

A Study on Transition of Labour Force from Tea Industry to Other Sectors in Dibrugarh District of Assam

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Abstract:

The shifting of tea laborers to other sectors in Dibrugarh District represents a significant socio-economic trend in Assam's tea industry. This transition is driven by various factors, including the search for better wages, improved working conditions, and alternative livelihood opportunities. Many tea garden workers, traditionally bound to the plantation economy, are now exploring employment in construction, small-scale industries, and the service sector. This shift has implications for both the tea industry and the local economy. While it may lead to labor shortages in tea gardens, it also indicates a diversification of the district's economic base. The movement of workers to other sectors may contribute to skill development and potentially higher incomes for some families. However, this transition also poses challenges, such as the need for retraining and adaptation to new work environments. Further research is needed to fully understand the long-term impacts of this labor shift on the tea industry, worker welfare, and the overall economic landscape of Dibrugarh District.

Keywords:

Transition, Tea labourer, Stratified Random Sampling and Binary Logistic Model,

1.0: Introduction

The tea industry in Dibrugarh district, Assam, has a rich history dating back to the 19th century when Robert Bruce discovered tea plants in the Brahmaputra Valley in 1823. The British East India Company established commercial tea cultivation in the region, and Dibrugarh district became a major tea-producing area. The industry expanded rapidly, with large tea estates being established, generating employment and contributing to the local economy. Over the years, the industry has faced challenges such as labor unrest, declining tea prices, and environmental concerns. Despite these challenges, the tea industry remains a significant contributor to the local economy, shaping the lives of thousands of workers and their families. Today, Dibrugarh district continues to be a prominent tea-producing region in Assam, with tea playing a vital role in the local culture and economy. This study aims to explore the transition of labor forces from the tea industry to other sectors in Dibrugarh district. The transition of labor forces from the tea industry to other sectors in Dibrugarh

district has been influenced by various factors, including changing economic conditions and evolving job opportunities. This shift has had significant implications for the local workforce, affecting both individual livelihoods and the broader socio-economic landscape of the region. Understanding these dynamics is crucial for developing effective policies and strategies to support sustainable economic development in Dibrugarh district and other tea-producing areas of Assam.

2.0: Review of Literature

Review of literature is a comprehensive analysis and interpretation of existing research on a specific topic or research question. It involves a systematic search, appraisal, and synthesis of literature to provide a critical overview of the current state of knowledge on the topic. Research on the transition of the labor force from the tea industry to other sectors in the Dibrugarh District of Assam is not thoroughly covered, as evidenced by the available papers. However, the socio-economic and health conditions of the tea garden labor force in Assam have been well-documented, highlighting significant challenges and implications for their transition to different sectors.

1. One paper, titled "'Lazy' Natives, Coolie Labour, and the Assam Tea Industry," discusses the historical context and creation of a labor force for the Assam tea industry. It outlines the reliance on migrant laborers or 'coolies' and how this colonial structure impacted local labor dynamics. The tea industry employed various local groups, but the workforce mainly comprised racialized and indentured migrants (Sharma, 2008).
2. The study "Nutritional status of adolescents among tea garden workers" focuses on the nutritional challenges faced by tea garden workers in Dibrugarh, indicating significant undernutrition and stunting among adolescent workers. Such health issues can adversely affect the workforce's ability to transition to other sectors (Medhi et al., 2007).
3. The paper "Study of health problems and nutritional status of tea garden population of Assam" provides additional insights into the health challenges faced by the tea garden population, including high prevalence of anemia, worm infections, and non-communicable diseases. These health issues are compounded by low literacy rates and

high substance use, factors that can impede the transition to different employment sectors (Mahanta et al., 2006).

4. Additionally, historical perspectives are offered in the paper "'Tea and money versus human life': The rise and fall of the indenture system in the Assam tea plantations 1840–1908," which critiques the indentured labor system and its inherent wastefulness. The decline of this system resulted from its internal contradictions, which may have influenced later labor transitions (Behal and Mohapatra, 1992).

While these papers provide a backdrop to the labor force challenges in the Assam tea industry, further research is needed specifically on the transition of this workforce to other sectors in the Dibrugarh District. Understanding current socio-economic conditions, alternative employment opportunities, skills development programs, and educational improvements would be key areas to explore for those interested in this transition.

3.0: Objectives of the Study

The researcher sets the followings objectives-

1. To examine the reasons for labour transition from the tea industry to other sectors.
2. To analyze the impact of labour transition on the livelihoods of tea garden workers.
3. To identify the opportunities and challenges faced by labourers in transitioning to new sectors.

4.0: Hypothesis of the Study

We set the following hypotheses for statistical inferences-

1. H_0 = The gender of the worker does not influence the chances of increase in Income.
 H_1 = The gender of the worker influences the chances of increase in Income
2. H_0 = The economic wealth of the worker does not influence the chances of increase in Income
 H_1 = The economic wealth of the worker does not influence the chances of increase in Income

5.0: Research Methodology

Research methodology refers to the systematic process of designing, conducting, and interpreting research studies. It's a crucial aspect of any research project, providing a framework for collecting and analyzing data to answer research questions or test hypotheses.

Here the following components of research methodology are used-

1. **Study Area:** The Dibrugarh district of Upper Assam was purposively selected for the present study among the 35 districts of Assam because Dibrugarh district has the highest number of tea gardens in Assam, making it a significant hub for the tea industry. Moreover, the tea industry plays a crucial role in the local economy and society, making it essential to study the impact of labour transitions on the district's socio-economic landscape.
2. **Sample Frame and Selection of Sample:** The sampling frame included tea laborers who transitioned from employment in tea gardens to other sectors. The study focused on understanding the factors that influenced their decision to leave the tea industry and transit to the other sectors. For that the researcher used both primary and secondary data. Primary data were collected through a stratified random sampling method. From an initial pool of 17 tea estates, including Chabua Tea Garden, Achbam Tea Garden, Nahotorli Tea Estate, Naharkatiya Tea Estate, Namrup Tea Estate, Jalnagar Tea Estate, Deha Tea Estate, Heritage Tea, Organic Tea Estate, Fanning Tea Company, Malibru Chai Udyog, Dhanseri Tea & Industries Ltd., Sinesis Tea Company, Assam Heritage Tea Company Pvt. Ltd., Jamirah Tea Estate, Sessa Tea Garden, and Ghograjan Tea Estate, six estates were selected through a random sampling process. Subsequently, a total of 120 labourers, representing approximately 33% of the 362 transitioned workers to various sectors, were randomly chosen. A structured questionnaire was developed to gather data from the selected sample, and semi-structured interviews were conducted to collect both quantitative and qualitative data. Secondary data were obtained by reviewing relevant historical documents and examining government reports, local employment statistics, and tea industry records.
3. **Variable Selection:** In order to analyze the impact of labour transition on the livelihoods of tea garden workers, the following dependent and independent variables are taken into consideration

A. Dependent Variable-The only binary dependent variable is the increase in income which indicates whether the transition leads to an increase in income for the worker or not. It can be coded as 1 if the income increases and 0 if it does not.

B. Independent Variables

- (i) **Education Level:** The level of education achieved by the worker may influence their ability to transition effectively to higher-paying jobs.
- (ii) **Skill Set and Training:** Particular skills or vocational training possessed by the worker that is applicable in other sectors.
- (iii) **Work Experience:** The amount and type of work experience that a worker has, which may influence their employability in new sectors.
- (iv) **Economic Wealth:** Financial assets and wealth may affect one's capacity and decision to transition to another sector—higher wealth might relate to higher reservation wages or risk-taking ability.
- (v) **Demographic Factors:** Including age, gender, and marital status, as these can impact mobility and opportunities in new sectors.

To examine the effect of labour transition on the livelihoods of tea garden workers, a Binary Logistic Regression Model was employed.

4. **Analysis Method:** In order to analyze the data, various statistical tools were employed including Binary Logistic Model to analyze the impact of labour transition on the livelihoods of tea garden workers. This model is appropriate because the dependent variable, an increase in income, which is an index of livelihoods is binary or dichotomous in nature, allowing for two possible outcomes: whether the worker's income increases after transitioning from the tea garden to other sectors or not. The independent variables are either continuous or categorical (ordinal/nominal).

Let 'Y' the dichotomous dependent variable, increase in income such that $Y=1$ if a worker's income increases after transitioning from the tea garden to other sectors and $Y=0$ if a worker's income does not increase after transitioning from the tea garden to other sectors.

Now, letting P_i = probability that $Y_i = 1$ (that is, that the worker's income increases) and $1 - P_i$ = probability that $Y_i = 0$ (that is, is, that the worker's income does not increase), the

logit transformation of the probabilities that is log of odds ratio $\left(\frac{P_i}{1-P_i}\right)$ results in linear

relationship of the dependent variable Y_i with the predictors:

- (i) X_1 =Gender of the respondent
- (ii) X_2 =Age of the respondent
- (iii) X_3 =Respondent's education
- (iv) X_4 = Respondent's skill set and training
- (v) X_5 = Work Experience
- (vi) X_6 = Economic Wealth

The linear relationship between the natural log of odds ratio of the probabilities of the dependent variable and the independent variables can be given by the following logit model-

$$L_i = \ln\left(\frac{P_i}{1-P_i}\right) = \beta_0 + \beta_1 X_{i1} + \beta_2 X_{i2} + \beta_3 X_{i3} + \beta_4 X_{i4} + \beta_5 X_{i5} + \beta_6 X_{i6} \quad (1)$$

6.0: Data analysis and Findings

The primary data collected through questionnaires and interviews are presented in the following tables-

6.0.1: Reasons for labour transition from the tea industry to other sectors

The following table shows the number of worker transited from tea garden to other sectors to various reasons

Table 1
Reasons for labour transition from the tea industry to other sectors

Reasons	Number of workers	%
Low Wages and Poor Working Conditions	46	38.33
Labor unrest and job insecurity	23	19.17
Limited Opportunities for Advancement	10	8.33
Alternative Employment Opportunities	21	17.5
Government Initiatives and Policies	5	4.17
Demographic and Socio-Economic Factors	15	12.5
Total	120	100

As evidenced by the data presented in the table, it is apparent that out of a total of 120 workers, 46 individuals (38.33%) transitioned to other sectors due to low wages and poor working conditions. This was followed by labor unrest and job insecurity, which accounted for 23 out of 120 workers (19.17%). Additionally, 21 workers (17.5%) transitioned due to alternative employment opportunities, while 15 workers (12.5%) cited demographic and socio-economic factors as their reason for transition. Furthermore, 10 workers (8.33%) transitioned due to limited opportunities for advancement, and 5 workers (4.17%) were influenced by government initiatives and policies.

6.0.2: Regression Results

The logistic regression model automatically fixes any factor as base factor under each categorical variable. The automatic action is modified by choosing the null factor or the lowest factor under each categorical variable for comparison as mentioned in the table. For example in case of respondent's education variable, no formal education is fixed as base factor (null factor) out of four factors viz. under HSLC, HSLC, HS and Degree. The same procedure is followed for all the other categorical variables.

Table 2:
Categorical Variables Coding

Variable		Frequency	Factor coding
		(1)	(2)
Respondent's Education	Under HSLC	47	0
	HSLC	33	1
	HS	34	2
	Degree	6	3
		<i>N</i> =120	
Work Experience	No	92	0
	Yes	28	1
		<i>N</i> =120	
Respondent's skill set and training	No	78	0
	Yes	42	1
		<i>N</i> =120	
Gender	Male	98	0
	Female	22	1
		<i>N</i> =120	
Economic Wealth Scheme	High	3	0
	Low	94	1
	Moderate	23	2
		<i>N</i> =120	

Before we run the model (1) by using the Maximum Likelihood Model, we must proceed to test the goodness of fit of the model, that is, to determine whether the model adequately fits the data. Omnibus Test of Model Coefficients is used to test the model fit. If the model is significant, there is a significant improvement in fit as compared to the null model without any predictor; hence, the model shows a good fit. Omnibus Test of Model Coefficients indicates a poor fit if the significance value is more than 0.05 at 5% level of significance. From the table given below it is seen that the significance value is 0.0 at 5% level of significance, which is less than 0.05, therefore, we can say that the model adequately fits the data.

Table 3
Omnibus Test of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	65.135	9	.000
	Block	65.135	9	.000
	Model	65.135	9	.000

In case of the logistic regression model involving a dichotomous dependent variable, instead of coefficient of determination, Cox & Snell R-Square and Nagelkerke R-Square are used to determine the extent of variation in the dependent variable explained by the independent variables. Nagelkerke R-Square is an adjusted version of Cox & Snell R-Square applied to test the goodness of fit of a model. From the table given, it is seen that the value of Nagelkerke R-Square is 0.614, which implies that $0.714 \times 100 = 71.4\%$ of the variation in the dependent variable is explained by the independent variables included in the model.

Table 4
Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	85.453(a)	.447	.714

Table 5
Factors affecting increase in income level:
Estimated regression coefficients with odds ratios

	B	Wald	Sig. (5%)	Odds Ratio EXP(B)	95.0% C.I. for EXP(B)	
					Lower	Upper
Gender(Female)	2.044	8.968	.003	.130	.034	.494
Age	.918	16.710	.000	2.504	1.612	3.887
Respondent's education		3.867	.276			
Respondent's education (HSLC)	1.773	1.390	.238	5.890	.309	112.260
Respondent's education (HS)	1.855	1.658	.198	6.394	.379	107.769
Respondent's education (Degree)	.262	.028	.868	1.300	.060	28.371
Economic Wealth(Yes)	11.803	7.784	.005	.165	1.000	.585
Work Experience (Yes)		3.778	.286		.046	
Constant	-15.924	3.201	.074	.000	.000	

significance. In this case we reject the null hypothesis (1) that the gender of the worker does not influence the chances of increase in Income. We conclude that the gender of the worker influences the chances of increase in Income.

The Exp (B) column shows the relative odds (Odds ratio) of the corresponding regression coefficients. The odds ratio of regression coefficient of gender (0.130) indicates that the females are 0.130 times more likely to increase the income level than that of male, inversely

it indicates male are 7.69 (=1/0.130) times less likely to increase the income level than female, keeping other factors constant.

From the above model, we can also see that the regression coefficient of economic wealth is significant ($\text{sig}=0.000<0.05$) at 5% level of significance. In this case we reject the null hypothesis (2) that the economic wealth of the worker does not influence the chances of increase in Income. We conclude that the economic wealth of the worker influences the chances of increase in Income.

The odds ratio of regression coefficient of age (2.504) means, a worker having economic wealth is 2.504 times more likely to increase the income level.

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