Diversified Livelihood Practices Among The Tea Garden Labour Community And Its Impact On Their Standard Of Living-A Study Of Assam: India

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ARTICLE INFO	ABSTRACT
	This paper is an attempt to study the diversified livelihood practices among the tea garden labour community of Assam, the highest tea producing state of India. It is done through a sample study of 400 individual workers of tea garden labour community in three districts of Assam viz. Tinsukia, Dibrugarh and Sonitpur done in July 2023. Diversified livelihood practices also known as occupational diversification means adoption of various occupations by individual or households in search of better income, improved standard of living and reduced risk. The extent of occupational diversification has been calculated by using Simpson Index of Diversification (SID). After calculating the index of diversification for each worker, average for all workers in selected districts has been obtained. The data are further compared to all India and all Assam level. After knowing the status of diversified livelihood practices, an index of standard of living is constructed and calculated for all individual worker and the impact of occupational diversification on the standard of living is analysed with the help of Tobit censored regression model and the study found a significantly positive relationship between occupational diversified occupational practices and standard of living of the said community. **Keywords:** Tea garden labour community, occupational diversification, standard of living, Assam, India **JEL Code:** D31, E24, J01, J21, J24

Introduction

Occupational diversification means adoption of various occupation by individual or households in search of better income, improved standard of living and reduced risk. It can be viewed in both micro and macro sense. In micro sense, it will mean diversification in the rural farming sector which may be of two different types, namely enterprise diversification and crop diversification. It is the farmers' adoption of alternative agriculture related activities along with mainstream agricultural practices as a response towards demand driven or distress driven situation. In the macro sense, it means a change in the contribution of different sectors (viz. Primary, secondary and tertiary) to national income as well as disposition of the working population. This can also be termed as occupational shift (Sawant, 1993) (Boro, 2023). Diversification can be categorised as horizontal diversification and vertical diversification where horizontal will stand for diversification in the same sector (usually agriculture) and vertical will stand for diversification across different sectors (Haque, 1996) (Kumar et. al., 2017). Occupational diversification enables enhancement of income and ensures stability of livelihood. It is one of the major determinants of economic development.

As per Assam Human Development Report 2014, in Assam people residing in 'Char' areas, tea garden labour community and people belonging to schedule caste are vulnerable section (according to the surveys in spatial diversity blocks). Among various communities, the tea garden labour community is chosen because this category is defined on the basis of their nature of work. According to Assam HDR 2014; this category is socially disadvantaged considering various socio economic factors like income, literacy, land holdings, health, access to basic infrastructure etc. So it is important to find out the status of occupational diversification among the said community.

Data and Methodology

Coverage
Universe of the study
The universe of the study is the tea garden labourer community of Assam, India. In this study, we are considering only the registered large tea estates of Assam as mentioned in the list of Directorate of Tea Tribes Welfare Department, Govt. of Assam. The list comprised of 803 registered tea estates. According to the Directorate of Tea Tribes Welfare, Assam; the garden labour community comprises of approximately 17 percent of the total population of Assam. Assam's population is 3.12 Crores (according to 2011 census data). Therefore, total population of tea garden labour community is roughly 53 Lakhs across Assam. Latest data is not available as the 2021 census has been postponed. But along with the increase in the general population of Assam in the last decade, population of tea garden labour community is also expected to increase.
Active workers in the tea estates (both permanent and casual) amounts to be 6,76,835. Out of that permanent labourers comprised of 57% and casual labourers comprised of 43% (Office of the Chief Labour Commissioner, Guwahati). However, the updated data given by the State Innovation and Transformation Ayug (SITA), Assam, total tea garden labourers engaged in the large tea estates of Assam amount to be 7.33 lakhs till 2020. It comprises both permanent and casual workers.

Units of observation
Units of observation are individual workers. Sampling is done on household basis and all the working members of the household are included in the study.

Sample Size
While taking the sample size, by taking any of the widely used formula for large number of population like Yamane (1967), Krejcie Morgan (1970) or Cochran (1977) the difference in the numbers will not affect the sample size as these formulas prescribe ideal sample size with the range of 384 to 400 with such large number of samples. Therefore, in this study, Taro Yamane formula is followed and accordingly we are surveying 400 working members of the tea garden labour community.

Data Collection
Types of Data and Data Source
Both primary and secondary data are used in the study. The primary data are collected through a structured interview schedule in the selected tea estates of the purposively selected districts of Assam.
Secondary data are taken from different sources like Government of India Census, Central Statistical Organisation (CSO), Different Rounds of relevant National Statistical Survey Organisation (NSSO) data, Assam Human Development Report, Govt. of Assam Official Website, Statistical Handbook of Assam, and Assam Economic Survey etc.

Sampling Design and Sampling Methods
Although tea gardens and tea garden labour community are found in both Brahmaputra and Barak valley; but tea gardens and the said community is mostly residing in the Brahmaputra valley, as per the office of the labour commissioner, Guwahati. Entire Brahmaputra valley accounts for 87.8% of the tea estates in Assam. Therefore the study is confined in the Brahmaputra valley itself.

Out of six agro climatic zones of Assam, Brahmaputra valley has 4 zones viz. upper Brahmaputra valley zone, lower Brahmaputra valley zone, north bank plains zone, and central Brahmaputra valley zone. Out of these zones, tea gardens are mostly confined in upper Brahmaputra valley zone and north bank plains zone (Assam HDR Survey, 2013). Therefore, the primary survey is done purposively in these two zones.

 Moreover, out of the 803 total tea estates of Assam (Directorate of Tea Tribes and Welfare), 70 percent are located in upper Brahmaputra valley zone, as per the Office of the Chief Labour Commissioner, Guwahati. According to Assam Government classification, upper Brahmaputra valley zone comprises Tinsukia, Dibrugarh, Sibsagar, Jorhat, Golaghat District. North bank plains zone comprises Darrang, Sonitpur, Lakhimpur and Dhemaji districts.

In order to collect the data from households multi-stage sampling procedure has been followed where the districts are chosen first then the blocks and it goes on as shown in the flow chart below-
In the study two districts are selected from the upper Brahmaputra valley zone and one district will be selected from north bank plains zone. District selection is done purposively based on the proportionate share of tea gardens of the selected district to that of the total of entire Brahmaputra valley. Two development blocks from each selected districts are selected randomly. Furthermore, one tea garden is selected randomly from each selected block and households are also selected randomly. All the working members of the household have been considered for the study.

Line of Analysis

The objective of the study is to determine the extent of occupational diversification among the tea garden labour community of Assam. It has been fulfilled by taking individual income data and share of different economic activities to that of total income of the workers. Then individual incomes are summed up to get the aggregate income. From the individual share of different economic activities, aggregate proportion of different activities with respect to total income is calculated. Finally Simpson's Index of Diversification (SID) is used to get the extent of diversification. The formula of calculating Simpson Index of Diversification (SID) is

$$SID= 1 - \sum_{i=1}^{n} P_i^2$$

Where, Pi=Proportionate value of ith activity in the total value of economic activity

The index ranges from 0 to 1 where 0 means complete specialisation and 1 means complete diversification

Although there are various index to determine diversification in various aspects like Simpson Index (SI), Herfindahl Index (HI), Entropy Index (EI), Modified Entropy Index (MEI) etc. the rationality of choosing Simpson Index of Diversification (SID) is that,

i) Through this index, extent of diversification can be interpreted directly which is not possible through indices like Herfindahl and Entropy Index.

ii) Although Transformed Herfindahl Index (THI) measures diversification directly; but SID is relatively superior because in terms of value, SID is considered as one of the best indices to handle with the big figures like in lakhs and crores of rupees. This will be significant in the proposed study because income level of the individual and households will place a crucial part in studying diversification.

iii) Moreover, SID is simple and convenient to calculate and use. Moreover it is a robust measure and has wider applicability in quantification of the intensity of diversification

It is for this reason, different studies (Khatun and Ray, 2012, Mandal and Bezbaruah, 2013, Saha and Bahal, 2014, Saikia and Goswami 2015, Dutta and Saikia, 2016, Khan Et. al. 2017, Swargiari P (2020) etc.) have used Simpson index of diversification in their respective research work. So this index has been found most appropriate in this study too. Hence SID index has been used in this study to know the occupational diversification among the tea garden labour community of Assam.

Results and analysis

With the help of Simpson Index of Diversification (SID), diversification index of each workers are obtained. It ranges between 0 and 1. It can be averaged in terms of districts or in terms of total workers across Assam to get the overall picture of extent of diversification among the tea garden labour community of Assam. At first, we can look into the occupational diversification in terms of Simpson index in the surveyed districts as follows.

Table 1: Occupational diversification among the tea garden labour community in the sample districts

District	Diversification Index (Average SID)
Sonitpur	0.42
Tinsukia	0.32
Dibrugarh	0.32
All Assam (All sampled district)	0.34

Source: Sample Survey

From the above table, it is clear that in all the surveyed districts, occupational diversification in terms of SID is almost similar. However, Sonitpur district is a bit above the list with SID index of 0.42. Dibrugarh and Tinsukia districts are found at par with SID index of 0.32. All Assam average SID calculated from the surveyed tea gardens is 0.34.

Now we can compare the above index with the index of Assam and all India along with other major states. For this we can refer to a study done by Khan et al. (2017). In this study, the livelihood diversification of farm households of Uttar Pradesh has been studied. The authors have used NSSO 70th Round of data to find out the various income earning activities undertaken by the farm households of major states of India. From these data, they have calculated the Simpson Index of Diversification for all the concerned states and for all India level. This table is helpful in drawing the comparative picture of the diversification status among the tea garden labour community of Assam to the rest of the state and all India average. For this, the table of that study has been placed here.

Table 2: SID index of India and its major states

State	Income sources of households						SID
	Cultivation	Livestock	Other agricultural activity	Non agricultural enterprises	Wage/salaried employment	Others	
Andhra Pradesh	592	46	16	35	280	31	0.57
Assam	767	42	16	23	128	24	0.39
Bihar	697	30	2	50	163	58	0.48
Chhattisgarh	805	0	6	15	168	7	0.32
Gujarat	584	90	7	37	267	14	0.58
Haryana	600	91	0	47	236	26	0.57
Jharkhand	725	1	8	46	186	35	0.44
Karnataka	694	40	31	24	193	17	0.48
Kerala	161	60	169	134	299	176	0.80
Madhya Pradesh	753	25	1	6	204	11	0.39
Maharashtra	717	27	5	49	180	22	0.45
Odisha	602	10	12	73	259	43	0.56
Punjab	456	92	8	51	319	74	0.67
Rajasthan	456	64	8	55	334	82	0.67
Tamil Nadu	548	102	11	23	293	23	0.60
Uttar Pradesh	652	31	2	51	187	76	0.53
West Bengal	558	12	17	83	268	63	0.61
All India	635	37	11	47	220	51	0.54

Source: Calculations based on NSSO 70th round data (Khan Et. al. 2017)

It is clear from the above table that occupational diversification index among the tea garden labour community of Assam (0.34) is almost similar to that of the occupational diversification status in general in Assam (0.39). But if we look at the all India average, it is higher at 0.54.

Gender wise analysis of occupational diversification among the tea garden labour community of Assam: It is important to know the gender wise details of the sampled households and workers. In this study, no purposive sampling is adopted gender wise while taking the response of workers among the tea garden labour community. In the sample survey, the number of male female worker can be stated as below:

Table 3: Percentage of male female workers in the sample survey

District	Male workers	Female workers	Total
Sonitpur	48.5	51.5	100.0
Tinsukia	62.5	37.5	100.0
Dibrugarh	59.1	40.9	100.0
Total (All Assam)	58.5	41.5	100.0

Source: Sample Survey

Here male and female workers selection is not purposive and merely a matter of chance, i.e. random selection. But in the tea estates, it is noticed that, female participation is almost at par with men and sometimes it exceeds male counterparts. It is supported by some other studies also. For example, Devi (2022) aptly mentions that in Assam, more than 50% women workers are engaged in the tea industry as a whole. However, it is to be noted that, in this study, workers belonging to tea garden labour community is taken into consideration. Some of them are found to be out from tea garden related work. Either their other family members are working in the tea estates and they are engaged in some other income earning activities or the whole family is completely out of the tea garden related activity. In the latter case, the family will be considered as 'ex tea tribe' as defined by the Tea Tribes Welfare Department, Govt. of Assam (ttwd.assam.govt.in). In the study, selection of ex tea tribe is also not purposive and is a matter of chance.
Now we can show the extent of occupational diversification among the male and female counterpart of tea garden labour community which is calculated through SID.

Table 4: Gender wise status of occupational diversification

District	Diversification Index (Average SID)	Average SID (Male)	Average SID (Female)
Sonitpur	0.42	0.41	0.43
Tinsukia	0.32	0.32	0.32
Dibrugarh	0.32	0.33	0.30
Total (All Assam)	0.34	0.34	0.33

Source: Field Survey

From the table 4, it is clear that the averages SID of male and female tea garden labour community workers in the respective districts are approximately closer in value. It is because the work participation is almost equal across gender in the tea garden areas (Devi, 2022). We can notice that except Sonitpur district, where diversification is found to be marginally high among the female workers compared to the male counterparts. It is because, in the field survey, it was noticed that many women workers are engaged in extra income earning activities like animal husbandry etc. which increase the diversification index. Otherwise, in other surveyed districts and all Assam average, the indexes are almost similar.

Status of diversification by nature of works
In tea garden areas, the main occupation is undoubtedly the tea garden works. Such workers are divided into two distinct groups-permanent and casual workers. Permanent workers are engaged in the tea garden activities round the year. On the other hand, casual workers are hired only in the busy plucking seasons. It ranges from minimum 3 to maximum 9 months. On an average, they are engaged in the tea garden related activities for 6 months only. So in the slack seasons, they work in some other activities to stabilize their income and sustain their livelihood. Such works may be wage earning activities, construction works, shop keeping, agriculture and allied activities, animal husbandry etc. It is not that the permanent workers don't diversify. They have also diversified in search of better income or to support their family. But, as they cannot devote too much time in other activities, so the opportunity to diversify is less. It will be clear from the following table.

Table 5: Aggregate SID in respect of nature of work among the tea garden labour community of Assam

District	Average SID of Permanent Workers	Average SID of Casual Workers
Sonitpur	0.17	0.48
Tinsukia	0.10	0.46
Dibrugarh	0.16	0.43
Total (All Assam)	0.14	0.45

Source: Field Survey

This table clearly shows that occupational diversification among the casual workers are way higher than that of the permanent workers. Approximately 43 percent of the total workforces in the tea gardens are casual in nature (Office of the Chief Labour Commissioner, Guwahati). So, it can be stated that these labourers are diversifying significantly across Assam. Presence of high number of casual workers in the tea estates of Assam is a clear indication that occupational diversification is also high among the tea garden labour community of Assam on an average.

Categorization of diversification among the surveyed workers
As the survey gives individual diversification index of all the workers taken in the sample survey, it is important to classify the workers according to their intensity of diversification. In the review of literature, it is found that some researchers have categorized the intensity or extent of diversification into three categories as low, medium and high. We can cite the study of Saha and Bahal, 2014; Kumar and Srivastava, 2017 for such classification. But Swargiari P (2020) in his study of livelihood diversification among the Bodo communities of Assam has classified the intensity of diversification into six distinct phases taking the help of mean diversification index and standard deviation. As such categorization gives more detailed insights into the intensity of diversification; this study is also following the same pattern. The categories are
i) Not diversified
ii) Least diversified
iii) Less diversified
iv) Moderately diversified
v) Highly diversified
vi) Fully diversified

Here the minimum value of SID i.e. 0 (zero) will represent absence of any diversification and maximum value of SID i. e. 1 (one) will represent full diversification. To find out the categories in between the extreme end, mean value of SID ($\bar{X}$) and standard deviation (σ) will be used. The mean value of SID will be the average diversification index which is 0.34 for the sampled districts in total. Standard deviation is calculated as 0.23. Now the classification will be done as
i) Not diversified (SID value 0)
ii) Least diversified ($\bar{x} - \sigma$ to >0) (0.11 to >0)
iii) Less diversified ($\bar{x}$ to $\bar{x} - \sigma$) (0.33 to 0.12)
iv) Moderately diversified ($\bar{x}$ to $\bar{x} + \sigma$) (0.34 to 0.56)
v) Highly diversified ($\bar{x} + \sigma$ to <1) (0.57 to <1)
vi) Fully diversified (=1)

Now we can calculate the absolute numbers and percentage of working members of the tea garden labour community from the sample. It is represented in the table below

Table 6: Status of Livelihood Diversification of the Sample Households

Basic classification of	Index Value	Status of diversification	No. of households	Percentage
Minimum Value	0	Not diversified	90	22.5
$\bar{x}-\sigma$ to >0	0.11 to >0	Least diversified	3	0.75
$\bar{x}$ to $\bar{x}-\sigma$	0.33 to 0.12	Less diversified	91	22.75
$\bar{x}$ to $\bar{x}+\sigma$	0.34 to 0.56	Moderately diversified	143	35.75
$\bar{x}+\sigma$ to <1	0.57 to <1	Highly diversified	73	18.25
Maximum Value	1	Fully diversified	0	0
Total			400	100

$\bar{x}=0.34, \sigma=0.23$
Source: Sample Survey

The table shows that among the sampled workers, 22.5 percent of the workers are not diversified and they pursue only one occupation. They are absolutely concentrated in their economic activities. The reason for absolute concentration are found as

i)   Permanent workers found less time, scope and opportunity to diversify
ii) A few workers are in some more gainful work away from tea garden low paying activities. Their income is sufficient to meet their own and family needs.
On the contrary, 18.25 percent workers are found to be highly diversified. Major portion of the surveyed workers are found to be moderately diversified (35.75 percent). The main reason of high and moderate diversification are found as

i)   Casualization of tea garden related work which provides employment for roughly 6 months a year only.
ii) Moreover, the tea garden related works are less remunerative in nature. For instance, in the Brahmaputra valley the wage rate for tea garden labour is 250 rupees per day per head and that of Barak valley is even lower at 228 rupees as revised by the government of Assam after slight increase as of October 2023 (The Economic Times 02.10.2023). So to support the family and own day to day needs, the worker is bound to go for diversification.
iii) So most of the diversification activities in this field are distress led diversification in nature.

Among the total number of 400 working individuals, 91 individuals i. e. 22.75 percent are less diversified and a very small amount of workers i. e. only 3 workers (0.75 percent) are least diversified according to the categorization. In the sample survey, no workers are fully diversified at the value of SID=1.

Meaning of standard of living: The concept of standard of living is related to the material goods and services available to a given population/household or individual and their respective quantity and quality. It is generally measured by using the per capita GDP (www.investopedia.com). But apart from the income aspect, it focuses on the life expectancy and economic opportunity. So measuring standard of living considering the only aspect of per capita income is narrow in scope. It only gives a quick and rough estimate of amount of goods and services available per person or a person's capability of having more goods and services. However, it is interesting to note that, many of the more complex, modern and advanced measures of standard of living index significantly correlate with the per capita GDP based measurement of standard of living (www.investopedia.com). A common measure of standard of living considering multiple indicators such as health, education and income is the Human Development Index (HDI) which is prepared by United Nations Development Programme (www.investopedia.com).
There may be two approaches to view standard of living (Droupathy A.V., 1959).
i)   Positive aspect of standard of living which illustrates the way in which the selected people of the study or a certain area or country are living
ii) A normative aspect of standard of living which signifies how the group of people or the residents of a geographic are ought to live a decent life.
Standard of living depends on various factors like accessibility to healthy and nutritious food, availability of adequate amount of decent clothing, better houses, quality education, easy accessibility to health infrastructures, availability and adequacy of transport and communication facilities, accessibility to safe drinking water and sanitation facilities, availability of crucial public utilities (Droupathy A.V., 1959).
U.N. statistical commission suggested various components for measurement of standards and levels of living in 1960 (www.unstats.un.org). These can be mentioned as below
(I)   Health
(II)   Consumption of food and nutritional aspects

(III)   Education
(IV)   Employment and labour conditions
(V)   Housing facility
(VI)   Social security benefits
(VII)   Clothing
(VIII) Recreational activity accessible and available

Construction of Standard of Living Index by UNDP: Considering these arguments and their practical implication, in this study also, the calculation process adopted by United Nations Development Programme (UNDP) in calculating Human Development Index has been applied. The HDI measures human development of various countries of the world by averaging three key dimensions namely a long and healthy life, educational attainment or being knowledgeable and having a decent standard of living. HDI constructs standard of living index (SLI) to measure how decent the standard of living of the people of different countries. Here, for the sake of our analysis, we will take into account only the calculation procedure of standard of living index (SLI) of HDI. The standard of living dimension is measured by taking into account of the per capita gross national income. It is calculated with respect to dollar for international acceptability and easy comparison. Moreover as the purchasing power of money is different in different countries, HDI adjusts the per capita GNI with respect to purchasing power parity of the respective country to make it more justified and acceptable. The HDI then uses the logarithm of per capita income. It is done to reflect the diminishing importance of income with increasing gross national income (GNI) or gross domestic product (GDP) (www.hdr.undp.org). It is to be noted that there are two distinct phases of the computation of HDI, as given by UNDP. They are

i)   HDI before 2010 (The old method)
ii) HDI after 2010 (The new method)

The mentioning and detailed calculation procedure of standard of living index (SLI) is followed only in the old method. In the new method after 2010, the calculation of standard of living index is modified, replaced and renamed as income index. So, to fulfill our purpose of calculating standard of living index of the tea garden labour community of Assam, we are following the old method of calculation of HDI. Although the basic structure of indexs formulation is same in both the methods.
 As mentioned above, we will confine our analysis and calculation procedure only with the standard of living index (SLI) of HDI. We will follow the old method of GDP per capita in this regard. The detailed procedure of the calculation process can be discussed as under.
At first, UNDP declares the officially observed maximum and minimum value of GDP/GNI per capita. In the old method which we are considering, the maximum value is \$40000 and the minimum value is \$100. Each time, the logarithm of the maximum and minimum value along with the actual value is used to construct the index. The use of logarithm has been justified by the UNDP by stating that it will show the diminishing importance of income on standard of living as GDP per capita increases. The basic structure of the index formulation is

$$x \text{ index} = \frac{x-a}{b-a}$$

Where a and b are the lowest and highest values x can attain respectively.
Using this formula, a raw variable x is converted into a unit free index having value in between 0 and 1. The formula for SLI can be stated as

$$\text{SLI} = \frac{log(GDP\ per\ capita) - log(100)}{log40000 - log100}$$

Construction of Standard of Living Index for the Tea Garden Labour Community of Assam: To construct the standard of living index, same methodology of calculation of SLI in the old HDI will be applied. For the whole observed sample of individual workers of the tea garden labour community of Assam, maximum and minimum income limit will be found out. The individual worker with highest and lowest annual income from all source of income earning activities will be considered for highest and lowest limit of index construction process. In the construction process the logarithm of all values will be taken as directed in the HDI standard of living construction process. The justification of doing that is already stated in the previous segment. In the numerator we will deduct the lowest value from the actual value of x i.e. the concerned member's total annual income. In the denominator, we will take the difference of highest and lowest value respectively. Finally we will arrive at the standard of living index for each individual worker of the sample survey of the tea garden labour community of Assam. The formula for our constructed index will go as under

SLI of Tea Garden Labour Community Workers =

$$\frac{log(Actual\ annual\ income\ of\ worker) - log(Observed\ minimum\ annual\ income)}{log(Observed\ maximum\ annual\ income - log(Observed\ minimum\ annual\ income)}$$

In our sample survey of a total of 400 individual workers of the tea garden labour community of Assam, the observed maximum value is 3,84,000 Rs. and the observed minimum value is 15000 Rs. per annum among the sampled workers.

To find out the impact of occupational diversification on the standard of living of the tea garden labour community of Assam, a censored Tobit linear regression analysis will be done by taking standard of living index (SLI) as the dependent variable and diversification index along with some selected control variable as explanatory or independent variable. As the dependent variable i. e. Standard of Living Index (SLI) may take the value of anything from 0 and 1, therefore, it is a censored variable. For this reason, Tobit model will be suitable in this analysis.

The Censored Tobit linear regression model in this analysis will be as under

$SLI = \beta_0 + \beta_1 SID + \beta_2 NAEMP + \beta_3 EDU + \beta_4 DEP + \beta_5 CONECT + \beta_6 TOWN + \beta_7 HEALTH + \beta_8 HOUSE + \beta_9 CLOTH + \beta_{10} LEISURE + \varepsilon$ .... (i)

Here, the dependent variable will be standard of living index (SLI) which will be constructed for each worker of the sample. The explanatory or independent variables are taken as extent of diversification (taken by the Simpson Index of Diversification of each of the workers), nature of employment (permanent of or casual), educational attainment (in terms of schooling years), number of dependent members, connectivity measured in terms of condition of roads from the home of the workers to the workplace, distance to the nearest town from the home of the workers, health conditions of the workers measured in terms of visit to the hospital in the preceding month of the sample survey, condition of house (either kutcha or pucca), expenses in clothing and expenses in leisure activities. Here the intention is to find out the possible impact of standard of living on the occupational diversification of the tea garden labour community of Assam. The other explanatory variables are taken as control variables. Now we can show the measurement process of the explanatory variable with the help of below table. The measurement process of dependent variable has already been discussed above.

Table 7: Explanatory Variable and there Measurement Unit

Explanatory Variable	Unit
Simpson Index of Diversification(SID)	Ranges from 0 to 1
Nature of Work (NAEMP)	0=casual, 1=permanent
Educational attainment as number of schooling years of each worker(EDU)	In years of schooling
Number of dependents (young+old)(DEP)	In absolute numbers
Connectivity measured in condition of roads from home to workplace(CONECT)	0=Kutcha, 1=pavel/pucca
Distance to the nearest town(TOWN)	In kilometer
No of hospital visit as a proxy to health(HEALTH)	In number of visit in the month preceding the month of survey
Condition of house(HOUSE)	0=kutcha, 1=pucca
Average expenses in cloth per year(CLOTH)	In Rupees
Average expense in leisure activities(LEISURE)	In Rupees

To analyse the impact of occupational diversification on the standard of living of the tea garden labour community of Assam, simple linear regression model has been used. It is calculated with the help of Stata, ver15. The model is specified as

$Y_i^* = X_i\beta + \varepsilon_i$ .... (ii)

Where, Y_i^* is a censored variable of Simpson Index of Diversification (SID) or the variable of primary interest, X denotes the matrix of explanatory variables and ε_i denotes the random disturbance term.

Results of the Regression Equation
The data collected in this study is cross sectional in nature. So there is probability of the random disturbance term to be heteroscedastic. Therefore, before estimating the model, the presence of heteroscedasticity has to be tested. The test is done in Stata ver.15 and the name of the test is Breuch-Pegan/Cook-Weisberg test of heteroscedasticity. This test indicates the presence or absence of heteroscedasticity in data sets. If

heteroscedasticity is found, the problem has to be corrected by estimation of White heteroscedasticity consistent Robust Standard Error. Moreover, the problem of multicollinearity is also tested with the Variable Inflation Factor (VIF) test subsequently.

The findings of regression analysis along with the heteroscedasticity test and VIF test has been presented in the below table.

Table 8: Findings of Tobit Regression of Standard of Living Index

Explanatory Variables	Estimated Coefficients	Robust Standard Error*	P value
Simpson Index of Diversification(SID)	0.1***	0.04	0.00
Nature of Work (NAEMP)	0.02	0.02	0.17
Educational attainment as number of schooling years of each worker(EDU)	0.004***	0.001	0.00
Number of dependents (young+old)(DEP)	0.005	0.006	0.4
Connectivity measured in condition of roads from home to workplace(CONECT)	0.004	0.01	0.7
Distance to the nearest town(TOWN)	-0.001	0.0008	0.16
No of hospital visit as a proxy to health(HEALTH)	-0.004	0.003	0.3
Condition of house(HOUSE)	0.006	0.01	0.7
Average expenses in cloth per year(CLOTH)	2	4	0.6
Average expense in leisure activities(LEISURE)	0.00002***	5	0.00
Constant	0.4***	0.04	0.00
F(10,389)	7.69***		

Notes: a) *** and ** represents significance level at 1 percent and 5 percent respectively

Test of Heteroscedasticity: Breusch-Pagan/Cook-Weisberg Test
Chi-square (1) =14.05
Prob>Chi-square =0.00
Result: Presence of heteroscedasticity
*Heteroscedasticity is corrected by estimation of White heteroscedasticity consistent Robust Standard Error

Test of Multicollinearity:

Table 9: Variable Inflation Factor (VIF) Test Result

Variable	VIF
sid	1.88
naemp	2.03
edu	1.17
dep	1.24
conect	1.02
town	1.17
health	1.09
house	1.07
cloth	2.09
leisure	2.14

Mean VIF 1.49
No multicollinearity found

Discussion of the results:

In the regression analysis, the impact of occupational diversification on standard of living of each working member of the tea garden labour community is analysed. For this standard of living index is placed as a dependent variable and in the explanatory variable section, individual SID of each worker as extent of diversification and some other controlled variables are placed. The details of those variables are already

discussed above. After the correction of heteroscedasticity problem, the study finds that there is positive relationship between occupational diversification and standard of living of the tea garden labour community of Assam. It means that as the extent of diversification increases, standard of living of the workers also increases. It is because; diversification ensures certainty of income and reduces the risk of fluctuation of income. Moreover it also increases the scope of earning more income. Hence the workers are in a better position in respect of standard of living when they are more diversified. These two variables are positively related to each other at 1 percent level of significance.

However, among the control variables, we find two other variables which are significantly related with the standard of living of the tea garden labour community of Assam. These variables are as below:

Educational Attainment: Educational attainments generally have significant positive impact on the standard of living of people. Various literatures prove this point of argument (Takahero, 2009) (Komugisha, 2019) (Choudhury et al. 2018). From these literatures, we can cite the following points of how educational attainment improves the standard of living

a) Enhancement of economic opportunities: Educational attainment increases the scope of getting better job opportunities which can ensure better income and other perks and benefits (Komugisha, 2019). For instance, if we cite the OECD countries, in 2020, bachelor's degree holders earned 44 percent more salary and other benefits than their counterpart having only secondary degree. Moreover those with master's degree earned 88 percent more than the others.

b) Skill and capacity improvement: Education can significantly improve the skill and capacity as well as efficiency of the workers. It leads to increase in productivity which further leads to increase in the overall standard of living (Komugisha, 2019).

c) Reduce poverty: As mentioned above, more educational attainment gives the scope of earning higher income and increase the employment opportunities (Choudhury et al. 2018). More educational attainment can reduce the problem of poverty significantly by providing better employment opportunities and in turn poverty reduction can significantly improve the standard of living of the people (Choudhury et al. 2018) (Takahero, 2009).

d) Increase in per capita consumption expenditure: More educational attainment increases the scope of earning more income which further increases the per capita consumption expenditure of the people under consideration. Increase in per capita consumption expenditure is a key determinant to increase in the standard of living of an individual (Takahero, 2009).

e) Increase in awareness: More educational attainment also likely to increase the awareness level of the people in terms of health, hygiene, sanitation and food preference etc. It helps in improving the standard of living of the individual or community concerned (Komugisha, 2019).

Now if we come back to our study, it gives the results similar to that of the existing literature i. e. the study finds a positive relationship between educational attainment and standard of living of the community with 1 percent significance. It means, as the educational attainment of the workers increases, there standard of living also increases. It is very obvious because more educational attainment gives more scope for better earning opportunities. Moreover, awareness makes better decision ability regarding sanitation, safe water use, and hygiene related practices.

Expenses in Leisure activities: The study also finds a positive relationship between expenses in leisure activities with 1 percent level of significance. It means standard of living increases as the workers spends more on leisure related activities. Leisure related activities in the tea garden areas typically include going to watch films, going to visit the relatives of another gardens or areas, going for local functions and festivals related fair etc. It is very common view that as workers gets more scope to spend on leisure related activities; their standard of living will definitely increase.

Summery and Conclusion:

The tea sector in India and particularly in Assam had experienced a crisis since early 1990s till year 2001. It is in the form of reduced production, export and closure of tea gardens (Misra, Upadhyay & Sarma, 2014). In 2001 itself, 36 tea estates across various tea producing states are closed and abandoned affecting the production, export and employment of thousands of labourers. However the situation got normalized and showed some signs of revival after 2002. Some tea estates are reopened again and production also increased gradually (Rai R. 2022). But it is important to know the status of workers after the crisis. Hence, it is very crucial to study the status of occupational diversification among the tea garden labour community of Assam, as the major tea producing and exporting state across India in the recent time. Moreover, it is crucial to know the impact of diversified occupational practices on the standard of living of the community. This study is a mild effort in this regard. The study found the extent of occupational diversification of the tea garden labour community across selected districts of Assam and their comparison with state and national average. It also throws light on the possible reason and justification of different levels of diversification among the community. It found a significantly positive relationship of diversified occupational practices and standard of living of the community which is a crucial finding in this field.

Policy Implications:

1. As extent of diversification is way higher in case of casual workers, tea garden management authority should help the casual workers in adopting better diversification mix. Because these workers get employment from the tea garden only for six months on an average. So diversification becomes a compulsion for them.
2. To encourage the diversification in the construction sector as semi-skilled and skilled worker; government can encourage the workers with proper micro level training. It cannot be expected from the tea garden management authorities as that will be outside their purview.
3. As the wages of the mainstream tea garden works are very low and it is not sufficient to satisfy the increasing demand of livelihood, the garden authority can itself encourage the workers to indulge in some small domestic income earning activities like animal husbandry, vegetable gardening for commercial purpose etc.
4. In the sample survey, it is noticed that the access to loan or credit facility is very limited among the tea garden labour community. So the state government and other financial institution can come forward to offer loan especially to the casual workers and those who have completely left the tea garden related jobs in search of other job opportunities. It can help the people to start of petty business like shop keeping and some self-employment opportunities.
5. All the stakeholders of the tea estates should try to increase the extent of diversification as it is the way to increase the standard of living of the tea garden labour community. Moreover emphasis should also be given to increase the educational attainment of the community. It will also help in increase the standard of living. But it is noteworthy that increase in educational attainment decreases diversified occupational practices of the community which is coming out of the findings of the study.

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