

Livelihood Diversification Pursued by Farmers in West Bengal

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ABSTRACT

Livelihood Diversification has come under increasing scrutiny because of its powerful and pervasive impact. Department for Information Development (DFID) adopted livelihood diversification as central to its strategy for meeting the goals set out in its 1997 White Paper 'Eliminating World Poverty'. In this context this study, presents evidence that non-farm and off-farm activities are carried out by a significant proportion of adults and make an important contribution to livelihoods in West Bengal. It shows that there is a high involvement of farmers households (76.25%) in different non-farm income sources along with agricultural income. There was a high involvement of women (24%) also in different diversification activities. It was found that diversification activities make a greater contribution to cash incomes for poorer households, as the proportion of total cash income from off-farm and non-farm activities is larger for poorer wealth groups. The most important diversification activities were trading. The paper also highlights that Average Diversification Index in the study area was 0.46. Majority of the diversifiers (60%) had medium extent of Diversification as against only 21.74 per cent of diversifiers adopted high extent of diversification. It was found that for a vast majority of the rural population, livelihood diversification was distress driven. The adults from Darjeeling district were more diversified (52%) as compared to Uttar Dinajpur district (39%). This study also looks into the role of extension in non-agricultural activities in the livelihood securities of farmers and relationship between farm and non-farm income. It revealed that nearly two third of the farmers participated in different non-farm activities. About 53 per cent of the diversifiers were successful and 47 per cent were unsuccessful in their diversified activities. Nearly 41 per cent of the successful diversifiers had moderately high success and only 13.10 per cent were under high success category. Majority of the diversifiers (62.50%) under the high success category adopted non-farming nature of diversification along with farm diversification. It is also important to note that some of the households had highly diversified livelihood, which included farming, non-farming and migration. However, this highly diversified nature mainly scattered under low success group. Despite the vast potentiality to diversify the livelihood towards farm and non-farm activities in the study area, there were problems such as negative perception of the community, outdated method of production, lack of improved technology and skills, lack of business start-up budget and absence of wide market for the non-farm output. State machinery should play a facilitator's role in terms of promoting investment in infrastructure development.

Key Words: Livelihood diversification; Information development; Diversification activities; Infrastructure development

Diversification is the single most important source of poverty reduction for small farmers in South and South East Asia (FAO and World Bank, 2001). Sustainable development has become an important policy goal for most nations because of the increasing evidence of failure on account of social and environmental development. Moreover, governments have accepted the responsibility for promoting the sustainability of development, in response to the Agenda 21 programme following the *United Nations*

Conference on Environment and Development (UNCED, 1992). Sustainable livelihoods have been increasingly recognized as an important element of sustainable development during the past decade. In this context, the role of livelihood diversification has come under increasing scrutiny because of its powerful impact. Livelihood diversification has been embraced by a number of development agencies, with UNDP the first to do so fully and the Department for International Development (DFID) adopting it as a central strategy

for meeting the goals set out in its 1997 White Paper 'Eliminating World Poverty'. The contribution made by livelihood diversification to rural livelihood is a significant one which has often been ignored by policy makers who have chosen to focus their activities on agriculture (Ellis, 1998).

Livelihood diversification (LD) is a key strategy by which people in many parts of the world try to make ends meet and improve their well-being. Livelihood diversification refers to a continuous adaptive process whereby households add new activities, maintain existing ones or drop others, thereby maintaining diverse and changing livelihood portfolios. The literature on livelihood diversification, which crosses several related fields and disciplinary approaches, is characterised by many terms and definitions. For the purpose of this paper, the definition of livelihood diversification chosen by Ellis is used: *Rural livelihood diversification is defined as the process by which rural households construct an increasingly diverse portfolio of activities and assets in order to survive and to improve their standard of living. [Ellis, 2000]*

People diversify by adopting a range of activities. Thus, income sources may include 'farm income', 'non-farm income' (non-agricultural income sources, such as non-farm wages and business income), and 'off-farm income' (wages of exchange labour on other farms – i.e. within agriculture, including payment in kind) [Ellis, 2000]. The aim of the present paper is to study the nature and extent of livelihood diversification. The importance of livelihood diversification activities in improving farmers' economy and variables determining the livelihood diversification activities are also studied.

METHODOLOGY

The study was undertaken in Uttar Dinajpur and Darjeeling district of West Bengal. These two districts represent different types of agro-climatic and socio-economic conditions of the state. Of these districts, two blocks from each district and two villages from each block were selected randomly. From each village, twenty farmers were randomly selected to constitute a total sample size of 160. Both, secondary and primary data were used for the study. A semi-structured questionnaire was developed based upon the information acquired during the explorative research phase and pre-

tested prior to the survey. The questionnaire was composed of open and closed questions and involved rating and ranking procedures. Data were analyzed using suitable statistical tools. Diversification index was measured with the help of Simpson index of diversity. The Simpson index of diversity is defined as:

$$SID = 1 - \sum_i P_i^2$$

Where, P_i as the proportion of income coming from source i . The value of SID always falls between 0 and 1. If there is just one source of income, $P_i=1$, so $SID=0$. As the number of sources increase, the shares (P_i) decline, as does the sum of the squared shares, so that SID approaches to 1. If there are k sources of income, then SID falls between zero and $1-1/k$. Accordingly, households with most diversified incomes will have the largest SID, and the less diversified incomes are associated with the smallest SID. For least diversified households (i.e., those depending on a single income source) SID takes on its minimum value of 0. The upper limit for SID is 1 which depends on the number of income sources available and their relative shares. The higher the number of income sources as well as more evenly distributed the income shares, the higher the value of SID. The Simpson Index of Diversity is affected both by the number of income sources as well as by the distribution of income between different sources (balance). The more uniformly distributed is the income from each source, the SID approaches to 1. To measure the success–failure of the diversifiers in their diversified livelihood a success – failure scale was developed following the steps used by Singh *et al.* (1970).

RESULTS AND DISCUSSION

Through the process of social as well as economic evolution, man has moved from cultivating the land, processing the products and setting up other non-farm activities including trade and services. Towards this, people changed from one economic activity to the other, while discarding/ improving upon the activities that they have been involved in. However, choices of different activities are being made at individual households either as an integral part of large scale changes in the infrastructure of the locality or in less endowed, poor infrastructure and remote areas, depending upon the individual's capabilities and assessment of opportunities and constraints. These decisions were taken at the household level about the nature of specific activity to

be taken up. This process not only helped them to enhance their livelihood security but also contributed towards the growth of economy. It is therefore, worthwhile preparing an inventory of different types of diversification options that the farmers in the area under study had taken up. A range of diversification activities undertaken in the study area, are illustrated in Table 1. Trading was the most important activity as both poor and rich are engaged in this profession. Trading occurs at various scales. Women were also engaged in small scale trading in various markets. Similar was the

observation made by *Murthy (1983)* and *Carswell et al.(2000)*.

Handicrafts were a major source of livelihood for many. At Darjeeling district women were engaged in many handloom activities. In spite of some inherent limitations, the area under study has enormous scope for livestock rearing which can very much supplement the meager income of the people. It was further observed that there was very little growth of agro-based industries in the study area. There was a wide scope of jute, vegetable, flowers, orchid, fruit such as banana, pineapple, litchi and oranges based agro industries. But

Table 1. Prevalence of non-farm and off-farm activities in the study area.

Activities	Non-Farm Activities	Off-Farm Activities
<i>Trade :</i>	Grocery, stock business, middleman, contractor, fertiliser-pesticide dealer, livestock, cattle feed, garments, electrical, tea, grain, drugs, lumber, food, cloth, soap, kerosene, honey, cotton, fruit, vegetables, meat, fish, home-brewed beer, seasonal business, stationery shop, pisciculture, STD, XE-ROX shop, others.	Wage labour, Food for work, agricultural labour, porter, sand collection, State Farm labourer
<i>Handicrafts & Artisan ship:</i>	Potter, blacksmith, tanner thatching, mat making, carpet making, bamboo work, weaving, tannery, rattan furniture, potter, wood sculptor. Woollen clothes, goldsmith etc.	Forest products:Charcoal, wood, grass, lumber. carpenter, spinning, basket making, roof
<i>Service provision:</i>	Shoe shining, barber, trapping mole rat, butcher, mechanic, professional mourner, transport, musician, grain mills, traditional medicine, tailor, money lender, fortune teller, Guide. Formally employed:Teacher, health worker, Vetenary Surgeon, NGO worker, local agent of party, council member, maid, guard, defence service.	Fishing, Fish catching, repairing nets and equipment, transporting fish. — —
<i>Rental income:</i>	Animals, tools, tractor, bike, tents, land, warm clothes.	— —

this segment was found neglected. These areas need greater attention by households, planners, extension workers, trainers etc.

Prevalence of livelihood diversification activities: Table 2 shows the major secondary activities of all adults (aged 18 and over) and shows that about 38.84 per cent of total adults had no other activity in addition to a ‘base livelihood’ activity (*Brock, 1998*) while almost 50 per cent of all adults had some diversification activities. The single most diversification activity is trading. More than 12.03 per cent of adults diversified into trade related

activities. Among specific enterprises grocery, stationary and tea stall was found to have been adopted by a good number of diversifiers. The next most important livelihood diversification activity was livestock with 10.03 per cent of all adults involved in it. This was followed by casual labour with more than 7.78 per cent of all adults. It can be seen that 6.28 per cent of adults had artisan as a secondary activity. It has also been seen that adults from Darjeeling district were more diversified compared to Uttar Dinajpur district. The reason might be that the scope and marketing in non-farm sector are high compared to Uttar Dinajpur. Unavailability as well as

unproductive lands particularly in the hill and comparatively high cost of living also forced farmers to diversify into other sectors for their livelihood in Darjeeling district. In Uttar Dinajpur district, casual labour was also important as small and marginal farmers in the dry season involved themselves into casual labour for their livelihood. They sometimes worked in other's field or temporarily migrate to cities.

Trade, is the single most important non-agricultural

activity in Uttar Dinajpur and Darjeeling district. It was found that livelihood diversification was distress driven for majority of the rural population. They diversified their livelihoods because income from one single source was not sufficient for survival irrespective of the source of income. It was inequality within the sites, rather than differential resource endowments across the sites, which determined livelihood diversification to a large extent. Livelihood diversification is a mechanism to enhance income and facilitate survival for the poor. At the same

Table 2. Major secondary activities of all adults (N = 798)

Activities	Secondary activity	Total No.	% of all adults	% of adults
No secondary activity	No other activity	310	38.84	38.84 % no secondary activity
Non-farm activity	Formally employed	22	2.75	26.32% with a non-farm activity
Artisan	50	6.28		
	Trader	96	12.03	
	Service provider	42	5.26	
Migration	Temporary	48	6.01	6.01 % temporary
Off-farm activity	Casual labourer	62	7.78	7.78 % with an off-farm activity
Livestock as secondary activity	Livestock	80	10.03	10.03 % with livestock activity
Other secondary activities	Student	28	3.51	11.02% with other secondary
	Housework	38	4.76	
	Retired/disabled	16	2.00	
	Others	6	0.75	

time, livelihood diversification is not constrained in the sense that it is open to anybody.

Prevalence of diversification activity and gender: The diversification options are generally thought to be more available to men than to women (Ellis, 1998) but in the study area when the case of adoption of cultivation was put to one side, it was seen that a significant percentage of women (38.31%) were involved in

livelihood diversification activities (Table- 3). Amongst women by and far the most important activity was trading and artisanship as shown in the Figure - 1 below. This shows that activities being undertaken by those adult men and women who diversified their livelihood. The figure 2 reflects that a good percentage of women were involved in activities related to livestock, petty trading, artisanship and casual labour. *Pankhurst*

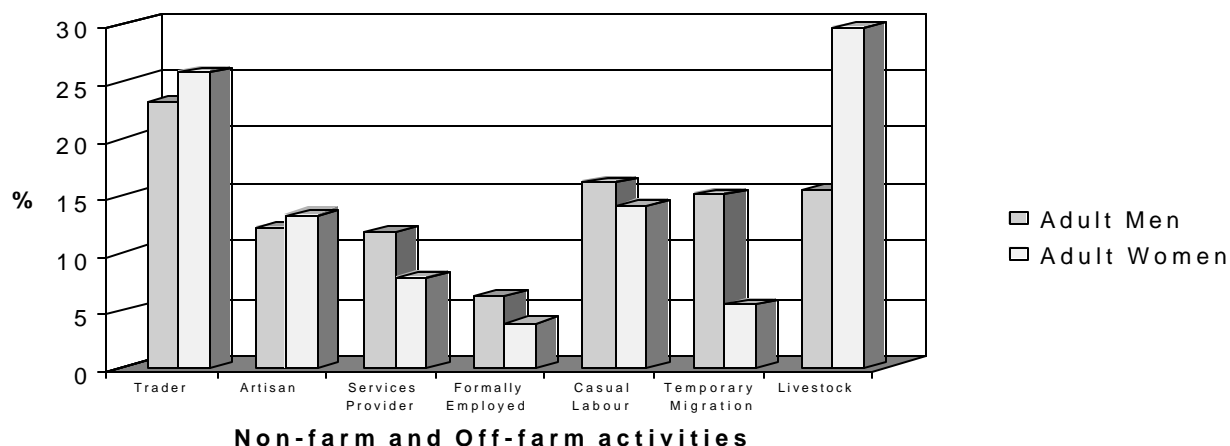


Figure-1: Different diversification activities amongst adult men and women

Table 3. Prevalence of secondary activities of all adult men and women

Activity	Adult Men	%age	Adult Women	%age
No diversification activity	124	26.72	186	55.69
Secondary activities categorised as LD activities (including formal employment, artisan, traders, and service provider)	145	31.25	65	19.46
Livestock as a secondary activity	42	9.05	38	11.37
Casual Labour	44	9.48	18	5.39
Other activities not categorised as diversification students, housework, retired, disabled and others	68	14.66	20	5.99
Temporary Migration	41	8.83	7	2.09
Total	464	100	334	100

(1993) and Carswell *et al.*(2000) also found trade as a most important diversification activity among women. *Extent of livelihood diversification* : The number of income sources is a measure of diversification used by different researchers in the past. However, the number of income sources as a measure of diversification may be criticized on several grounds. First, a household with more economically active adults, all things being equal, will be more likely to have more income sources. This may reflect household labour supply decisions as much as a desire for diversification. Secondly, it may be argued that there is discrepancy when comparing households receiving different shares of their income from similar activities. For instance, a household obtaining 99 per cent of its income from farming and 1 per cent from wage labour has the same number of source of income as a household with 50 per cent of its income from farming and 50 per cent from wage labour. But, according to research target, and the actual diversification concept the household with 50 per cent of its income from farming and 50 per cent from non-farming sources has a more diversified income than another household obtaining more than 50 per cent of its income from farming and the rest from non-farming sources. This leads to a second measure of diversification. The definition of diversification relates to the number of source of income and the balance among them. The Simpson index of diversity is widely used to measure the diversity. Hill (1973) used Simpson index to measure diversity. Joshi *et al.* (2003) also adopted the Simpson index to compare crop diversification in several South Asian countries. It is used here to measure livelihood diversity. The distribution of extent of diversification among different diversifiers is given in Table 4.

It is clear from Table 4 that the majority of the diversifiers (60%) had medium level of Diversification Index as against only 21.74 per cent of diversifiers were under high level of Diversification Index (fig-2). Diversification makes smooth flow of income to the household by reducing both predictable and unpredictable fluctuations. Predictable, seasonal fluctuations in income can be enhanced by combining enterprises and activities that generate returns during different times of the year. Unpredictable fluctuations are those which create an unexpected loss in income, may be reduced by a diversified portfolio of economic activities.

Table 4. Distribution of diversification index among diversifiers' households

Diversification Index	N	%age
Low (Up to 0.38)	21	18.26
Medium (More than 0.38-0.63)	69	60.00
High (More than 0.63)	25	21.74
Total	115	100

Average Diversification Index in the study area = 0.46

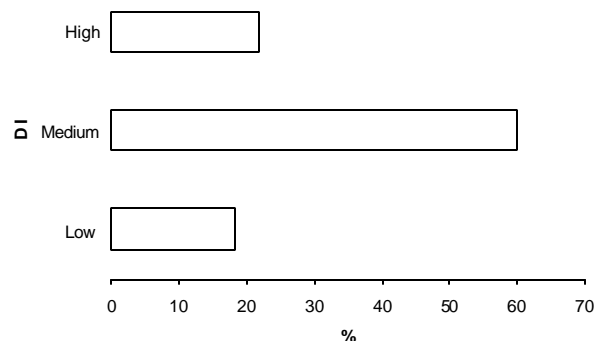


Figure- 2: Distribution of diversified households according to diversification index

Determinants of degree of livelihood diversification:

This section examines the effect of different household characteristics on degree of livelihood diversification among farm households in the study area. The hypothesis was that the share of income from different sources is influenced by the characteristics of the household. The linear model was used in which the income share was a function of household characteristics. The result of the linear regression is presented in the Table 5. The 'F' value was computed at 0.01 levels of significance. A perusal of Table 5 revealed that the variables such as labour, innovation proneness, annual income, resource mobilization potentiality, credit seeking behaviour, land size, number of livestock, education, family education status, contact with personal localite, financial capital, awareness about diversification and extent to local infrastructure were closely and positively related to degree of livelihood diversification. On the other hand, dependency ratio was negatively associated with degree of diversification.

Table 5. Determinants of degree of livelihood diversification

S.. No	Variables	Coefficient	Standard Error	't' Statistic
1	Age	0.016	0.017	0.42
2	Caste	0.017	0.029	0.58
3	Dependency Ratio	-0.082	0.032	-3.21**
4	Labour	0.136	0.061	2.25*
5	Indebtedness	-0.023	0.028	-0.95
6	Risk	0.012	0.011	1.08
7	Innovation proneness	0.092	0.029	2.80**
8	Aspiration	0.028	0.013	0.35
9	Annual Income	0.088	0.017	2.41*
10	Material Possession	0.015	0.029	0.30
11	Distance from market	-0.009	0.021	-0.42
12	Resource Mobilisation Potentiality	0.089	0.047	3.08**
13	Credit Seeking Behaviour	0.032	0.021	2.14*
14	Credit Utilisation Behaviour	0.027	0.057	1.29
15	Repayment Behaviour	0.062	0.044	0.26

16	Land Size	0.081	0.011	2.21*
17	Cultivated Land	0.071	0.055	1.30
18	Number of livestock	0.030	0.014	3.17**
19	Cash Crop	0.002	0.020	0.32
20	Education	0.057	0.022	2.35*
21	Family Education Status	0.087	0.048	2.70*
22	Personal Localite	0.045	0.032	2.76*
23	Extension Contact	0.019	0.020	0.95
24	Mass Media Exposure	0.009	0.025	0.35
25	Awareness	0.071	0.026	1.80*
26	Natural Capital	0.024	0.018	0.62
27	Financial Capital	0.053	0.042	3.44**
28	Physical Asset Number	0.014	0.022	1.08
29	Extent to local Infrastructure	0.049	0.028	2.35*
30	Institutional Infrastructure Utilisation	0.011	0.032	0.37
31	Social Participation	0.027	0.018	0.70

Dependent Variable: Degree of Livelihood Diversification

Number of Observation=115, F=5.20**, R2 =0.7

Distribution of respondents according to the degree of success : The issue of the respective success and failure rates of new diversified activities has important implications for agricultural and rural policy. The responses collected from 115 diversifiers on the success-failure scale developed were analysed to classify the respondents into two groups –successful and unsuccessful. The total score of a respondent was obtained by summing up his score on six critical indicators out of a total of ten indicators in the scale. Those who secure 97 or more out of 130 points on the critical indicators were put in successful group while rests were in unsuccessful group. In this way out of 115, 61 diversifiers were found in successful group and the rest 54 in unsuccessful group. Therefore it may be concluded that in the study area, 53 per cent of the

diversifiers were successful and 47 per cent unsuccessful in their diversified activities. This finding at par with the finding of *Boagert et al. (1973)*, *Sadengi (1991)* and falls in line with the evaluation results of SEEUY programme in Bijapur (1963) and IRDP in Punjab (1987). This analysis is taken further by classifying the successful group according to the degree of success. For this, the scores obtained by the successful respondents on all the ten items of the success-failure scale were added and each group was classified into four classes as per score range assigned to each class.

The data pertaining to classification of successful diversifiers as per their degree of success have been reported in Table 6. The table reveals that as high as 40 per cent of the successful diversifiers had moderately high success and only 13.12 per cent were under high success category. About eighteen per cent successful diversifiers were under low successful category.

Table 6. Distribution of respondents according to the degree of success

S. No.	Level of success	Score range	N	%age
1	Low Success	<110	11	18.03
2	Moderately low success	111-125	17	27.87
3	Moderately high success	126-140	25	40.98
4	High success	140<	8	13.12
	Total		61	100

Distribution of successful diversifiers by degree of success and nature of diversification: The diversification forms prevalent in rural areas could be farm, non-farm, migration and combination of these. In the farm route, the rural producers are primarily dependent on agriculture and other land based activities, as primary

source of livelihood. The diversification within the farm sector takes place through crop diversification i.e; either shifting to high value traditional crop, cash crop, enterprise crop or scaling up the agri-allied activities such as holding up livestock, sericulture, bee-keeping etc. Agri-allied activities generally link them to external markets in form of credit or marketing of their outputs or even support services or both.

In the non-farm route, the rural producers were involved in wide variety of activities, ranging from tiny and cottage level manufacturing, through processing, to trade and services. The rate of success was not uniform in all types of diversification. Nature of diversification depends on several factors as discussed earlier. However, some activities or strategies of diversification have better chances of success. Keeping this generalization in view, an analysis was made to see the rate of success in different activities of varying nature. Different diversification activities were further divided into broad category of diversification. Success rate of respondents within the broad category of diversification were worked out. The data in this regard are reported in Table 7.

A glance at the data reveals that majority of the diversifiers (62.50%) under the high success category adopted non-farming nature of diversification along with farm diversification. On the other hand, under the low success category, majority of the respondents (45.46%) were depended on farm diversification only for their sole livelihood activity. It is also important to note that some of the households had highly diversified livelihood, which included farming, non-farming and migration. However, this highly diversified nature mainly scattered under low success group.

Table 7. Distribution of successful diversifiers by degree of success and nature of diversification

Broad category of diversification	Degree of success in diversified activities				Total
	Low Success (Up to 110)	Moderately low success (111-125)	Moderately high success (126-140)	High success (140 and above)	
Farming alone	5 (45.46)	6 (35.29)	6 (24.00)	1 (12.50)	18
Farming + Non farming	2 (18.18)	5 (29.41)	18 (72.00)	5 (62.50)	30
Farming + Migration	2 (18.18)	4 (23.52)	1 (4.00)	0 (0)	07
Farming + Non farming + Migration	2 (18.18)	2 (11.78)	0 (0)	2 (25.00)	06
Total	11 (100)	17 (100)	25 (100)	8 (100)	61

It can be safely concluded from Table-7 that the success rate was higher in the combination of farm as well as non-farm category of diversification. This combination was complementary in nature. Farmers used the surplus generated through non-farm activity in purchasing of input for cultivation. Farming alone in the study area was very risky. Crop yields are subject to the uncertainties of rainfall and input supply. Farming incomes were subject to the uncertainties of both yields and prices. *Berstein et al. (1992)* and *Berry (1989)* found the similar findings. In this context, *Haggblade et al. (1989)* have suggested that certain policy interventions are necessary to allow positive farm non farm growth linkage.

CONCLUSION

It is evident that irrespective of the level of development, families pursue a mix of activities for income stabilization and risk mitigation. This mix is generally across sectors, farm and non-farm and also option of migration. Significant numbers of adults from the sample households diversified their livelihood in different farm, off-farm and non-farm activities. It has been found that trading and artisanship were most important activities in the study area. It was also found that there is a high involvement of women in diversification activities. The diversification activities were dependent primarily upon the context within which it is occurring. This includes the different access to diversification activities, market condition, development of infrastructures, social and human capital and the distribution of the benefits of diversification. This needs

to be examined to make effective policy for sustainable development of the farmers.

Despite the vast potentiality to diversify the livelihood towards farm and non farm activities in the study area, there are problems such as negative perception of the community, outdated method of production, lack of improved technology and skills, lack of business start-up budget and absence of market for the non-farm out put. There are also lack of potential researches to study the effect of non-farm activities on farm production and to identify the major problems that hamper the non-farm sector. State machinery should play a facilitator's role in terms of promoting investment in infrastructure such as road, electricity, irrigation facility etc. More of decentralised operations for government programmes, especially using the local institution for greater efficiency and better outreach programmes are needed. Availability of support services such as credit to diversifiers through appropriate changes in policies and delivery mechanisms should be ensured for sustainable development of the farmers going for diversification.

The results of the study have profound implications in redefining research and extension strategies towards a livelihood approach to rural development. Understanding the livelihood diversification of farmers with a multi-dimensional approach was attempted in the paper and the Livelihood Diversification Index developed for the purpose would be useful too for the researchers and policy markers to assess and compare the livelihood security of different rural communities in the country.

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