Research Square

Preprints are preliminary reports that have not undergone peer review.
They should not be considered conclusive, used to inform clinical practice,
or referenced by the media as validated information.

Dynamics of Livelihood Diversification in Rural Hinterland of Hooghly District in West Bengal, India

Rajat Chakraborty
University of Burdwan
Dr. Sumana Sarkar
ssarkar@geo.buruniv.ac.in

University of Burdwan

Research Article

Keywords: Livelihood diversification, Deprivation Index, Participatory Well-being Ranking (PWR), Livelihood Status Index (LSI), Satisfaction Index (S.I), Hooghly

Posted Date: June 9th, 2026

DOI: https://doi.org/10.21203/rs.3.rs-9868314/v1

License: This work is licensed under a Creative Commons Attribution 4.0 International License.
Read Full License

Additional Declarations: No competing interests reported.

Dynamics of Livelihood Diversification in Rural Hinterland of Hooghly District in West Bengal, India

Abstract:

Livelihood diversification has become a key tactic for enhancing the stability of and reducing the vulnerability of agrarian based rural households in developing countries. As a result, they began participating in different non-farm activities instead of traditional farm-based occupations. This study assesses the trend of livelihood diversification in response to different economic challenges among major occupational groups viz. Cultivators (CUL), Agricultural labourers (AL), Household industry workers (HIW) and Other workers(OW) at the micro level, particularly focusing in the rural hinterland landscape of Hooghly after taking Jangipara Community Development Block (CDB) as a case. The data had been gathered from field surveys as well as secondary sources.

The study uses several indices like Deprivation Index, Livelihood Status Index (LSI), and Satisfaction Index (S.I) along with Participatory Well-being Ranking (PWR) to analyse the pattern of livelihood diversification and its linkage with the well-being status of major occupational groups. The findings reveal that a complex non-linear relationship exists between diversification and livelihood outcomes. Households depending on farm sectors have more diversified portfolio than households engaged in non-farm sectors. Here, households of Cultivators and AL exhibit moderately high to high level of diversification due to seasonality of agriculture based economic activity and experience medium to high deprivation respectively; in contrast, households of HIW and OW showing moderately low to low level of diversification confront with semi-medium to low level deprivation. Here, policy intervention is needed to widen the opportunity for generating more sustainable livelihood options for farming communities at the micro level.

Keywords: Livelihood diversification, Deprivation Index, Participatory Well-being Ranking (PWR), Livelihood Status Index (LSI), Satisfaction Index (S.I), Hooghly.

1. Introduction:

Livelihoods are the resources, capabilities and activities that enable people to make a living and that contribute to their well-being and resilience (UNDP 2021). Livelihood diversification is the process through which households assemble and alter their assets and activities, within the development of several livelihood strategies, in the face of changing conditions (Scoones 2015). Rural households worldwide are broadening their diversification strategy to livelihood to improve income stability and decrease vulnerability (FAO 2022; World Bank 2023).

Livelihood diversification is primarily led by the need to manage the risks associated with agricultural dependence in rural economic space. Here, households tend to engage in a combination of different on-farm, and off-farm activities to stabilized their income and ensure food security (Habib et al., 2023). Case-specific empirical studies from African countries like Ghana and Kenya revealed that diversification helped rural households to mitigate food insecurity and maintain stability over the year-round consumption which led to enhance welfare and socio-economic outcomes reducing vulnerability (Kolog et al., 2024 and Sun et al., 2023). Recently a study conducted in Bundelkhand region of India shows a remarkable shifting of working age population towards non-farm sector depending on various socio-economic strata like caste or community affiliation and land ownership, which affect the condition of rural livelihoods (Rajak 2025). Diversification increases the household resilience capacities but the success of diversification depends on the quality and consistency of the non-farm options (Bora et al., 2022). The study on occupational distribution using PLFS data (2022-2023) on West Bengal showed that the older generation people are still concentrated in the agricultural and allied low-skilled based sector but the younger generation is slowly shifting away from their traditional family occupation and engaging in the skilled non-farm sector (Saha 2026). The diversity of occupation over time is gradually revealing a dynamic change in the inter-generational methods of livelihood (Das et al., 2025). Livelihood diversification contributes to increase the economic stability, food security and helps the households to cope with climate shocks, therefore closely matching towards Sustainable Development Goal 1 (No Poverty) and SDG 8 (Decent Work and Economic Growth) (Ongachi & Belinder, 2025).

Development of rural hinterland is shaped by the nearest urban centres as it acts as a supply zone of raw materials and labours and in turn receives services. In the past thirty years, the Jangipara C.D. Block had gone through both the sectoral transformation of occupational structure and the structure of the economy (Das,2014). As per the 2011 Census, the occupational structure of the Jangipara Block in Hooghly district shows a balanced combination of farm and non-farm activity with proportion of four major occupational categories i.e. Cultivators (14.13%), Agricultural Labourers (34.77%), Household Industry Workers (14.86%), and Other Workers (36.24%). Calculation of Simpson's diversification index clearly indicates that Jangipara is a highly diversified Block in Hooghly District, with the combined effects of high proportion of marginal cultivators, agricultural distress, proximity to urban centres, and intergenerational changes in aspirations and employment preferences. In this context, the current study aims to identify the nature and extent of livelihood diversification among the different occupational groups in connection to deprivation and well-being scenario at the micro-level.

2. Study Area and Its Selection Criteria:

Hooghly is an agriculturally prosperous district with strong industrial background. It secured sixth position in terms of livelihood diversification in West Bengal. This district consists of four subdivisions containing 18 no. of CDBs along with 40 urban centres. Jangipara Community Development Block is a part of Serampore Sub-division located between 22°40′30″ N to 22°44′26″N latitude and 88°0′E to 88°12′30″E longitude with an area of approx. 164.43 sq. km in size covering 128 villages and 10 Gram Panchayats with a total population of 1,65,837. The study area is bounded on the North side by parts of Haripal and Tarakeswar Block, on the East by Chanditala-I, and on the South by parts of Haora District (Fig. 1).

According to a report of ‘Livelihood Analysis in West Bengal’(PRASARI,2011), District Hooghly fall into two livelihood zone viz. Zone 7: Ruhr & Alluvial-Grain Crops-Fishery-Poutry-Livestock-Cottage Industry Livelihood zone (Jangipara block shares this zone along with other 12 no. of Blocks) and Zone 10: Coastal & Alluvial-Grain Crops-Fishery-Floriculture-Vegetable-Legumes-Livestock Livelihood zone (6 no. of blocks).

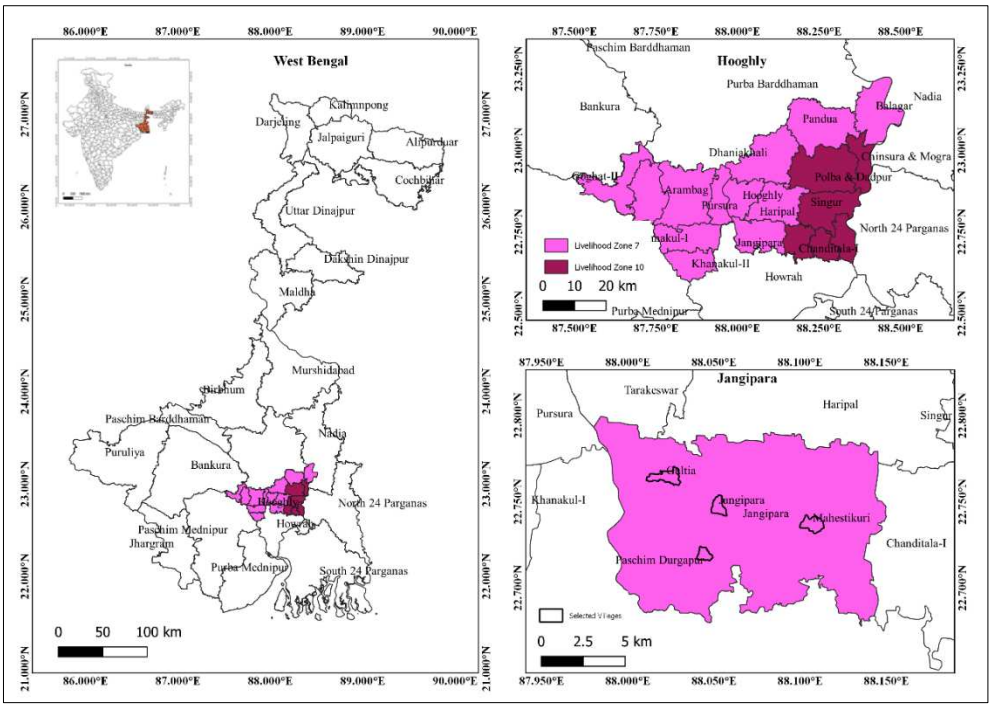


Figure 1: Location Map

Source: prepared by authors

Table 1: Selection criteria of the different administrative units

Administrative unit	Selection parameter	Remarks
District	Simpson index (S.I)	The District Hooghly (ranked 6th)
Block	*Block selection criteria 1:* Simpson index (S.I)	The Block Jangipara (ranked 1st)
Block	*Block selection criteria 2:* HDI, 2011 (Livelihood index, Asset index, Employment index, BPL category, WPR, Livelihood groups)	The value range of Jangipara nearest similar to Hooghly District's value
Gram Panchayet	Quartile deviation on National average score (26 parameters of Mission Antyodaya, 2020)	▪Radhanagar (Lowest score) ▪Rajbalhat-II & Dilakash (Medium score) •Jangipara (Highest score)
Village	Location Quotient (L.Q)	Paschim Durgapur, Mahestikuri, Gultia, Jangipara has been selected on the basis of maximum concentration of livelihood groups

The study adopts a multistage framework (Table 1) in order to capture spatial socio-economic variance in livelihood diversification from overall District to Village level.

$$S.I.(\lambda)^n = 1 - \sum_{i=1}^{N} (P_i)^2$$

Where, N= Total livelihood activity, Pi = Livelihood activity proportion of the and i refer as particular activity in the total livelihood group

Simpson Diversification Index (SDI), it is a useful tool that has been used here to study the extent of livelihood diversification. The value of this index range between 0 and 1, where 0 indicates full concentration and 1indicates

full diversification. District Hooghly and Jangipara Block ranked 6th position and1st position among all the Districts of West Bengal and all the Blocks of Hooghly respectively.

The index has been calculated on the basis of different types of livelihood groups after taking the occupational categories data from the Census 2011. Based on the nearness values of livelihood security index (Table 2) in between Hooghly and Jangipara, this Block has been selected for the study.

Table 2. HDI & Livelihood Security Indices

Selected Parameters	Administrative Units	
	Hooghly District	Jangipara Block
Asset Index	0.44	0.496
Employment Index	0.26	0.214
Livelihood Index	0.35	0.36
BPL (% of households)	32.05	21.61
WPR (Ranked among the all Blocks in Hooghly)	-	2nd
Main worker (Ranked among the all Blocks in Hooghly)	-	1st
Cultivators (%)	12.06	14.13
Agricultural labourer (%)	27.1	34.77
Households Industry (%)	5.19	14.86
Others worker (%)	55.65	36.24

Source: Human Development Report and Census, 2011

Besides, data from Mission Antyodaya report (2020) was used to analyse the position of different Gram Panchayats on the National average. score (Figure 2) of multiple dimensions of development. Surprisingly, the Block Jangipara score is similar to the District Hooghly score; it's another strong reason to select the Block as a study area.

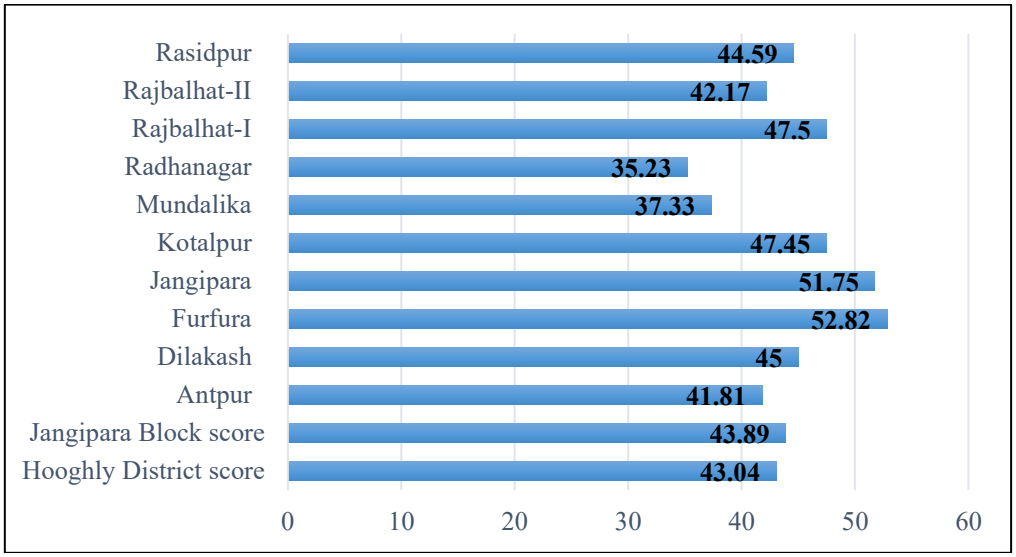


Figure 2: Different administration-wise National avg. score
Source: Mission Antyodaya, GoI, 2022

After that, the Quartile deviation has been calculated based on the national average score from Mission Antyodaya, GoI, 2022 (Table 3) to classify the Jangipara block into four zones, and four GPs, viz. Radhanagar (low-scoring zone), Rajbalhat-II, Dilakash (medium-scoring zone) and Jangipara (high-scoring zone) have been selected as the sample study area for the investigation.

Table 3. National average score-wise Quartile and Location Quotation calculation

Quartile Category	Quartile Formula	NAS Range	Representative GP	Sample Villages	Dominant Working Group	LQ Value	Dominant Livelihood Activity	Total Households	Confidence Level (90%)	Margin of Error (7%)	Population Proportion ((50%)	Sample Size
Q1 (Low NAS)	((n+1)/4)th	35.23 – 40.69	Radhanagar	Paschim Durgapur	Cultivators	4.25	Farm-based	133	$n = N/1 + Ne^2$ n= sample size, N= proportion of the sample, e = Margin error			69
Q2	((n+1)/2)th	40.70 – 44.79	Rajbalhat-II	Mahestikuri	Agricultural Labourers	2.21	Farm-based	84				53
Q3	(3(n+1)/4)th	44.80 – 48.56	Dilakash	Gultia	Household Industry	4.05	Non-farm-based	340				99
High NAS (Q3+)	—	48.57 – 52.82	Jangipara	Jangipara	Other Workers	2.07	Non-farm-based	667				116 **Total e = 337**

Further, to select the sample villages, the Location Quotient index (Table 3) has been calculated. From every selected GP, one village has been selected for the study purpose, considering the L.Q value in major work categories.

The current work is empirical and field-based in nature; an intensive field survey has been conducted with a sample size of 337 households. Intergenerational studies (Figure 3) had been conducted through questionnaire surveys, personal interviews, and focused group discussions to record the respondents' perceptions.

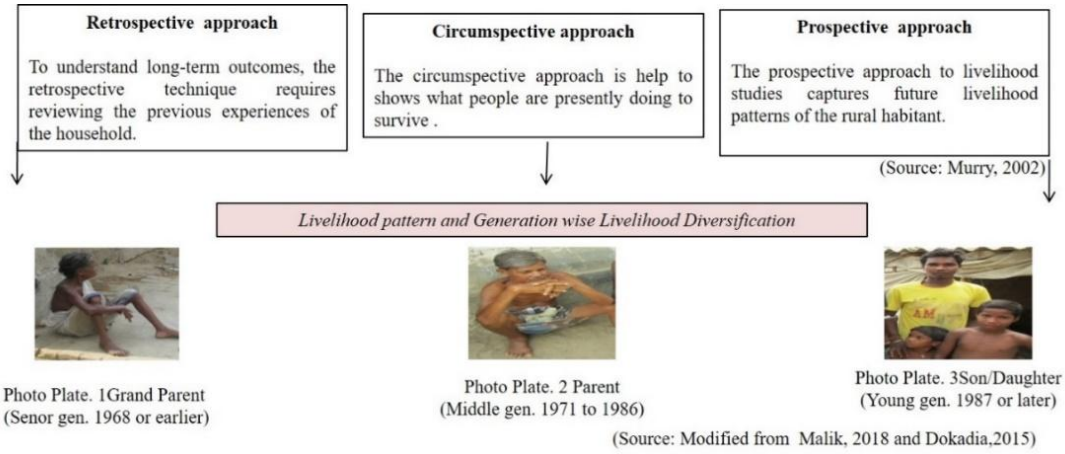


Figure 3: Intergenerational population composition

3. Materials and Methods

Database

The present study is mainly based on field-based primary data, capturing both quantitative and qualitative information for the year 20222-23. Besides, several data and information have been obtained from secondary sources, including Quantitative datasets like Census data (1991–2011), the Socio Economic & Caste Census (SECC-2011), the District Statistical Handbook (2020),) & the Antyodaya dataset (2022) and Micro-scale quantitative data is collected from the local BDO office.

Methodology

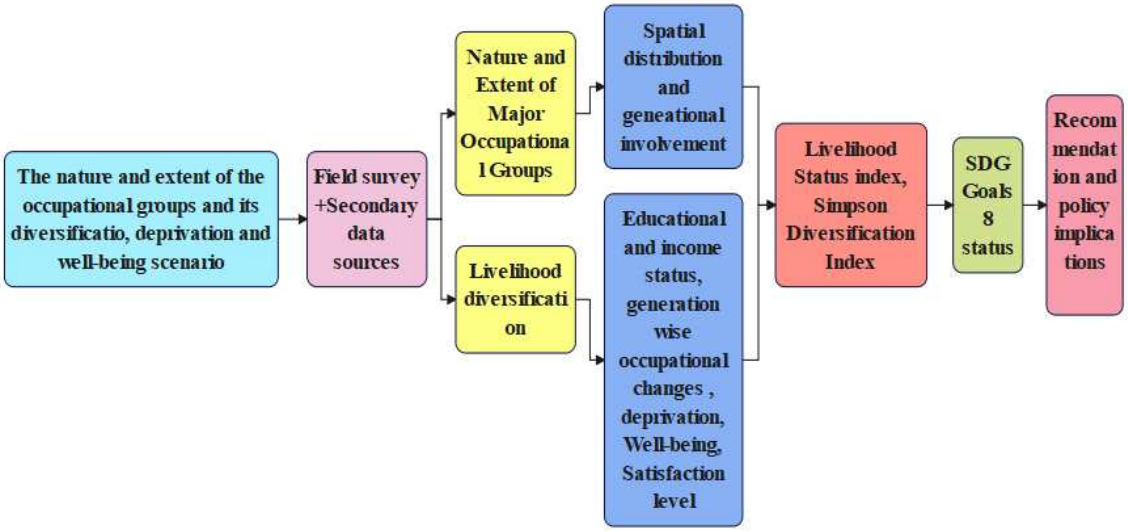


Figure 4. Detailed methodological flow chart of this study

Z score is a statistical measure used to illustrate how a value relates to the mean of a set of values. To calculate the livelihood deprivation scenario Z score has been used to rank among the four villages.

$$\text{Z score} = (x-\mu)/\sigma$$

[Where, x denotes raw score, μ means the population mean, σ represents the population standard deviation].

Standard deviation is a statistical measure that shows how much the values in a dataset deviate or spread out from the mean (average). Standard deviation used to calculate the Participatory wellbeing ranking among the selected four villages.

$$\boldsymbol{\sigma=\sqrt{\varepsilon(x-\mu)2/N}}$$

[Where, σ means population standard deviation of x Each data value, μ represents population mean (average) and N means total number of observations]

Satisfaction index is a statistical measure of level of satisfaction of respondents related to different qualitative aspects.

$$SI = \frac{\text{fs} + \text{fd}}{N}$$

(Where, Is= satisfaction index, fs= Number of satisfied respondents, fd=Number of dissatisfied respondents, N-Total number of respondents, Majumdar et. al., 2007)

Livelihood Status Index (LSI) used to investigate the overall livelihood condition of households, composite Livelihood Status Index (LSI) is modified by integrating three components i.e. well-being, deprivation, and

satisfaction. This concept is grounded in the multidimensional outlook of livelihoods, which emphasizes both subjective and objective aspects of human welfare (Chambers & Conway, 1992; Pal, 2015).

$$LSI=\frac{Wi+Di+Si}{3}$$

[Higher values mean lower deprivation (better conditions) Where, LSI = Livelihood Status Index of the i th unit, Wi = normalized value of well-being index, Di means normalized value of deprivation index and Si denotes normalized value of satisfaction index.]

4. Results and Discussion

As per the census report (2011) of the Government of India, the workforce has been classified into four groups, such as cultivators and agricultural labourers, who are under farm livelihood; household industry workers and other workers are considered under non-farm livelihood. To understand the nature of prevailing livelihood in Jangipara Block, these four major occupational groups have been considered.

4.1 Nature and Extent of Major Occupational Groups:

The nature and extent of occupational groups refer to the characteristics and types of involvement into the different economic activities performed by the occupational groups and their spatial distribution in study area respectively.

Distribution of Farm Based Livelihood

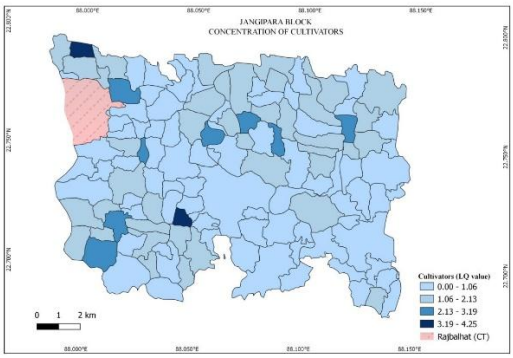


Figure 5: Spatial distribution of cultivators

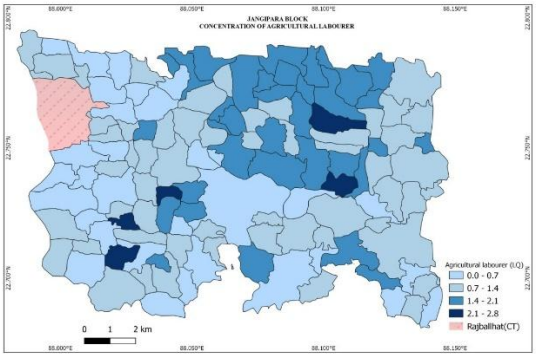


Figure 6: Spatial distribution of Agri. labourers

Farm-based livelihood in the Jangipara Block is both subsistence and commercial in nature. The Block has a variety of favourable factors such as its geographical location, agro-climatic conditions, fertile soil, and better irrigation facilities that enable it to be an agriculturally productive region. The spatial distribution of cultivator's uniform in nature (Figure 5), because most of farmer are Semi-medium (having land ownership <4 Hectares). Field data clearly state that, the dominate region Paschim Durgapur with 42.02% farmer have own land and 23.18% are sharecropper Farming is basically conducted by hired labourers. The illustrated distribution of agricultural labourers (Figure 6) highest mostly found in some isolated pockets in the south-central and eastern parts of the block.

Over time, the situation has changed. Sectoral involvement has expanded, yet a field investigation has revealed that rural households have significantly altered their traditional means of subsistence from generation to generation.

Table 4. Age distribution of villagers engaged with the occupation of the surveyed households

Age (in yrs.)	Participation in Cultivation		Participation in Agricultural Labourer Activity	
	Male (%)	Female (%)	Male (%)	Female (%)
< 30 (Young gen.)	3.82	-	8.32	6.25
30-60 (Middle gen.)	54.69	96.43	58.36	93.75

> 60 (Senior. gen.)	41.49	3.57	33.32	-

Source: Field survey (2022-23)

The field data highlights that farm-based livelihood activities are highly concentrated in the middle age group who are still engaged with their family occupation, with minimal participation of the younger population, indicating a drastically shift away from traditional agriculture. The positive presence of women of the productive age group contribution a crucial part to rural livelihoods. Thus, the overall pattern suggests a changing rural economy marked by youth disinterest and persistence of their traditional livelihood dependence among the older generation.

Distribution of Non-farm Based Livelihood

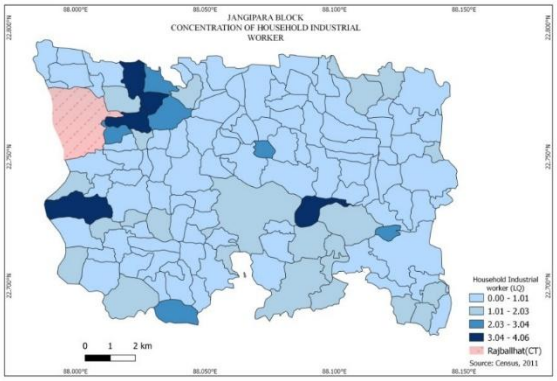


Figure 7: Spatial distribution of Household industry workers

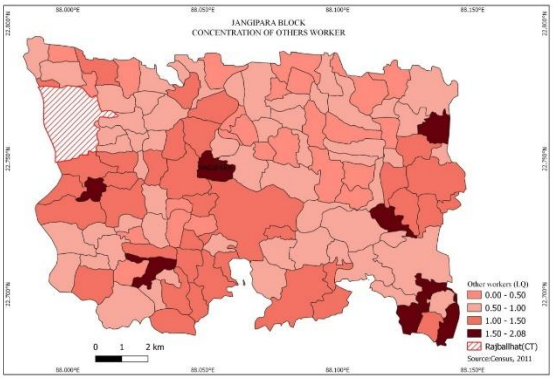


Figure 8: Spatial distribution of other workers

Though agriculture is the base of rural economy, but a significant shift is observed toward non-farm activities. Non-farm sectors especially small-scale household industries and other services are increasingly becoming crucial livelihood sources in the hinterland area. The spatial map suggests that household industries (Figure 7) in Jangipara Block are highly localized rather than widespread. The high concentration shows in the north-western part, specifically adjacent to the census town area of Rajballhat. Other Workers (Figure 8) especially include those in the service sector, private and government jobs sector and trade, commerce. Exclusively Rajballhat and Block central part Jangipara dominated by this non-farm sector.

Table 5. Age distribution of villagers engaged with occupation of the surveyed households

Age (in yrs.)	Age (in yrs.)	Participation in Household Industry		Participation in Other works	
		Male (%)	Female (%)	Male (%)	Female (%)
< 30 (Young gen.)	< 30	3.55	9.09	25.64	49.36
30-60 (Middle gen.)	30-60	51.43	90.91	48.72	50.64
> 60 (Senior. gen.)	> 60	45.02	-	25.63	-

Source: Field survey(2022-23)

Overall, the field data indicate that, that middle-aged people, men and particularly women, are the main drivers of household industry, whereas young and middle-aged generation people willing to involved in other jobs, with a remarkable preference for young women, who are involved to stretch the cloth related to weaving. Beside this, involvement in other sectoral activities is significantly higher, especially among females compared to males, it's means particularly females, is more inclined towards diversified other activities. Near about similar male female workforce participation as middle generation people in other activities shows the most economically active segment of the overall population.

Significantly, younger men and women have no interest in working in domestic or cottage industries, indicating a generational shift in goals—perhaps toward formal employment, urban migration, or educational opportunities. Livelihood participation is strongly influenced by the factors of age and gender. Both household and non-

household sectoral activities are most active among the middle-aged population, while younger individuals are more attracted to other work.

4.2. Determinant Factors to Livelihood Diversification:

Educational Status

Education acts as a key tactic of livelihood diversification by enhancing individual skills which improves employability and expand the opportunities to access the diverse economy. In the predominantly agricultural village of Paschim Durgapur, the younger generation is currently enrolled in modern schools, while the majority of the older generation is illiterate, and only a small section of the middle generation has completed their formal education. When comparing the literacy rates of men and women, women make up only 31%. Girls' students have the highest dropout rates and a gap that is particularly wide in the older generations (Fig. 9. (a).

In Mahestikuri, a largely agricultural labourer-dominated village, women have higher rates of illiteracy and lower rates of participation in higher education than men. This disparity is especially noticeable in older generations, where older women's illiteracy is very high. Most of the young generation is currently enrolled in local schools, while it comes to literacy rates, women account for just 31% of the total. Here, the dropout rate is relatively high among girls (Fig.9 (b).

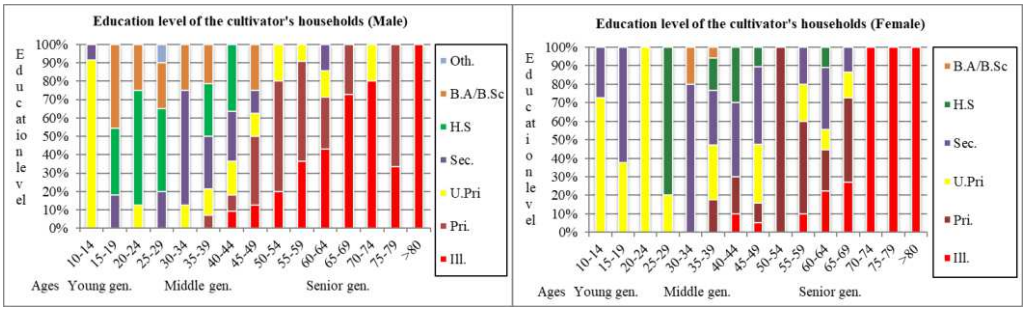


Fig. 9 (a). Education level of cultivators

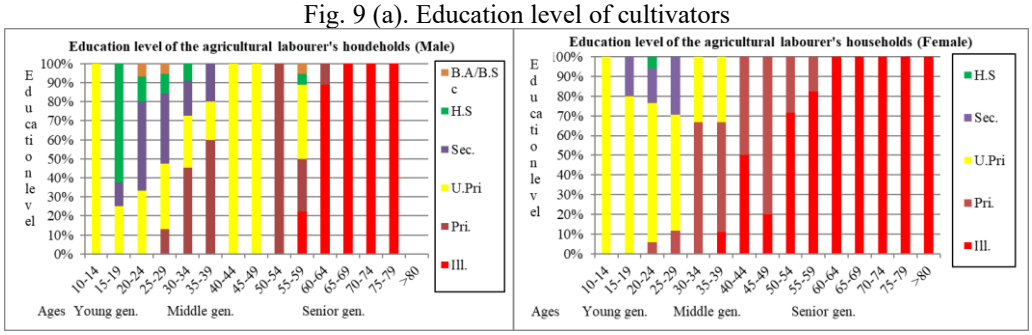


Fig. 9 (b). Education level of agricultural labourer

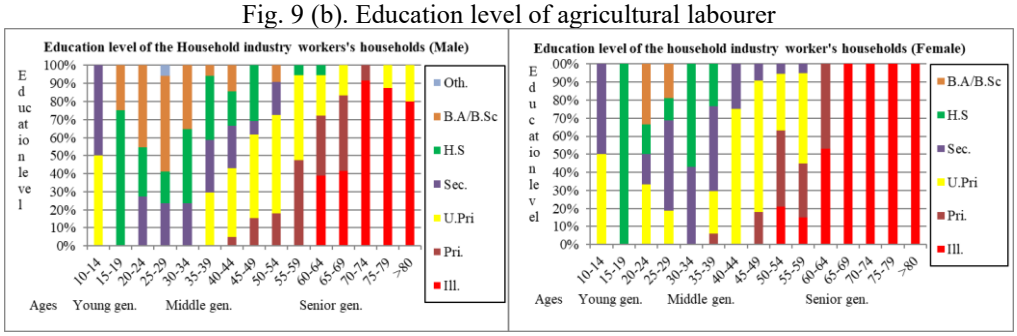


Fig. 9 (c). Education level of household industry worker

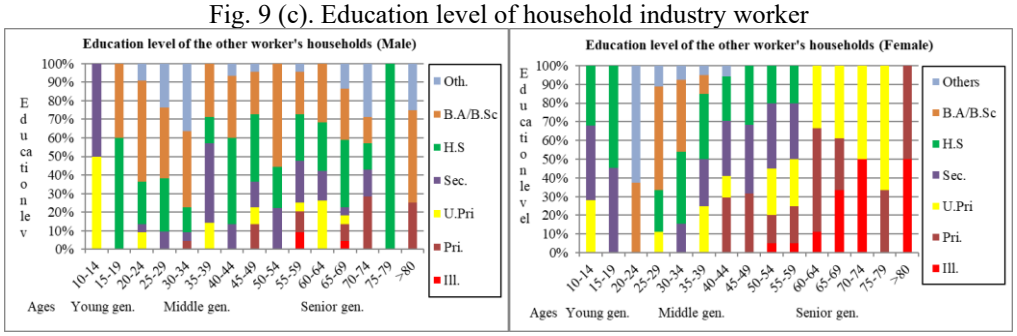


Fig. 9 (d). Education level of other worker
(Source: Field survey, 2022-23)

Higher educational attainment among the younger generations increases diversification away from their family traditional activities towards non-farm economic activity, which has a significant impact on generational shifts of rural livelihoods.

The majority of the middle-class and older members of the weavers' family are also found illiterate, compared to men, women in practically every age group have lower representation in the academic system. The gender gap in education is highly noticeable in the older generations. Young people are enrolled in several formal education programmes. Very few men and women pursue other forms of education, such as technical ones (Fig.9(c).

The scenario is relatively better in other worker families in terms of enrolment in school. A few of them have advanced degrees and work in affluent jobs, engaged primarily in tertiary sectors. The younger generation participates mainly in contemporary educational fields (Fig. 9(d).

It is evident from the comparative analysis of the educational scenario that access to employment sectors is directly or indirectly influenced by educational status, which in turn influences livelihood options. As a result, in many villages, education plays a significant role in changing the patterns of life from low-wage, informal to formal, skilled employment, but gender inequality still prevents women from taking advantage of these chances.

Income Status

Table 6. Income structure of farm based activities

Crop/ production	Pre-Kharif Season	Kharif Season	Rabi season
Major crop	Boro	Amman	Potato
Approx. Production (In kg./ *Bigha*)	1300	1500	4000
Approx. Price (In Rs.)	11700	13500	16000
Approx. Labour +Fertilizer+ Irrigation cost (In Rs.)	7000	6500	8000
Approx. Profit (In Rs.)	4700	7000	8000

Source: Field survey (2022-23)

The income data (Table 6) indicated that the farmer's livelihood is mostly affected by the seasonal strategy. It has been observed that agriculture is not profitable because of high prices of agricultural inputs like fertilizer and seeds, along with a shortage of labour.

In agricultural labour work, a considerable wage differences exists based on nature, place of work and gender involvement, with the highest wage of ₹350 per person paid for paddy transportation, which is basically labour-intensive in nature. Potato extraction is also fetching high wage of about ₹300 likely due to the physical effort and time required while paddy farming works, Potato picking and other miscellaneous tasks received moderately wage ranging from ₹150 to 200, showing a mid-range labour demand.

The local *Middlemen* set significantly lower prices for weavers. Rather than eight cloths, they can negotiate a set pricing rate of Rs. 2000/-with weavers. The government-run cluster offers the weavers a fair wage price, but the quantity was restricted. Different wage price charts make it quite evident that the wage income is entirely dependent on the business seasons and middle men.

Table 7. Income details of household industrial activities

Wage Pattern	Weaving (Via Mahajan)	Weaving (Via Cluster)	Cloth adjustment	Folding of cloth	Pocketing of cloth
			Female-based work	**Young male-based work**	**Young male-based work**

Wage (Rs.)/ Person	200/ 250/ 300/ (Depends on design)	300/-	12/-Per cloth	3/- per cloth	0.50/- per cloth
Approx. income (in Rs)	>60 yr. 250*4=1000/week <30-60 yr. 250*6=1500/week	-	-	Peak season 800/- per day Off season 100/- per day	-

Source: Field survey(2022-23)

The structure of wages for weaving-related activities in the study area shows a combination of skill-based and piece-rate payments, with a substantial seasonal fluctuation in income. The wage pattern significantly varies depending on the type of labour performed, skill level, and mode of engagement.

Table 8. Primary and secondary economic activities of the occupational groups

Major occupational groups	Gender	Primary Occupation	Secondary Occupation
Cultivators	Male	Cultivation	Govt. Job / Private Job / Industry and Wage Labour / Petty Business / Transport
	Female	Cultivation	Livestock / Cottage Industry / Petty Business / Private Job
Agricultural Labourers	Male	Agricultural Labour	Private Job/ Industry Labour / Jewellery Work / Petty Business
	Female	Agricultural Labour	Livestock / Cottage Industry / Petty Business
Household Industry Workers	Male	Weaving	Govt. Job / Private Job /Industry Labour / Dhoti Processing / Petty Business
	Female	Household Industry	Livestock / Petty Business/ Private Job/ Starching dhoti
Other Workers	Male	Business	Govt. Job / Private Job / Industry and Wage Labour / Transport
	Female	Business	Govt. Job / Private Job / Livestock / Cottage Industry/ Petty Business/ Weaving

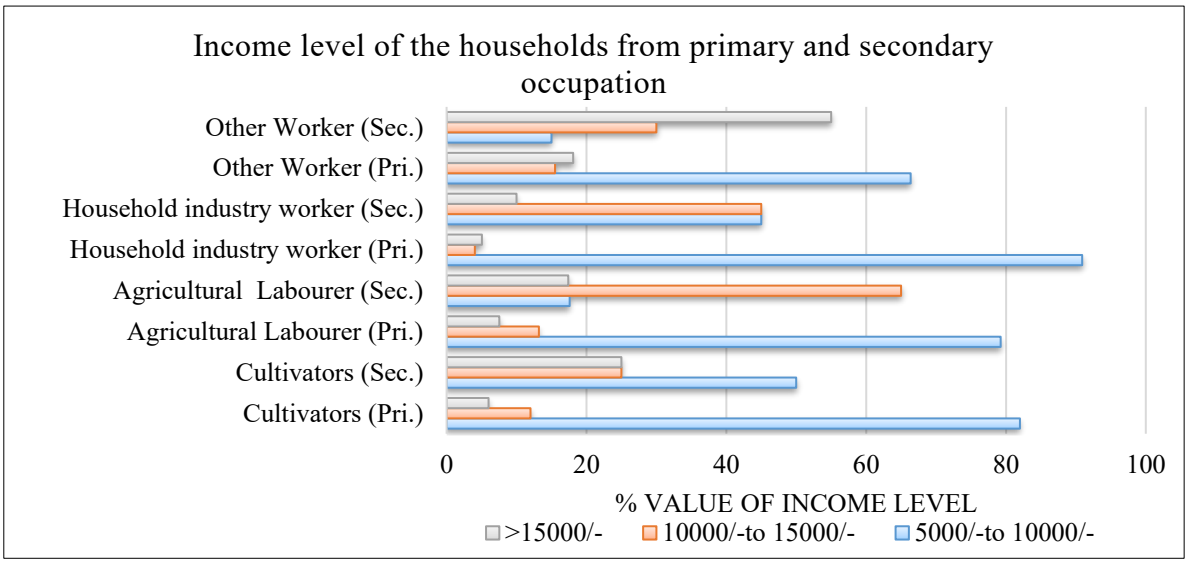


Figure 10. Income level of the different households

Source: Field survey(2022-23)

Figure 10. *Pri.* means primary occupation and *Sec.* denotes the secondary occupation, shows that the farmer and agricultural labourer are mostly involved in primary sectors and earn approx ₹5000–₹10000/month. In this vulnerable situation, to sustain their livelihood, household member secondarily involved in multi-sectoral activity, the above-mentioned figure also clearly indicates an income improvement in secondary-based occupation, which enhances their financial stability. As we move to household industry and other workers, a clear shift is noted toward secondary jobs, where income shares go up a lot. This income level pattern indicates that households involved in multiple or secondary activities generally attain elevated income levels, which significantly enhances occupational diversification.

Multi Occupational Involvement:

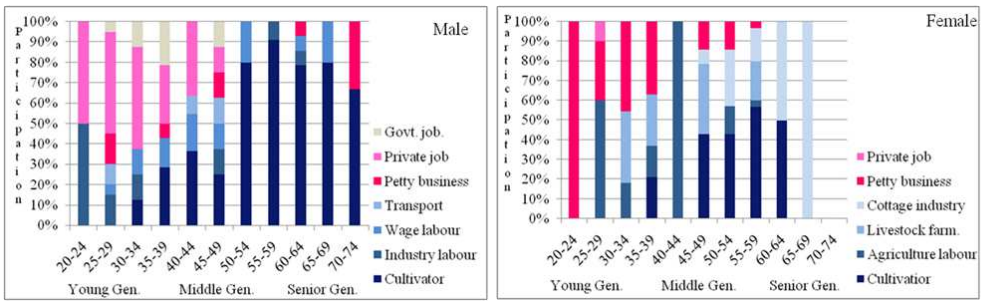


Figure 11 (a). Sectoral involvement of cultivators

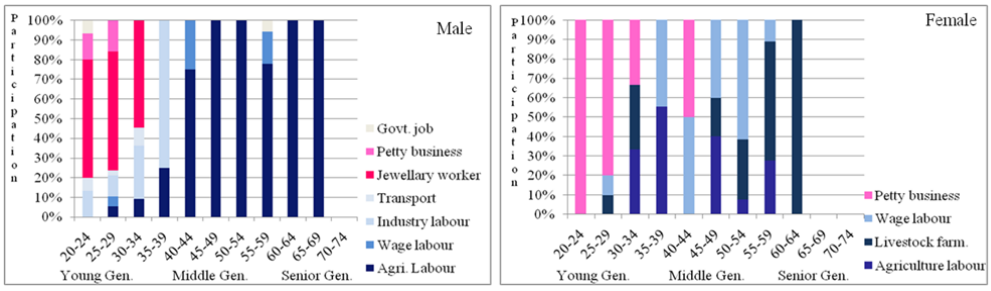


Figure 11 (b). Sectoral involvement of agricultural labourer

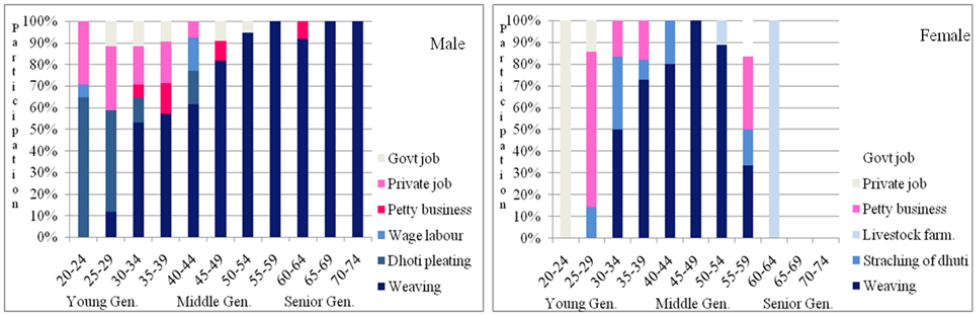


Figure 11 (c). Sectoral involvement of household industry worker

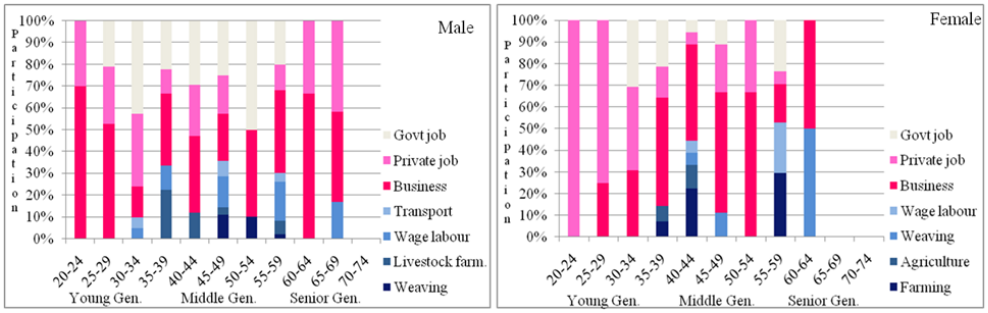


Figure 11 (d). Sectoral involvement of other workers
Source: Field survey(2022-23)

The graphs Figure 11(a) highlight a gradual decline in involvement in agriculture and its allied activities instated a steady rise in non-agricultural employment opportunities across the generations, the younger generation is more engaged in non-farm activities like private jobs, petty business, and the senior generation is heavily engaged in agriculture, in contrast the middle generation shows a mix characteristic of farm and non-farm occupations.

Figure 11 (b) charts illustrate a generational shift of agricultural labourer households. A significant share of the younger generation are engaged in specialized jewellery wok and other non-farm activities. The middle generation maintains a balance both agricultural labour and non-farm occupations, the senior generation is concentrated in agricultural labour with few participations in other sectors.

Figure 11 (c) illustrates the generational shift of the traditional artisan. Among the younger generations, a sharp decline noticed in traditional activities like weaving and dhoti pleating, by replacing a surge in service in both govt. and private, petty businesses. The senior generation remained specialized in their traditional activities.

Figure 11 (d) clear depict that, the generational shift in employment preferences among the others worker's households, senior generation are strong reliance on business and traditional sectors. Middle Generation diversified, in transport, govt. jobs and the young Generation, who participated in private jobs and business activities.

Livelihood Deprivations:

Multidimensional data has been used to analyse household-level deprivations. Field survey data were used to monitor deprivation at the household level in the study area following normalization methods for each criteria. Different dimensions of deprivation as per the study's requirement, modified from Gaur and Rao (2020) and Ogbonna and Deepika (2025) and used to analyse the status of deprived households. (Table 9).

Table 9. Deprivation status of major livelihood groups

Criteria	Deprivation dimension	Cultivators	Agricultural labourer	Household industry worker	Others worker
Banking access	Economic	0.48	0.34	0.47	0.49
Household's income (Monthly)		0.27	0.26	0.29	0.35
Land holding (Acre)		0.42	0.33	0.40	0.41
House type		0.40	0.29	0.40	0.42

Adult literacy	Human Capital	0.41	0.30	0.46	1
Social organization memberships	Social	0.50	0.21	0.73	0.50
Total		2.48	1.73	2.75	3.17
Composite Score		0.41	0.28	0.45	0.52
Status		Medium deprivation	Relatively High deprivation	Semi medium deprivation	Relatively Low deprivation

The deprivation analysis across the major occupational groups reveals significant disparities in livelihood vulnerability. Other workers reflected the highest cumulative deprivation score well above the mean (0.52), indicating low deprivation status. In contrast, agricultural labourers face high deprivation by limited resources and different disadvantages among the different deprivation criteria. Household industry workers have a semi moderate deprivation level and Cultivator households experience medium deprivation, driven mainly by landlessness and substandard housing (Table 9). All things considered, the findings highlight how occupation type has a significant impact on the kind and severity of deprivation, with agricultural labourers standing out as the most deprived despite having comparatively lower overall scores because of concentrated socioeconomic vulnerabilities

4.3. Livelihood Diversification Pattern

Livelihood diversification in Rural area involves adoption of strategies to construct a diverse portfolio of economic activities after widening the scopes of earnings from both farm and non-farm sectors. It is considered as a crucial strategy for reducing risk and improving economic resilience**.**

The Figure 12 highlights a strong correlation in between economic condition and livelihood diversification among different occupational groups. The agricultural labourers households exhibit the highest level of diversification over 75%, due to facing economic challenges. Whereas household industry worker and other workers remain largely non-diversified. Interestingly, economic problems are the prime mover for seeking multiple income across all categories, but notable segment of household industry workers and other workers cite a "lack of profit" from their traditional primary occupation as a specific reason for change.

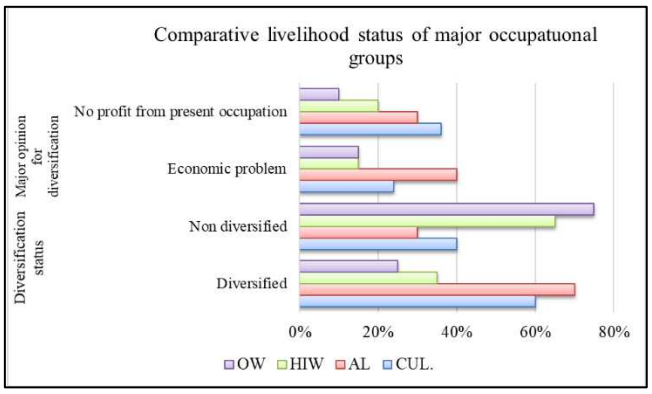


Figure12. Livelihood status among different occupational groups
Field Survey (2022-23)

Analysis of Intergenerational Responses towards continuation of traditional livelihood activity shows that 80% of farmers' families did not want to involve their future generations in this activity because of the rising cultivation costs and low profit margin (Figure 13). Similarly, youth from agricultural labourers' families show less interest in engaging in the same occupation as of their fathers due to low wage levels and job insecurity. The majority of guardians sent their son to work in the jewellery industry in another state. A small number of weavers' families eventually hope that their offspring will carry forward their ancestral practice of weaving *tant* fabrics. In case of other worker households, the male young generation of the family who is in business continues their usual activities, and they desire that the future generation will gain education and training to be absorbed into various service sectors.

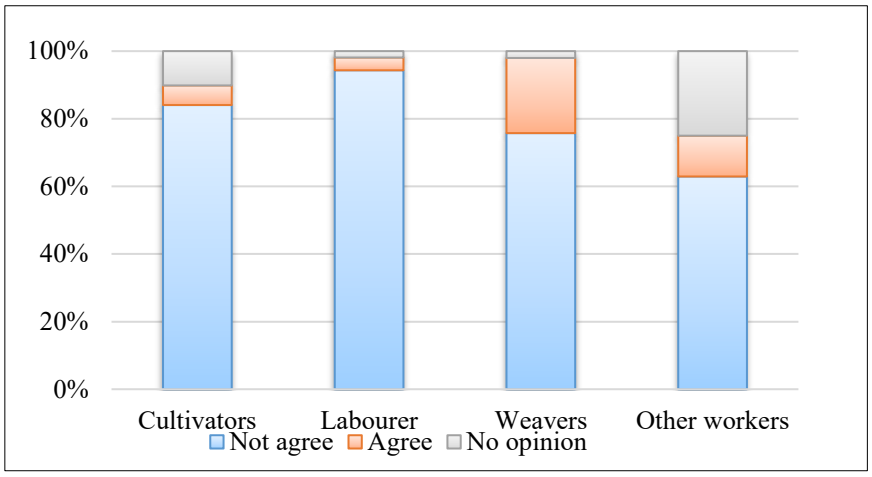


Figure 13. Opinion of respondents for continuing their traditional livelihood activity by the young generation
Field Survey (2022-23)

4.4 Linkage of Livelihood Diversification with Well-being Status:

Participatory Wellbeing Ranking (PWR) is a method that is used here to analyse the socio-economic status of surveyed households of major work categories. Existing literary works confirmed that the strategies for livelihood diversification are directly linked with the PWR.

Table 10. Criteria for participatory wellbeing ranking (PWR)

Main parameters	Underprivileged	Modest-income	Well off
Monthly income (INR)	Below 10000	10000-15000	Above 15000
Land ownerships	Below 4hectares	4-7 hectare	Above 7hectares
Livestock ownerships	Goat	Cow	More than one Cow
House type	*Kutcha*	Semi-*Pucca*/ *Pucca*1 floor	*Pucca having* 2 floors
Cooking fuel	Firewood/ cow dung	Firewood/ cow dung/ LPG cylinder (Mixed)	LPG Cylinder
Vehicle ownership	Van/Cycle	Bike/ Toto/ Motor van	4-wheeler commercial vehicles
Main livelihood source	Lower /semi/ un-skill-based activities	Medium /lower skill-based activities	High/ medium skill-based activities

Table 11. Participatory wellbeing ranking of households working group (PWR)

Village name (Dominant Working group)	Rank	Score	Remarks	
Jangipara (Other workers)	1	1.35	***Good***	**Standard Deviation(σ)= 0.074950997288745 Mean (μ:)=1.2375 Mean + SD= 1.31 Mean-SD=1.16**
Gultia (Household Workers-Weavers)	2	1.25	***Moderate***	
Paschim Durgapur (Cultivators)	3	1.2	***Semi moderate***	
Mahestikuri (Agricultural labourers)	4	1.15	***Relatively poor***	

Source: calculated by authors

It is observed that PWR of Jangipara, dominated by other workers group, has the highest rank and obtained a good level of well-being status. Gultia, dominated by household industry workers, especially weavers, secured a Moderate status while Paschim Durgapur (cultivation dominant village) is ranked Semi moderate one (Table 11). Mahestikuri, primarily comprise of AL households, is consequently marked as of relatively poor status. This glaring disparity among rating values indicated that, in comparison to villages dependent on more varied or non-agricultural livelihoods, those who have involved primarily into agricultural sector particularly the agriculture labour group is experiencing more vulnerable condition.

Livelihood Satisfaction:
Satisfaction index calculation (Table 12) is a Subjective Well-being assessment, where the Index quantifies the quality of life among the different occupational groups through key variables like infrastructure, health and overall living condition.

Table 12. Satisfaction index of major occupational groups

Variables	Occupational groups (S.I. value)		Degree of satisfaction
Occupation, Infrastructure, Health, Living environment, Recreation, Overall Livelihood	Farm based	Cultivators (0.98)	Relatively satisfied
		Agricultural labourers (0 0.38)	Not satisfied
	Non-farm based	Household industry workers (2.48)	Moderate Satisfied
		Other workers (2.67)	Highly satisfied

Source: calculated by authors

The highest index value found in the Other Workers for better living environment along with better infrastructural facility. The household industry workers follow Semi-moderate condition depends on their lifestyle and occupation. Surprisingly there is a massive satisfaction gap that found among farm based livelihood households of AL and CL because of marginal land ownership, low productivity and income gaps leading to poor satisfaction. Agricultural labourer family significantly suffer the condition regarding their health, recreation, and infrastructural facility.

Overall Livelihood Status:
In the comparative table, there is an inverse relation between economic condition and occupational diversification, what reveals a relevant "development-vulnerability" paradox in SDG 8.

Table 13. Livelihood diversification and status vs SDG goals

Occupational Group	LSI Score	Z-score	SDI Value	Z-score	Livelihood condition	'SDG 8' goals status
Cultivators	0.86	-0.61	0.45	+0.41	Moderate diversification but low livelihood status.	Low productivity and low-income, (gap in Target 8.2)
Agricultural Labourers	0.60	-1.31	0.48	+1.23	Highest diversification Lowest livelihood status	Failure of decent work conditions (critical gap in target 8.3)
Household Industry Workers	1.39	+0.80	0.43	-0.13	Semi-moderate diversification Above-average livelihood	Economic growth and improved livelihoods (on track to target 8.3)

Other Workers	1.51	+1.12	0.38	-1.51	Lowest diversification Highest livelihood status	Full and productive employment (near to target 8.5)

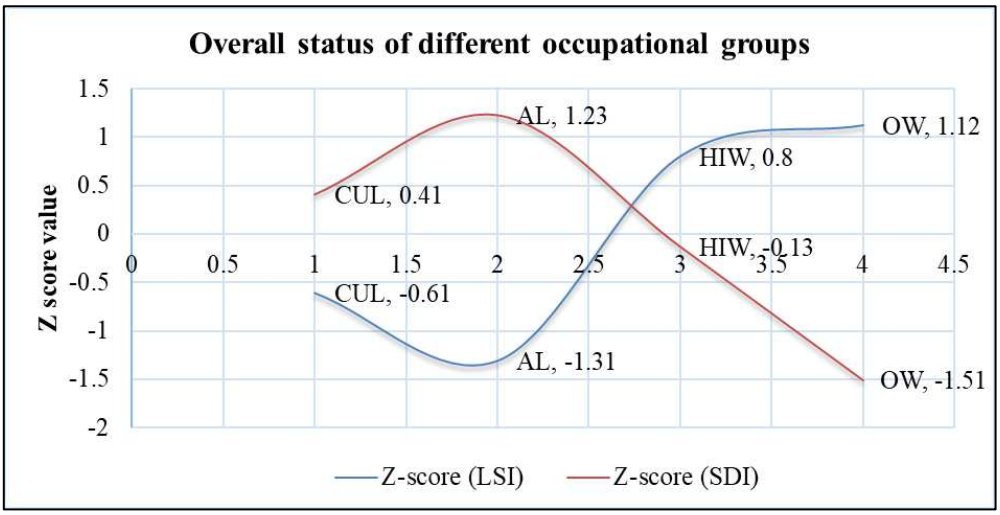


Figure 14. Overall Livelihood Status

Source: calculated by authors

The above mention picture clearly shows that (Figure 14) people engaged in other sectoral work at the centre part of the block area have highest livelihood status with comparatively low diversification, while the household industry workers have semi-moderate diversification with support for above-average livelihood which is on the way to sustainable economic development. However, the specific diversification of farm households does not reflect prosperity, but a forced survival strategy, with low productivity and income gaps. Moreover, agricultural labour households are among the most diverse yet vulnerable groups with a serious lack of decent working conditions.

5. Recommendation and Policy Implications:

Livelihood diversification is one of the major strategies to enhance rural household resilience and alleviate poverty. Policy priorities should include increasing non-farm employment, enhancing access to livelihood capital, and strengthening local institutional support. Vulnerable households with tiny asset bases still have limited ability to diversify and care must be taken. A region specific integrated livelihood development plan can contribute significantly to sustainable rural transformation and achievement of more general development objectives.

Push Factors (low income, low status) Generation-wise occupational diversification ('*Traditional*' to modern non-farm activities)

Occupational groups	Cultivators	Agricultural Labourers	Household Industry Workers	Other worker
Livelihood status	Seasonal fluctuations push them into traps or poverty, and are unsustainable=Moderate diversification	Critical state, making their livelihood non-sustainable=Highest diversification	Records a balanced range of assets, putting them near sustainability=Semi-moderate diversification	The high asset base and status allow them to meet the criteria of livelihood sustainability=Lowest diversification
Senior generation (Stability)	Indigenous Knowledge Mentorship related to cultivation (Natural farming)	Economically active without physical overexertion engage them in supervising jobs	Involve them as Master Mentors to protecting the heritage	Site Mentors in other sectoral activities
Middle generation (Value Addition0	Cop farming to Non-farm activates involvement like Agri – tech, Agi-touism	Opportunity to established ware house focused on proximity to urban center Kolkata	Provide the facility to improve home environment for upgrading household units to better production	Protecting their right focused on their economic activity
Young generation (Innovation)	Focused on: 'smart farming' Integration of AI, IoT, Agri entrepreneurship, advisory services suggesting like soil status and corresponding treatments.	Train young labourers to become independent service providers, Agro theme park, Agro events tourism	Digital marketing, product design, and global quality standards, narrative-based branding	Micro-Entrepreneur, Labour Start-ups

Pull factors (profit, socially respected) Generation-wise re-migration- to '*Tradition*' activities

Figure 14. Suggestive measure for livelihood betterment for the different occupational groups according to generation wise

6. Conclusion:

The study reveals that the occupational diversification in the region is mainly towards non-farm activities due to existing scenario of limited agricultural income, unpopular nature of farming activity and increasing rural unemployment. Mostly the older people engaged in agricultural activity and the young generation have a tendency towards adopting a more diversified livelihood venturing into non-farm activities. Rural youth have a tendency to migrate for skilled or semi-skilled non-farm jobs which are thought to offer greater prestige and better income opportunities than farming and its related labour work. Villages like Jangipara have relatively better livelihood capital, but disparities exist across different occupational groups. Households involved in skilled non-farm sectors have better access to resources and more diversification than households involved in low-income or primary production activities. Education is important because younger and better-educated people are increasingly moving into service and commercial activities instead of agriculture. The older members of the household still play an important role in farming. There are gender disparities, with women's participation limited by low education and mobility. Diversification patterns are generally strongly affected by education, landholding size, ownership of assets and access to finance, with small and fragmented landholdings being an important driver. Overall, the study focused on the quality, stability of occupations which is more critical than the extent of diversification. For effective growth towards SDG 8, policy interventions is needed for promoting diversification to enhance skill development, access to resources and decent work conditions. Without addressing these structural issues, diversification will only continue to reflect livelihood vulnerability rather than resilience particularly in rural hinterland area and rural livelihood.

Ethics Declaration: **Not Applicable**

Funding Declaration: **Not Applicable**

References:

- Bora, D., & Mahanta, A. (2022). Rural livelihood diversification among tribal communities of North-Eastern region of India: A systematic review. *Journal of Asian and African Studies*, 1–16.
- Bora, D., Das, B., & Bhuyan, R. (2022). Livelihood diversification and its impact on poverty status: A study with special reference to the Rabha community of Assam. *Journal of Rural Development, 40*(4), 515–529.

- Das, L., Panda, S., Basak, P., Mondal, S., Debnath, M. K., & Malitha, A. B. (2025). A study on occupational structure and its diversity among farm families of northern districts of West Bengal, India. *International Journal of Agriculture Extension and Social Development, 8*(4), 367–376.
- Das, S. (2014). Sectoral transformation of working population and status of employment: A case study on Jangipara C.D. Block, Hooghly District, West Bengal. *International Journal of Current Research, 6*(4), 6437–6441.
- Dokadia, A. (2018). Exploring multi-generational perspectives of career, learning, and leadership. Tata Institute of Social Sciences, Mumbai.
- Ellis, F. (2000). The determinants of rural livelihood diversification in developing countries. *Journal of Agricultural Economics, 51*(2), 289–302.
- Food and Agriculture Organization. (2022). *The state of food and agriculture 2022: Leveraging automation in agriculture for transforming agrifood systems*. FAO.
- Habib, N., Ariyawardana, A., & Aziz, A. A. (2023). The influence and impact of livelihood capitals on livelihood diversification strategies in developing countries: A systematic literature review. *Environmental Science and Pollution Research*, 30, 69882–69898.
- Hooghly District. (2022). District statistics. https://hooghly.nic.in/district-stat/
- Kaur, A., Arora, A., & Singh, S. P. (2020). Employment diversification in rural India: Nature, pattern, and determinants. *Centro de Estudios Sobre la Despoblación y Desarrollo de Áreas Rurales, 22*, 189–226.
- Kolog, J. D., Asem, F. E., Mensah-Bonsu, A., & Atinga, R. A. (2024). Determinants of livelihood diversification in an integrated agricultural and non-agricultural livelihood system in Ghana. *Scientific African* (25).
- Majumdar, A. H., Hossain, E., Islam, N., & Sawar, I. (2007). Urban environment quality mapping: A perception study on Chittagong Metropolitan City. *Kathmandu University Journal of Science, Engineering and Technology,* 1(4).
- Malik, P. (2018). Generations in the Indian workforce. *International Journal of Research and Analytical Reviews, 5*(4).
- Ministry of Rural Development, Government of India. (2022). Mission Antyodaya: Village agriculture reports. https://missionantyodaya.dord.gov.in/ accessed on 20/3/2023.
- Murray, C. (2002). Livelihoods research: Transcending boundaries of time and space. *Journal of Southern African Studies, 28*(3), 489–509.
- Office of the Registrar General & Census Commissioner, India. (2011). Primary census abstract data tables. Census of India.https://censusindia.gov.in/census.website/data/census-tables
- Ongachi, W., & Belinder, I. (2025). Agricultural extension as a pathway to livelihood diversification and sustainable development in rural communities: A systematic review. *BMC Agriculture*. 1 (6).
- Ogbonna, A. O., & Deepika, M. G. (2025). Rural multidimensional poverty and livelihood mix: A micro level study in Bihar, India. Heliyon, 11(4), e42772. https://doi.org/10.1016/j.heliyon.2025.e42772
- Pal, Vivek, Shiyani, R.L., Ardeshna, N.J. (2015). Livelihood Status Index: Poverty and Inequality Assessment in Gujarat. *International Journal of Agriculture Sciences*. 7 (14), 863-870.
- PRASARI. (2011). Livelihood zones analysis in West Bengal. FAO.
- Rajak, D. (2025). Pattern of occupational diversification among rural agricultural households: A field view. *Artha Journal of Social Sciences, 24*(1), 1–30.
- Sun, Q., Fu, C., Bai, Y., Oduor, A. M. O., & Cheng, B. (2023). Livelihood diversification and residents' welfare: Evidence from Maasai Mara National Reserve. *International Journal of Environmental Research and Public Health,* 20(5), 3859.
- Chambers, R., & Conway, G. (1992). *Sustainable rural livelihoods: Practical concepts for the 21st century*. IDS Discussion Paper.
- Chambers, R., & Conway, G. R. (1991). *Sustainable rural livelihoods: Practical concepts for the 21st century*. International Water Management Institute.
- Saha, M. (2026). Gender differences in occupation: A sector-wise analysis with PLFS data in West Bengal. Changing Dimensions in Economic Development. (pp.317-328). Emerald Publishing Limited
- Scoones, I. (2015). *Sustainable livelihoods and rural development*. Practical Action Publishing.
- Socio Economic and Caste Census. (2011). https://secc.dord.gov.in/
- United Nations Development Programme (2015). *Transforming our world: The 2030 Agenda for Sustainable Development*. United Nations.
- United Nations Development Programme. (2021). *Human development report 2020/2021: The next frontier—Human development and the Anthropocene*. United Nations.
- World Bank. (2023). *World development report 2023: Migrants, refugees, and societies*. World Bank.