

AN ASSESSMENT OF INCOME VULNERABILITY OF TEA GARDEN WORKERS IN SYLHET DISTRICT

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JUNE, 2023

AN ASSESSMENT OF INCOME VULNERABILITY OF TEA GARDEN WORKERS IN SYLHET DISTRICT

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REGISTRATION NO. 21- 010008

A Thesis

Submitted to the Faculty of Agribusiness Management,
Sher-e-Bangla Agricultural University, Dhaka,
in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

IN

AGRICULTURAL FINANCE AND MANAGEMENT

SEMESTER: JANUARY- JUNE, 2023

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CERTIFICATE

This is to certify that the thesis entitled “AN ASSESSMENT OF INCOME VULNERABILITY OF TEA GARDEN WORKERS IN SYLHET DISTRICT” submitted to the Department of Agricultural Finance and Management, Faculty of Agribusiness Management, Sher-e-Bangla Agricultural University, Dhaka in partial fulfillment of the requirements for the degree of MASTER OF SCIENCE in AGRICULTURAL FINANCE AND MANAGEMENT, embodies the result of a piece of bona fide research work carried out by MD. FOYSAL HOSSEN, Registration no. 21- 010008 under my supervision and guidance. No part of the THESIS has been submitted for any other degree or diploma.

I further certify that such help or source of information, as has been availed of during this investigation has duly been acknowledged.

Dated: 20 MAY, 2024
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ACKNOWLEDGEMENTS

At first, I want to express all praises and appreciations to almighty God, the supreme creator and the sustainer of the universe, who has given me the knowledge and opportunity to conduct the study for completing the Degree of Masters of Science (M.S.) in Agricultural Finance and Management from the recognized institution Sher-e-Bangla Agricultural University, Dhaka-1207.

Many individuals had assisted me in different ways to develop and complete this thesis. I am grateful and indebted to all of them.

I am very proud of acknowledging my sincere and deepest sense of gratitude and indebtedness to my respected teacher and research supervisor Dr. Md. Sadique Rahman, Professor, Department of Agricultural Finance and Management, Sher-e-Bangla Agricultural University, Dhaka for his keen scholastic guidance, precious suggestions, and constant encouragement, constructive criticism and support from the beginning to the end of the research work.

I would like to express my heartiest thankfulness and indebtedness for the help and cooperation of my respected teacher and co-supervisor Taskin Afrina, Asst. Professor, Department of Agricultural Finance and Management, Sher-e-Bangla Agricultural University, Dhaka for her kind support, constructive criticism and illuminating suggestion to complete the research work successfully during the entire research period.

I would also like to express my profound respect to all honorable teachers of the faculty of Agribusiness Management for helping me to overcome setbacks and stay focused on my study.

All the faculty members, staff of the Department of Agricultural Finance and Management, Sher-e-Bangla Agricultural University, Dhaka are very kind and supportive. I express my deepest gratefulness to all of them.

I am very indebted to my parents, brother and wife for their blessings, constant source of inspiration, and the sacrifice and moral support of my parents in my entire academic life.

I am indebted to my sample members for providing valuable data and information for conducting the study successfully.

I want to give my heartiest thanks to my friends Shopna Akter, Umaiya Khanam Disha, Tasnia Mathin and Junior brother Iftekhar Ahmed for their friendly help, co-operation and accompany throughout the research period.

I also remember those people who helped me to prepare this thesis. I have taken various help from several reference books, web, journals, and thesis paper and also grateful to the authors and publishers.

The Author

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ACRONYMS

UAE	United Arab Emirates
Kg	Kilogram
US\$	United State Dollar
Ha	Hectare
i.e.,	Id est. (L.). “that is” (to say)
et al.,	et alia (L.) “and others”
UK	United Kingdom
HIV	Human Immune Deficiency Virus
AIDS	Acquired Immune Deficiency Syndrome
Kcal	Kilo calorie
HICES	Household Income, Consumption and Expenditure Survey
WMS	Welfare Monitoring Survey
CSA	Central Statistical Authority
Tk	Taka
AM	Ante Meridiem
PM	Post Meridiem
&	And
Km ²	Kilometer Square
NGOs	Non-Government Organizations
GLS	Generalized Least Squares
GDP	Gross Domestic Product
MBBS	Bachelor of Medicine and Bachelor of Surgery
STATA	Statistics and Data
WRI	Wage Rate Index
etc.	et cetra (others and so forth)
BTB	Bangladesh Tea Board
SEHD	Society for Environment and Human Development

ABSTRACT

The aim of the study was to assess the income vulnerability of tea garden workers in Sylhet district. Two tea gardens were selected for the study namely “Lakkatura Tea Estate” and “Malnicherra Tea Estate”. Household surveys were used to collect data from tea garden workers. A total of 50 households were selected for the study and data was collected through face to face interview. The sample was chosen using the random sampling technique. The statistical tools were also used to analyze the objectives of the study. The chance of falling into income vulnerability was estimated using multiple regression model in this study. The age distribution of the workers revealed that, average age was 39 years old, maximum age was 62 years old, minimum age was 25 years of old. From the family size, it was found that maximum family size has 13 members, minimum family size was 3 members, average family had 6 members and mostly have 7 members. In the educational status of tea workers found that 18% of the respondents had passed primary level, 82% was illiterate. The workers of these tea gardens were living in very miserable condition. The study's findings indicated that, of all the workers sampled, 90 percent were high vulnerable, meaning they had a higher chance of being income vulnerable in the future, while just 4 percent had a low chance of becoming income vulnerable. For the analysis of the determination of income vulnerability some variables had significant effect on the income vulnerability of tea workers. The independent variables – gender, education, family size, and expenditure had a significant impact on the income vulnerability. However, gender, family size, and expenditure had a negative relationship with tea worker's income vulnerability, meaning these variables had a significant impact on lowering tea garden worker's income vulnerability. The income vulnerability of tea workers was significantly and negatively impacted by the acquisition value of livestock assets and the availability of credit as adaptive capability. It may lessen the tea garden worker's vulnerability to change in income. This condition can be improved by taking some implementation method by the policy makers.

CHAPTER 1

INTRODUCTION

1.1 Background of the study

In Bangladesh, tea is one of the most significant cash crops. It is a significant food commodity in global trade as well (Kamruzzaman *et al.*, 2015). The British were first developed the tea gardening in Bangladesh (Tea Industry - Banglapedia, n.d.). First tea garden was founded in Chittagong in 1840, and from that Bangladesh tea industry began. In 1857, the first tea garden in Bangladesh was founded in Malnichhara, Sylhet (Nasir and Shamsuddoha, 2011). In Bangladesh, tea is mostly grown in four districts: Habigonj, Moulvibazar, Sylhet, and Chittagong. These districts are located in the hilly eastern portion of Bangladesh. One of the country's main tea-producing regions is Sylhet. Sylhet is an area of surrounding traditional tea growing area. The area has more than 150 tea gardens. The sub-Himalayan region of Panchagarh is a relatively recent addition to the tea-growing region. Therefore, the majority of the local population depends on the tea garden for their livelihood (Kamruzzaman *et al.*, 2015). The cash crop was planted on about 300 acres in 2000, but it is currently grown on approximately 3,500 acres in Panchagarh's Tentulia, Sadar, and Atoari upazilas. It can be extended to eventually encompass over 60,000 acres (Bangladesh.com, 2007).

Bangladesh is the tenth-largest producer of tea in the world, ranking fifteenth among exporters and sixteenth among consumers. In a worldwide sense, the tea industry in Bangladesh is negligible. It only accounts for 1.68 percent of the world's tea production and 0.58 percent of its exports (Ali *et al.*, 2014). Its export appears to be steadily decreasing. Bangladesh will become a nation that imports tea if this trend keeps up.

Tea Board statistics indicates that major tea-importing nations such as Russia, the United Kingdom, the Netherlands, Germany, Poland, the United Arab Emirates, Iran, Bangladesh, and Pakistan have witnessed a rise in their tea exports (Bangladesh Tea Board, 2022). Approximately 0.81 percent of the GDP, or BDT 1775 million, are made each year from the export of roughly 18 million kilograms of tea (Kamruzzaman *et al.*, 2015).

Table 1.1 Annual export of tea

Period	Quantity (Kg)	Value (In Thousand US\$)
2016-17	2320	4189
2017-18	780	2280
2018-19	636	2461
2019-20	1136	2847
2020-21	1243	3023
2021-22	639	1956
2022-23	637	1465

Source: Monthly Statistical Bulletin of Bangladesh Tea Board, March, 2023

Bangladesh has 168 tea gardens as of right now. Many businesses, such as Sterling Companies, the National Tea Company, Bangladesh Tea Board, Bangladeshi Proprietors, Bangladeshi Private Limited Companies, James Finlay, Duncan Brothers, Deundi Tea Company, and the New Sylhet Tea Estate, are in charge of managing each tea estate. Bangladeshi businesses and private individuals own the remaining tea gardens, while four Sterling corporations own 27 estates (Khan et al., 2020).

The total area allocated for tea is 56846 ha in Bangladesh. During 2022, the total production was 93.83 million Kg (Wikipedia contributors, 2024). Greater Sylhet contributes around 96% of the annual production.

As per the data of the Statistical Bulletin of Bangladesh Tea Board of the month of March, 2023, production target of tea was 100000 Kg in 2022 but the achievement was around 93829 Kg (BANGLADESH TEA BOARD, 2024).

Table 1.2 List of tea gardens in Bangladesh (District wise tea gardens)

District	Number of tea gardens
Moulvibazar	90
Habiganj	25
Sylhet	19
Chittagong	22
Rangamati	2
Panchagarh	8
Thakurgaon	1
Khagrachari	1
Total	168

Source: Teaboard.gov.bd (2024)

The majority of Bangladesh's tea gardeners were tea workers, as this was their inherited occupation. Their families have relied on tea gardens for their livings for many decades, and they are landless (Ahmmed et al., 2016). They don't have any other job opportunities. Thus, in tea gardens, they bonded to them generation after generation. Even the young people who work in tea gardens are compelled to join the job as unskilled laborers since they have no possibility to pursue other careers (Kamruzzaman *et al.*, 2015). They are often paid low wages, not more than USD \$1 for an entire day's work, from morning to evening (Ahmmed et al., 2016). Their basic requirements are not sufficiently covered by the minimum pay levels. They are almost backward in the entire sphere of their life. Most of them are ethnic minority. Tea garden laborers view their job as a challenge to sustaining their standard of living. They are highly susceptible to closures since they rely on the tea estates for food, shelter, water, healthcare, sanitation, and education (Oldenziel *et al.*, 2006). Tea workers get a fixed amount of wage but there is very rare to increase the amount of wage rate which could improve their livelihood pattern. The people live in almost hand to mouth, even not get opportunity to other income generating activities for their low level of education. So the people are vulnerable to income and consumption too. The scope of the work for tea gardens in Bangladesh is very limited. Another reason behind in decreasing the scope of tea gardening in Bangladesh because tea workers are the ethnic group. Nonetheless, there is little research done on the lives of those who work. Therefore, there was a narrow attention to investigate about their socio-economic condition of these people living in tea garden (Ahmad *et al.*, 2015). There hasn't been much micro level research done on tea garden laborers so far.

Assessment of income vulnerability is also important because the production of tea mostly depend on the workers of tea garden. Vulnerability is a multi-dimensional phenomenon. The term 'vulnerability' commonly used to describe the ability to be wounded, or the likelihood that a system may experience harm due to exposure to a risk. According to United National Development Programme (UNDP), vulnerability is a human condition or process resulting from physical, environmental, economic and social factors which determine the scale and likelihood of damage from the effect of a provided hazard (Kimani *et al.* 2015).

In this particular situation, vulnerability refers as the reduced ability of a person or community to predict, manage, struggle, and recuperate from the effects of tea workers' low wages. This idea has been applied in a variety of research traditions (Smit and Wandel, 2006). Income vulnerability is a dynamic and relative term. Vulnerability focuses more and more on the people's livelihood. The vulnerability evaluation of tea workers' income must determine each worker's total vulnerability in relation to their income threshold (Gallopín, 2006).

1.2 Present status of Bangladeshi tea garden workers

Bangladesh has 168 tea estates and more than 360,000 plantation workers (Wikipedia contributors, 2024). At present, the laborers who work in the tea industry are not locals. About 150 years ago, the British companies brought them from various States of India. These laborers, who represented a wide range of ethnic backgrounds, cleared forests, nurtured tea seedlings, constructed expensive lodges, and planted shade trees for the tea cultivators (SEHD, 2009). However, still they cannot improve their condition. Due to their isolation, tea plantation workers rely mostly on their employers for necessities including housing, food, medical, and education. They don't know about their legal rights and other privileges (Repon, 2015). They have distinct languages, customs, and cultures since they are members of various ethnic or tribal groups. Along with severe social marginalization and discrimination, they have trouble socializing with other Bangladeshis.

The tea industry is distinct from other sectors of the economy. Agriculture and industry are involved in the production of tea (The Daily Star, 2009). The labor forces of tea gardens are engaged in both areas. But maximum numbers of workers are involved in agriculture i.e. in the tea gardens or fields. Tribal and female laborers are favored for

employment in the tea gardens since they are better equipped to handle the task of picking tea leaves there than male laborers (Hossain, 2015).

They get a very little amount of wage and fringe benefits. Because of this, the lives of tea plantation workers are filled with arduous labor that does not result in happiness or comfort. They suffered from illiteracy and unaware about their rights. In 2008, the wage of tea workers was increased to Tk 69. Following that, in 2014, workers in the Sylhet district's tea gardens demanded a four-month strike in order to raise their pay. Workers' persistent efforts had paid off, as their pay rate had increased. And, In 2023, the wage of tea workers was increased to Tk 170 for category-A garden workers, Tk 169 for category-B garden and Tk 168 for category-C garden (Dhaka Tribune, Aug 13, 2023).

Though it was very hard to maintain a decent life for tea workers, but the increased wage rate was a positive development. One major issue is the appalling housing conditions in the tea gardens. Most permanent workers of tea garden do not have housing facility in Bangladesh (Repon, 2015). Poor housing conditions, strikingly long working hours, abysmally low wages, lack of decent health facility, minimum educational facilities and social discrimination deprive them of many fundamental human rights and needs (Amin, 2016). They have no land property of their own (Hossain, 2015).

1.3 Rationale of the study

Tea is a vital sector and has the ability to support the country's economic expansion. It stands as the third largest exporting goods. It is as such a great source of earning revenues of the country in respect to foreign exchange earnings. If it is possible to increase tea production by large amount in cost effective way it must be contribute to our GDP which helps to increase economic growth (Masud *et al.* 2015). This present position is achieved by the hard works of laborers. But these workers are deprived from their basic rights. They lead a very miserable condition of life compare to other sectors such as garments factory, ship breaking industry, and even of brick field workers. They do not get full scope to avail all kinds of basic demands in full phase.

Tea exporting is a significant source of foreign exchange for Bangladesh, and tea garden workers play a major role in making this happen. But it's quite pitiful that providing amenities for tea garden workers doesn't have a higher priority. They do not get fair wage. So they do not want to work in tea garden. A century later tea laborers still find themselves illiterate, low paid and under privileged too. Due to their meager living

conditions, minimum pay, long working periods, deprive of many fundamental human rights, social discrimination, and other factors, tea workers' children are forced to work as tea workers for the rest of their lives (Hossain, 2015). As a result, determining their income vulnerability may be crucial to improving their standard of living. Through evaluating income vulnerability, one may get insight into how income variability rises and affected by connected factors, managing by adaptive capacity. There are few research studies of tea garden workers income vulnerability were done, and a clear knowledge gap of income vulnerability of tea workers in Bangladesh. The goal of this study is to fill the knowledge gap and offer light on the tea worker's income vulnerability. The research will be useful in determining the aspects that may cause workers to become more vulnerable in their income. The results of the study will assist researchers, policy makers, and other researchers in making decisions that will lessen the vulnerability of income of the tea garden workers. This will inspire upcoming researchers to investigate this matter more.

1.4 Research questions

Some research questions are raised from the research problem. These questions help to set relevant objectives of the research. The questions are given below:

- 1) What is the socio- economic condition of the tea garden workers?
- 2) What are the factors affecting the income vulnerability of the tea workers?

1.5 Research objectives

For this study, two goals were established for the study. These are listed below:

- i. To know the socio- economic profile of tea garden workers, and
- ii. To assess the income vulnerability and its associated factors of tea garden workers.

1.6 Organization of the thesis

The thesis is organized into seven chapters to assess the income vulnerability of tea garden workers.

Chapter 1 includes introduction, background of the study, tea workers present status, and rationale, research questions and objectives of the study. Theory related to vulnerability and empirical studies of income vulnerability are presented in Chapter 2

This chapter also gives the knowledge gap and some innovative ideas about the income susceptibility of tea workers. There is a clear knowledge gap of the research on income vulnerability. Chapter 3 gives a clear idea about the methodology of the study. Study design of the research and analytical tools and techniques are described in this chapter. The multiple regression model used to assess the income vulnerability and determinants which can influence the income susceptibility of tea workers are described in this chapter. Chapter 4 gives the information about the result and discussion of socio-economic condition of selected tea workers and factors affecting the income vulnerability of the tea workers. Finally, summary and findings of the study, limitation and conclusions are provided in Chapter 5. Some suggestions and future research agenda from the experience of the present study will be presented in this chapter.

CHAPTER 2

REVIEW OF LITERATURE

It is important to know the past researches which are related to the proposed study before conducting any experiment. This knowledge and information gathered from the past research help to develop the proposed research. This chapter describes the theory of income vulnerability and some empirical studies on this issue to enhance the knowledge to improve the study. Knowledge gap from the reviewed study and some innovative idea to study on the income vulnerability are also described in this chapter.

2.1 Theory of income vulnerability

Vulnerability is generally viewed as being specific to perturbations that impinge on the system and in other words, a system can be vulnerable to certain disturbances and not to others (Gallopini, 2006). Vulnerability at the individual level can be thought in terms of the uncertainty in the outcomes of different indicators such as income and consumption. By the negative outcome of these indicators, individuals can face various problems in the future (Dutta *et al.*, 2010). If people are unable to sustain a particular basic level of life in the future, they may become vulnerable due to their income.

The current state of the theoretical studies of vulnerability is a bit chaotic. A number of competing measures have been proposed and the literature does not seem to be settled yet on a conceptually sound as well as operationally suitable definition.

Hoddinott and Quisumbing (2003) and Ligon and Schechter (2004) provided an exhaustive list of methods for estimating vulnerability to poverty surveying all the existing literatures and reviewed strengths and weaknesses of each of them. According to them, vulnerability to poverty can be classified into three broad categories: a) Vulnerability as Expected Poverty (VEP) metric creates a benchmark for consumption and the probability for falling below it at an individual level. It is calculated using indicators on household characteristics related to poverty, shocks, and risks. It creates a benchmark for consumption and the

probability for falling below it at an individual level. It is calculated using indicators on household characteristics related to poverty, shocks, and risks; b) The concept of vulnerability as Low Expected Utility (VEU) is founded on the idea that vulnerability is the utility lost as a result of risk, or the gap between expected household consumption and certainty comparable consumption. This measure has the benefit of disaggregating vulnerability due to poverty and vulnerability due to uninsured risk. Although considered a stronger measure of vulnerability than VEP, VEU is difficult to calculate and reliant upon difficult to acquire panel data and; c) Vulnerability as Uninsured Exposure to Risk (VER) is not a predictive tool, but instead measures actual changes in welfare due to a given risk. It is easy to calculate and can attribute welfare loss to either idiosyncratic or covariate risks. These approaches measure welfare loss as a result of shocks, but differ in that VEP and VEU measure the ex-ante probability of a household's consumption of falling below a given minimum level in the future due to current or past shocks, while VER measures ex post welfare loss due to shocks. The most commonly cited shocks are climatic, economic, political, social, legal, crime and health conditions (Nkondze *et al.*, 2013).

The disadvantage of the VEP method is that estimates across a single cross-section which requires cross-sectional temporal variability. In VEU method, it is difficult to account for an individual's risk preference. The absence of panel data is a limitation of VER method. It is impossible to measure impact of shocks in the absence of panel data because ex-ante and ex-post consumption and income data are generally not included in cross-sectional data (Moret, 2014). The Household Economy Approach (HEA) is a livelihoods-based analytical framework developed by Save the Children UK in the early 90s designed to obtain information on how people access to food and cash based on multi-level analysis (Nkondze *et al.*, 2013).

The Individual Household Model (IHM) is a disaggregated version of HEA designed to provide more detailed vulnerability analysis at the household level. Though it operates according to the same framework as HEA, IHM employs different field methods. Instead of interviewing individual households as representatives of a larger wealth group, IHM utilizes semi-structured interviews with individual households selected using statistical sampling methods (Moret, 2014).

The Local Vulnerability Index was designed to address a gap in vulnerability assessment methodologies, which tended to either focus on the household or country levels, but not in between. (Rossouw, 2017)

The Household Vulnerability Index (HVI) is a statistical index developed by the Food, Agriculture and Natural Resources Policy Analysis Network (FANRPAN) in 2004 to measure household vulnerability. The HVI offers several benefits. It accords with current best practices by using a sustainable livelihoods focus to analyze the dimensions of both vulnerability and coping (Moret, 2014). The HVI assesses a household's or community's susceptibility to shocks and diseases like AIDS and HIV, unpredictable weather patterns, and poverty. The HVI categorizes a household by assessing external vulnerability that is induced by shocks and internal vulnerability of such a household to withstand shocks, then, classifies the household as coping, acute, or in an emergency situation depending on the household's ability to cope. The index helps to see the sustainable livelihoods and food security traditions of the economics literature on vulnerability.

2.2 Empirical studies on income vulnerability

Some empirical studies on income vulnerability are given below:

Uddin (2020) studied about the Bangladeshi tea garden workers income vulnerability. The consequence of the work indicated that out of the total sampled workers, 95% were highly susceptible, which means, there existing a higher chance to fall in future income susceptibility. There is a negative and significant effect of acquisition value of livestock assets and access to credit on the income susceptibility. This may assist to reduce the tea garden worker's income vulnerability.

Islam et al. (2019) has investigated the reasons of poverty, vulnerability, and the survival approaches of the tea workers. The study found that the primary factor causing poverty and vulnerability among tea garden workers is still deprivation in different areas of life. Saha et al., (2017) has assessed the socio-economic status of tea garden workers in Sylhet district. Age, education level, family size, monthly income, marriage dowry, credit availability, employment history, exposure to communication media, and workplace danger were the factors that were chosen. According to the data, 34.9% of the workers had a low socioeconomic status, while 33.1% had a very low socioeconomic status and 32.1% had a medium socioeconomic position. The majority of the workers had a poor socioeconomic status.

Takashi (2002) looked on risk aversion as a feature of dynamic poverty in low-income nations. A two-period panel dataset that was gathered from Pakistan's North-West Frontier Province was used in the study. According to empirical findings, sample households experience high levels of transient poverty in terms of income; nevertheless, ex-post risk-coping mechanisms only partially transfer income fluctuation to consumption variability. Further a result also concluded that several households, who are excluded from these mechanisms, are prone to high risk of a substantial fall in consumption and a drastic cut in children's school enrollment and the households are more vulnerable to consumption.

Chaudhury (2003) conducted a study to assess vulnerability of poverty. In this study, concepts, empirical techniques, and instructive examples were evaluated. The result of the study concluded that poverty is a stochastic phenomenon and the current poverty level of a household may not necessarily be a good guide to the household's expected poverty in the future. The study had to go beyond identifying the existing poor and the non-poor, as well as evaluating the susceptibility of households to poverty. A conceptual and methodological overview of vulnerability assessments utilizing household-level data was given to the study, along with several illustrative examples of its empirical use. This study also provided the general methodological approach that can be usefully applied and tailored to particular contexts and data.

Khawas (2006) tried to investigate the social and economic circumstances of Darjeeling Hills tea estate workers. It highlighted the predicament of garden workers in the area that yields the world's best tea. This paper addressed the disregard shown by the tea industry to the social and economic advancement of garden laborers. This paper's primary goal was to draw attention to the working circumstances of tea garden laborers in the Darjeeling Hills within the framework of the nation's tea business crisis and the ensuing effects on these laborers. It listed down the factors responsible in this connection and called for a more robust debate, discussion and systematic research on these factors in order to understand the crux of the problems characterizing.

Das and Islam (2006) investigated several aspects of the tea gardener's human rights situation. The main topics of this paper were the social, political, economic, and cultural aspects of the lives of those who live in Sylhet's tea gardens. Knowledge of labor laws, gender equity, the value of education, good governance, and other topics had received

particular attention. The view of mainstream culture toward tea gardeners and the perceptions of tea gardeners toward members of mainstream society were also examined in this paper. The study made the suggestion that every effort should be made to educate tea gardeners about human rights and associated issues.

Matul (2009) studied how low-income households in transitional settings handled their finances and how vulnerable they were to poverty. This study looked at how low-income people's financial practices affect how vulnerable they are to poverty. According to the analysis, low-income households' financial practices hinder asset building and greatly enhance their vulnerability to poverty in the context of Eastern Europe's transition. According to the paper, Savings, risk mitigation, and restricted long-term financial planning enhance vulnerability. Financial services and borrowing have little effect on it but do aid in asset accumulation.

Azam and Imai (2009) studied the vulnerability and poverty in Bangladesh. This study found that Households without formal schooling or those that are farmers are perhaps the most vulnerable. In this study regional variation in vulnerability was considered. The study suggested that ex-ante measures to prevent households from becoming poor as well as ex post measures to alleviate those already in poverty should be integrated in evaluating poverty of the households those are lacked of economic assets should give priority to reduce consumption fluctuations and building up assets through a combination of protective and promotional programmes. With the help of micro-credit programme, access to credit should be increased to help poor households so that they can reduce income and consumption vulnerability, assist to buy daily needs and useful assets, and can assure security against crunches.

Deressa (2013) conducted study on the household vulnerability to poverty in rural Oromiya, Ethiopia. The study was based on the secondary data of HICES and WMS 2004-05 collected by CSA. The study was tried to examine the extent of vulnerability to poverty of household's determinants of vulnerability to poverty in rural Oromiya. The estimation of vulnerability to poverty showed that 17.93 percent of the non-poor are highly vulnerable and the mean vulnerability of those households is 0.62. The logit model was used to investigate the determinants of vulnerability to poverty. The result of the model was larger household sizes and illiterate head of household significantly increase the probability to become vulnerable. Ex post actions can assist in reducing poverty as well as ex ante measures can help keep households from falling into it.

Nkondze *et al.* (2013) conducted a study on household vulnerability to climate change and the factors affecting vulnerability of the households at Mpolonjeni Area Development Programme in Swaziland. To determine the vulnerability, HVI was used and for determination of factors affecting household vulnerability multinomial logistic model was used. The results showed that 39.6 percent of the households were low vulnerable, 58.2 percent were moderately vulnerable and 2.2 percent were highly vulnerable. Parameter estimates of the multinomial regression model showed that the number of sick members, number of employed members, number of dependants, household size and the livestock index influence households to move from low vulnerability to moderate vulnerability or high vulnerability.

Ruma and Dipak (2014) studied with the educational vulnerability and risk factors of tea garden workers of Dewan Tea Garden which is 100 years old. The workers of tea gardens in Assam are backward in education, though there are schooling facilities in most of the tea garden areas. Moreover, literacy rate among women workers was very low in comparison to their male counterparts. Lack of education and awareness was the major hindrances to overall capacity building of tea garden workers. Besides, poor educational status of the tea garden workers is a major cause to increase risk factors of their community in many dimensions. This study is mainly conducted in order to understand the correlation among educational vulnerability, occupational dynamics and possible risk factors of tea garden workers.

Muleta and Deressa (2014) studied on the factors of susceptibility to poverty in female headed families in rural Ethiopia. This study tried to make the comparison between the susceptibility to poverty of female headed families with the male headed families in rural Ethiopia. It is about the survey from 1999 to 2000 based on the Ethiopian rural household. The findings was, about 38 percent out of the total sampled households are highly vulnerable to poverty and 16.38 percent of the non poor are highly vulnerable to poverty. On the other hand, using the recent data for this study only they got 35.26 percent of households are poor. This mean susceptibility for female headed families is higher than the male headed families.

This paper exhibited that female headed families are more susceptible to poverty than male headed families.

Dang and Lanjouw (2014) studied on welfare dynamic measurement on two definition of vulnerability line and their empirical application. Vulnerability line that distinguished the poor population from the population that is not poor but still faces significant risk of falling back to poverty. This paper was attempted to fill this gap by proposing vulnerability lines that can be straightforwardly estimated with panel or cross-sectional household survey data, in rich and poor country settings. They claimed the vulnerability lines offer a means to broaden traditional poverty analysis and can also assist with the identification of the middle class or resilient population groups. These empirical illustrations was provided using panel data from the United States and Vietnam for the period 2004 to 2008 and cross-sectional data from India for the period of 2004 to 2009. The estimation results indicated that, during this time period the population of Vietnam and India was living in poverty and the middle class had been falling and expanding. At the same time, the opposite had been occurring in the United States.

Welderufael (2015) studied on the determinants of household's vulnerability to food insecurity in Ethiopia. An econometric analysis was done on rural and urban households. Finding out how vulnerable households in Ethiopia's Amhara regional state were to food insecurity in both urban and rural settings was the aim of this study. In this work, the Foster-Greer-Thorbecke (FGT), the logit model, and descriptive statistics were employed. About 48 percent of the households were in vulnerable to food insecure. The suggested daily calorie requirement of 2200 kcal was not met by them. In urban regions, households with larger family sizes, lower consumption expenditures, older households, unemployed individuals, and male heads experienced higher levels of food insecurity. In addition to these factors, shocks including disease and drought, farm size, livestock ownership, and farm inputs determined rural household food insecurity.

Dawit (2015) analyzed the measurement of vulnerability to poverty from Ethiopian Rural Household Survey. The study employed a three step FGLS estimation procedure to estimate vulnerability to poverty and to predict the effect of household socioeconomic status on expected future consumption and analyze the variations in future consumption. The results of the study showed those, about 51 percent of households in Ethiopia are vulnerable to poverty that is significantly higher than the current poverty level of about 29 percent. While the Northern and the southern regions have the highest average vulnerability of approximately 52 percent, Oromia region has 49 percent vulnerability to poverty ratio. Household size, possession of livestock, farm size, and off-

farm income, amount of rainfall, and basic goods and services received are the variables that significantly impact vulnerability to poverty. The analysis of the studies showed that, among the 376 sampled households in the rural villages of Ethiopia, 49 percent households are found to be poor while 51 percent of the households were non-poor. Thus 49 percent of the sampled households could not get the minimum recommended calorie level i.e. 2200 Kcal/adult per day from incomes generated by agricultural activities. The findings from this study suggested that vulnerability to poverty arise as a result of community level characteristics, and household characteristics. As a result, while 51 percent of the Ethiopian population is poor, of which the majority of these i.e. 80 percent are vulnerable to poverty and 52 percent of the non-poor will be expected to slip into poverty at least one period ahead i.e. 47 percent of the population. The findings of the studies also suggested that more than two-thirds of the population is vulnerable to poverty in the future.

Kimani *et al.* (2015) studied on the assessment of rural communities to environmental changes in mid-hills of Himachal Pradesh in India. The study was conducted by carefully selecting the indicators of exposure, sensitivity and adaptive capacity of environmental changes. The indicators were weighted using Principal Component Analysis (PCA). The result showed the highest weight was included on historical changes in climate (1.00), share on non natural resources based income (0.98) and physical assets (0.74) among the indicators of exposure, sensitivity and adaptive capacity respectively. It was cleared from the study by the inter-block analysis of the vulnerability index that households located away from the district headquarters had higher level of biophysical and socio-economic vulnerabilities than the households those are near to the district headquarter because these households have reliance on natural resources which can impact ongoing environmental changes.

Mutabazi *et al.* (2015) assessed the determinants of poverty and vulnerability of smallholder farmers in a changing climate in the case of Morogoro region of Tanzania. The results of the study indicated that income poverty was prevalent in the study area based on a daily income per capita poverty line of US\$ 1.25. The income poverty was relatively higher in agro-climatically less-favorable area than in favored areas. Over three quarters of the sample households were vulnerable. The pattern of future vulnerability tended to overlap with poverty rates. Ageing of the household head tended to increase the level of vulnerability. Large-sized households were more income-poor than their

counterpart small-sized households. Farming experience reduced the probability of future vulnerability. Increased farm size enhanced the level of income and further increase in farm size reduced future vulnerability. Higher income contributed to wealth formation through improved access to assets and housing amenities.

Cameron (2016) studied the urban infrastructure and household vulnerability to food insecurity in Maputo, Mozambique. In Maputo, the households in the formal areas tend to have a greater access to both social and physical infrastructure, while households in the informal areas tend to have reduced access to both. This lack of household access to social and physical infrastructure increases a household to be food insecure. This study used household survey data collected from 2071 households in Maputo. The results of the study demonstrated that households with inconsistent access to infrastructure have greater chance of being food insecure. Though there has controlled on income level, the presence of chronic illness, household size, dwelling informality and the gender of the household head but there has no sign to become food secure. Inconsistent infrastructure access as a determinant of household vulnerability to food insecurity which is the main subject of this study. This investigation also showed that, in addition to low household income there are other ways in which a household can be vulnerable to food insecurity in Maputo. The conclusions of this case study demonstrated that the potential importance of pro-active urban planning can limit the potential vulnerability of future urban households to food insecurity in Maputo.

2.3 Knowledge gap

There are no specific researches on income vulnerability of tea workers. Keeping in mind the gap, the present study sets two objectives of vulnerability. There are various researches on educational vulnerability, vulnerability to poverty, vulnerability to climate change etc. But there is a very limited research on vulnerability to income especially on tea garden workers. Income is an important factor that affects the standard of living of people. But the wage of tea garden workers is very low in present situation. By the susceptibility measurement of wage, it is possible to know why the people of tea workers are vulnerable to income, why they are not involved in other occupation besides working as tea workers. For these reasons, the researcher was interested to conduct study on the income susceptibility of tea garden workers.

CHAPTER 3

RESEARCH METHODOLOGY

Research Methodology is a way to find out the result of a given problem on a specific matter or problem that is also referred as research problem. In methodology, researcher uses different criteria for solving the given research problem. Different sources use different type of methods for solving the problem.

According to Goddard & Melville (2004), "answering unanswered questions or exploring which currently not exist is a research". The Advanced Learner's Dictionary of current English lays down the meaning of research as a careful investigation or inquiry especially through search for new facts in any branch of knowledge. In research methodology, researcher always tries to search the given question systematically in our own way and find out all the answers till conclusion (Industrial Research Institute, 2010). This chapter describes the research methodology of the study. It gives the clear idea about the study design, data sources and collection method of the study and also deals with the analytical techniques for the study. In analytical techniques both descriptive statistics and econometric approach were used. The following steps were used to conduct the study.

3.1 Research design

A research design is the plan of a research study. In fact, the conceptual framework that guides research is known as research design, and it serves as a guide for data collection, measurement, and analysis. The function of the research design is to insure that requisite data in accordance with the problems. In order to accurately examine the cause and effect relations between the variables and to provide an answer to the research questions, a plan for the research design is necessary. The research design of the study includes study area selection, sample size, preparation of survey schedule, and time frame of data collection, data collection method, and processing and tabulation of data. The study design of the research is discussed below:

The process of this research is illustrated in the following figure:

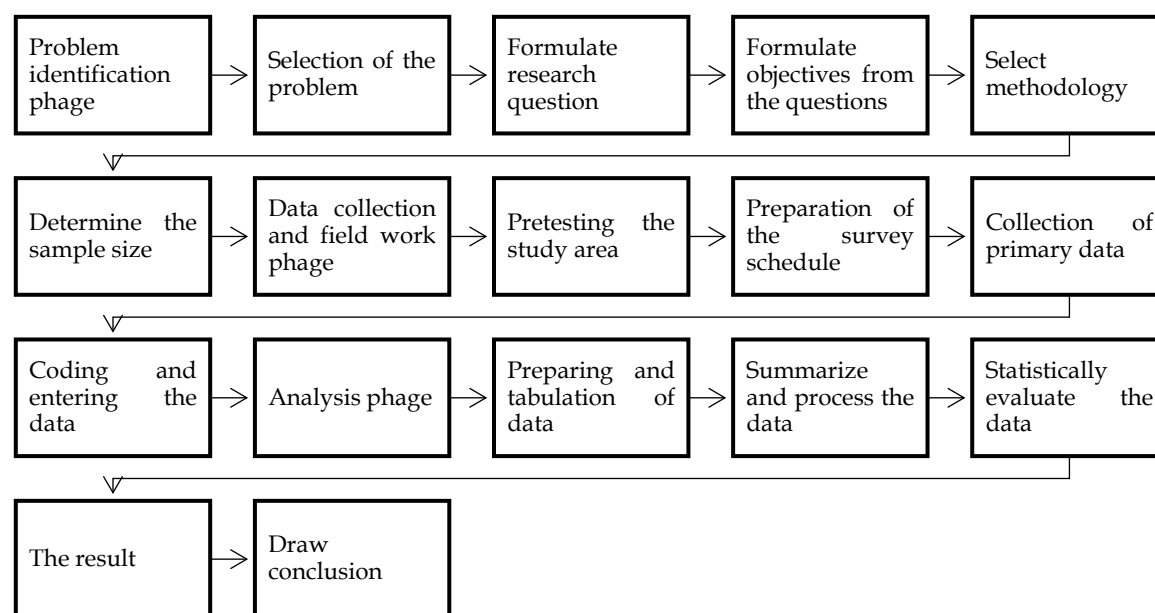


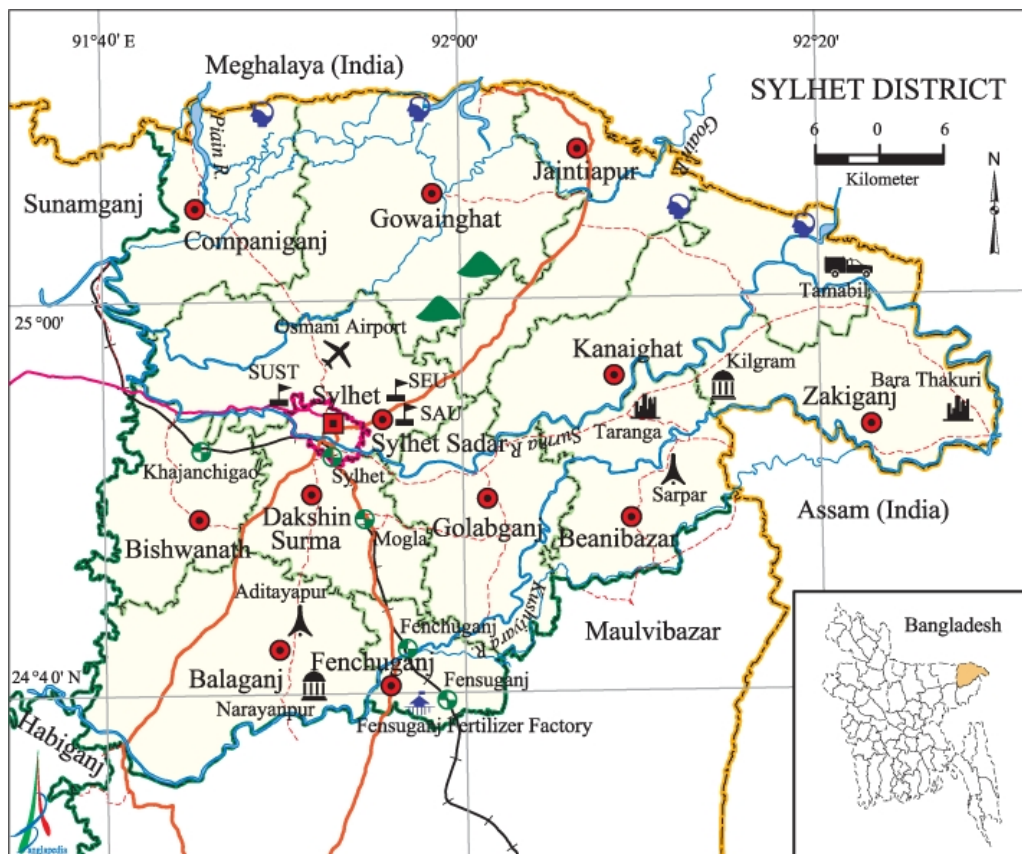
Figure 3.1 Research Design

3.1.1 Selection of study area

Sylhet district has selected for the study as most of the tea production is generating from Sylhet. Sylhet district situated in northeast Bangladesh, is one of four districts in the Sylhet Division. Its boundaries are as follows: the Indian state of Meghalaya to the north; the districts of Sunamganj and Habiganj to the west; the Maulvibazar district to the south; and the state of Assam to the east. The total area of the district is 3452 sq. km. The district lies between 24° 36' and 25°11' north latitudes and between 91°38' and 92°30' east longitudes (District Statistics, 2024). It has total population are 3232834, male 1626947, female 1605887 (Banglapedia, 2024). A preliminary household's survey was conducted to get a clear idea about the research area.

Two tea estates namely "Lakkatura Tea Estate" and "Malnicherra Tea Estate" of Sylhet zilla were chosen for the thesis work. These two gardens were selected because these gardens would represent the objectives of the study. The main reasons behind the selection of the two tea estates were:

- i. expected number of respondents was found from these two tea estates;
- ii. this type of study was not carried out previously in these tea estates;
- iii. easy accessibility to the respondents for the collection of reliable data.



Map 3.1 Map of the Sylhet District

Source: Banglapedia, 2024

3.1.2 Data source and collection method

3.1.2.1 Sample size

Selection of sample size is an important step in study design. In order to get accurate result it is important to select a good number of sample sizes. The sample size should be large enough to cover the objectives of the research. It should be large enough to allow for adequate degrees of freedom in the statistical analysis. The researcher used purposive random sampling to achieve the ultimate objectives of the research. The researcher selected a sample size of 50 households randomly from the selected tea gardens to fulfill the objectives of the research. The selected two gardens were near to Airport Road under the Sylhet zilla.

3.1.2.2 Preparation of the survey schedule

The next step of research design is the preparation of survey schedule. For the conformation of the objectives of the study, a draft survey schedule was prepared in such a way that all the information related with the income of tea workers which can create

income vulnerability of tea workers could include in the questionnaire. In order to get all information about the tea garden workers, a set of interview schedule was prepared to pretest the schedule. Then the unrelated information was omitted from the schedule to collect the important information which is helpful to get accurate result. Thus the draft schedule was improved, rearranged, and modified in the light of the actual and practical experiences. After making necessary adjustments, a final survey schedule was prepared. The final interview schedule included the information such as identification and demographic profile of the tea garden workers, assets, access of basic facilities, credit, consumption, expenditure, income of tea workers, access to insurance, access to health services etc.

3.1.2.3 Period of data collection

From 50 respondents data was collected in the month of February in every Sunday because the workers stay busy in other days of week. Sunday is the leisure day of their work.

3.1.2.4 Method of data collection

Method of data collection is also important to collect accurate information from the respondents. In order to get accurate data, it is important to communicate freely with the respondents. In the research, face to face interview was used to collect data. On the prior of asking questions, the main goal of the research was clearly outlined to the tea workers. At first, they feel hesitate to answer the questions. They did not want to give answer because they think it will not be benefited for them. But when the researcher understood them about the purpose of the study, then they co-operated researcher to give answer. The questions were asked systematically and explained the questions whenever it was felt necessary. After the end of the interview, the answers were checked to ensure that the answers of all questions recorded properly.

3.2 Analytical framework and tools

The analytical method is a generic process combining the power of the scientific method with the use of formal process to solve any type of problem. Five main parts make up an analytical framework: a variety of instruments, a collection of practical solution patterns, one or more model forms, a variety of research strategies and competencies, and approaches for organizing complicated data. Conventional descriptive statistics such as mean, average, percentage and graphical analysis were used to examine the different

attributes of the sample workers to document the socio-economic profile of tea workers. Multiple regression model was used in the analysis part.

3.2.1 Determinants of vulnerability

Based on the previous literature, the following variables were identified.

3.1 Name of the Variables:

Variables	Type	Description
Dependent Variables		
- Income Vulnerability	Continuous Variable	In this work vulnerability of income is the dependent variable which is dependent on various independent variables.
Independent Variables		
- Gender	Dummy Variable	1 if the worker is male, 0 otherwise.
- Age (Year)	Continuous Variable	Age of the tea garden workers in years.
- Education (Year)	Continuous Variable	Total completed year of schooling of the workers.
- Family Size	Continuous Variable	The number of family members.
- Expenditure (Taka)	Continuous Variable	Expenditure of the workers in Taka.
- Value of Physical Asset	Dummy Variable	1 if the workers avail the physical asset, 0 otherwise.
- Value of Livestock Asset	Dummy Variable	1 if the workers can avail the livestock asset, 0 otherwise.
- Credit Access	Dummy Variable	1 if the workers get credit facilities, 0 otherwise.

3.2.2 Analytical Technique

Multiple regression model has used here. Multiple regression models are widely used in social science research, mainly for two purposes: prediction and effect estimation. Various strategies have been recommended when building a regression model:

- use the right statistical method that matches the structure of the data;
- ensure an appropriate sample size by limiting the number of variables according to the number of events;

- c) prevent or correct for model overfitting;
- d) be aware of the problems associated with automatic variable selection procedures (such as stepwise), and
- e) always assess the performance of the final model in regard to calibration and discrimination measures. If resources allow, validate the prediction model on external data.

Multiple regression is a statistical technique that can be used to analyze the relationship between a single dependent variable and several independent variables. The objective of multiple regression analysis is to use the independent variables whose values are known to predict the value of the single dependent value.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \dots \beta_n X_n + \epsilon_0 \quad \dots\dots\dots(1)$$

$$Y_{\text{Income Vulnerability}} = \beta_0 + \beta_1 \text{Gender} + \beta_2 \text{Age} + \beta_3 \text{Education} + \beta_4 \text{Experience} + \beta_5 \text{Family size} + \beta_6 \text{Expenditure} + \beta_7 \text{Physical asset} + \beta_8 \text{Livestock asset} + \beta_9 \text{Credit access} + \epsilon_0$$

ϵ_0 = Error Term

Here Y is the dependent variable, and $X_1, \dots, X_n$ are the n independent variables. In calculating the weights, $\beta_0, \dots, \beta_n$, regression analysis ensures maximal prediction of the dependent variable from the set of independent variables. This is usually done by least squares estimation.

CHAPTER 4

RESULTS AND DISCUSSION

4.1 Socio-economic profile of tea workers

Socio-economic factors play a crucial role in determining how a society behaves. The community's behavior is determined by several criteria, like age, education, experience, credit availability, training acquired, etc. Every person's decision-making would be impacted by their characteristics. The selected tea garden workers condition was also same as others tea garden workers. Their future is linked to the huts they have constructed on the "labor lines". They still exist as individuals with no agency or right to own property (Hussain, 2015). Although the tea garden people are hindu in religion but they are untouchable from other Bengali hindu community. They treat them as lower people. The people who lived in tea garden were called "Adibasi". Most of the people were hindu. In the selected tea gardens, small numbers of people follow muslim religion. They are ethnic community and socially excluded from the other community people. For these reason, socio-economic background of the selected sample workers particularly age, education of the household head, income and expenditure of the family, employed and unemployed members of the family, family size and composition, living condition, sanitation facility, medical services, households with access to credit, access to electricity or solar energy and access to mobile phone etc. are discussed in this chapter.

4.1.1 Gender distribution of tea garden workers

In the selected tea gardens, there was higher number of female workers than male workers who worked in tea garden. Maximum male members of the households engaged them in pineapple garden for their income generating activities. In the selected 50 households there were 31 female workers i.e. 62 percent of total sample workers and 19 male workers which was 38 percent of selected workers. From the calculation it was clear that the percentage of female workers in these tea gardens was larger than the male workers. The number of female workers was double than the male workers.

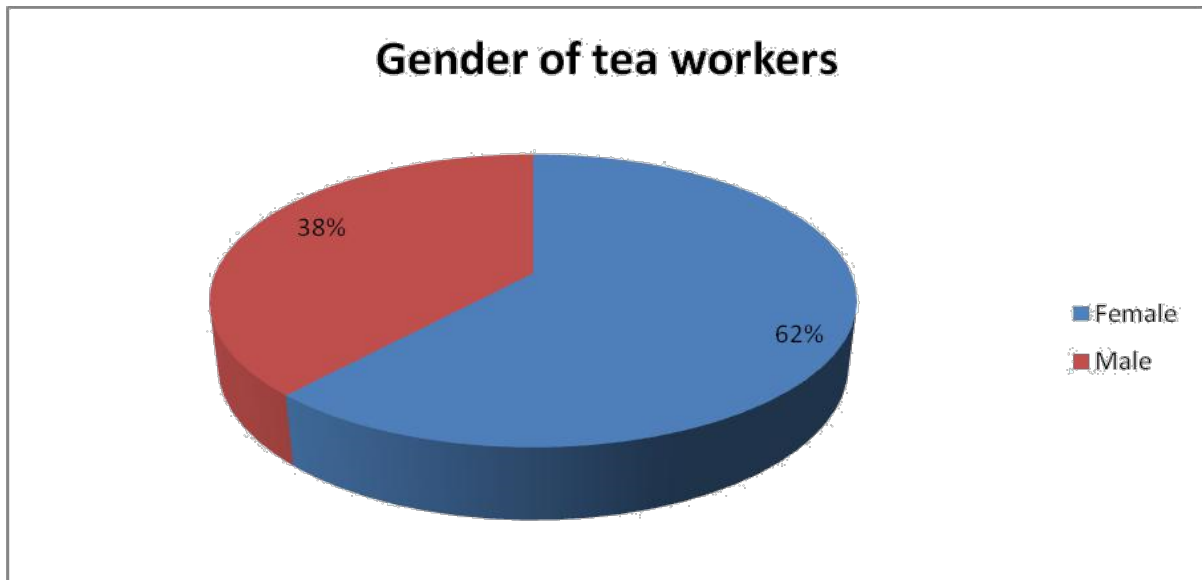


Figure 4.1 Gender distributions of the respondents

According to World Population Report, UNFPA (2023), the national percentage of Bangladesh of female and male was respectively 50.43 percent and 49.51 percent. In the selected tea gardens there were a larger number of female workers than the national average. On the other hand, the percentage of male workers in the particular tea gardens was lower than the national average.

4.1.2 Age distribution of tea workers

There were different age groups of workers in the particular sample workers for the study. In this study, the research area's tea garden employees were divided into various age groups. The range of ages of the workforce was 25 to 62. The workers were divided into four groups based on their which were 0 to 14, 15 to 49 and 50 to 59 years and above 60 (Health Bulletin, 2020).

Table 4.1 Age distribution of selected tea workers

Age group (Years)	Number of workers	Percentage of workers (%)
0-14	0	0
15-49	43	86
50-59	3	6
>60	4	8

Source: Author's estimation based on field survey, 2024

From the above (Table 4.1), it was estimated that among the picked samples majority of the tea garden workers i.e. 86 percent were from the 15 to 49 years age group. The national average of this age is 54.9 percent (Health Bulletin 2020, 2022). So, there were the most workers between this age group (i.e. 15 to 49) than the national average. From the table it was estimated that there was no workers between the age group of 0 to 14 years. Among the selected tea garden workers 6 percent were in the age group of 50 to 59 years and only 8 percent were in above 60 year age group. According to Health Bulletin 2020 (2022), the national average of the age group 50 to 59 years and above 60 years is 8.7 percent and 8.3 percent respectively. In the selected area there was highest number of workers between the age group 50 to 59 years than the national average and the workers above 60 years were less than the national average.

4.1.3 Family size of tea workers

Family size is the number of people that reside in the same home. Family members are those who are thought to live together permanently. From the selected households, the highest number of family members is 13. Maximum number of families has 7 members. For this study researcher categories family size into three groups. Three groups were small, medium and large. Small family size was up to 4 members, medium family was from 5 to 6 members and large family was above 6 members.

Table 4.2 Family size of tea workers

Family size	Number of household	Percentage of member
Small (up to 4 members)	14	28
Medium (5-6 members)	10	20
Large (above 6 members)	26	52
Total	50	100

Source: Author's estimation based on field survey, 2024

From the above table 4.2, most of the household are large, like, 52 percent of family were large. 20 percent of the household were in medium range, and 28 percent were small family (Figure 4.3). In the selected households it was understood that, there was a very small number of medium family. The national mean household size is 4.3 (Health Bulletin, 2020). The studied households had an average family size of 6, which was greater than the national average.

4.1.4 Educational status of tea workers

Educational statuses of the two tea gardens were also low as other tea gardens. Tea workers wanted to work in tea garden at heredity. Laborer's children become laborer traditionally. They did not want to send their children in school because they thought that if their children work in tea garden it will be supportive for them to maintain their life. It was very rare that their children had passed secondary school. Maximum household had children's who did not complete primary education. In the two gardens literacy rate was very low. Most workers often could signature only. But maximum portion of workers were illiterate. There was one government primary school but no high school in the boundary of tea garden. One high school named "Bhunabir Dasarath High School" in this village but it was too far from the tea gardens. The selected two tea gardens, one was adjacent to another. A local non-government organization "BRAC" ran a school in this village. When the researcher visited the tea gardens tea workers said that they want to send their children in school but the educational cost was not in their capacity. They were low earners, so their main attention was on the earnings. In present situation it was difficult to maintain their normal life with this earning. For these reason the workers were eager to send their children in tea garden.

Table 4.3 Educational status of tea workers

Educational status	Number of respondents	Percentage (%)
Illiterate	41	82
Primary	09	18
Secondary	0	0
Total	50	100

Source: Author's estimation based on field survey, 2016

In the above figure 4.3, 18 percent of the respondents had passed primary, 82 percent were illiterate and only 0 percent had passed SSC and HSC. The national literacy rate of Bangladesh is 75.6 percent (Health Bulletin, 2020). The overall literacy rate in the chosen study area was 18%, less than the average for the country. 9 had passed the boundary of primary level. Maximum workers were study almost up to class two or three. But the illiteracy rate of the study area was also high i.e. 82 percent which is far from the literate percentage.

4.1.5 Employed members of the selected households

Family members in the household are now engaged in different occupation. But in the selected tea gardens most of the family members were engaged in different occupation of tea garden. Maximum employed members in the selected household were worked as tea workers. Other household members of the family were depended on these employed members. In the selected tea gardens, there was no households those had no employed members (Table 4.4). The selected households have 5 one employed members. The number of households with two employed members and three employed members was 16 i.e. 32 percent and 17 i.e. 34 percent of total selected 50 households.

Table 4.4 Employed members of the selected households

Determinants	Number of employed members	Percentage (%)
Employed members = 0	0	0
Employed members = 1	5	10
Employed members = 2	16	32
Employed members = 3	17	34
Employed members > 3	12	24
Total	50	100

Source: Author's estimation based on field survey, 2024

The national percentage of employed members in Bangladesh is 60.80 (Bangladesh Economic Update, 2023). In the particular families of the tea gardens, the employment percentage was 45.72 which is close to the domestic percentage. Therefore, the tea garden worker's situation of employment was excellent. However, every household member was employed as a tea worker.

4.1.6 Unemployed members of the selected households

In the selected tea gardens, there were 0 households with no unemployed members mean that these households did not have any unemployed members. And 0 percent of total households had no unemployed members (Table 4.5).

Table 4.5 Unemployed members of the selected households

Unemployed members in households	Number of unemployed member households	Percentage (%)
No unemployed member	0	0
Two unemployed members	17	50
Three unemployed members	13	8
More than three unemployed members	20	0
Total	50	100

Source: Author's estimation based on field survey, 2024

In the particular households of the tea estates, 54.28 percent members were unemployed. The national percentage of the unemployed members is 4.67 percent (Bangladesh Economic Update, 2023). The calculated percentage of unemployed members was higher than the national percentage.

4.1.7 Living condition of tea workers

Living conditions of tea workers were mostly miserable. Most of them have 2 rooms to live with a crowding situation as that sometimes people and livestock's were lived in same single room. As though the living houses were provided by the employers, it was very hard to stay all family members in one or two room.

Table 4.6 Living condition of tea workers

Living condition	Number of the household	Percentage (%)
Miserable	35	70
Very miserable	15	30
Total	50	100

Source: Author's estimation based on field survey, 2024

In these tea gardens a single house was provided by the company. If there was needed any repair of their house, the laborers had to repair themselves. Employers provide the essential materials for constructing house.

Permanent workers got one house consisting of two rooms. All houses in the selected two tea gardens were constructed with mud. The workers had to construct the house. They could try to construct extra house for their children by getting permission of the

employers. According to Bangladesh Labour Act (2006), made an order to employers to ensure that all workers and his family residing in tea plantation are provided housing facility.

There is a huge gap between law and practice in tea workers shelter support from employer's side. Following the order of Bangladesh Labour Act (2006) and Bangladesh Cha Sramik Union fix a complete housing facility for every permanent workers of the estate in their agreement. But still many permanent workers need to build their own house. Also, maintenance service of workers shelter was very poor in these tea estates.

4.1.8 Wage earnings and working hour of the tea garden workers

The main sources of livelihood of the selected tea gardens were wage and rationing. But all workers did not get ration. There were two types of workers are in these tea gardens. One was temporary workers and the other permanent workers. Permanent workers got all types of facilities from the company but temporary workers were not got all facilities. Permanent workers wage rate were different from the temporary workers. Ration was not got by temporary workers. But very small amount of ration was provided. The ration amount was 3 Kg flour per week and had to pay 10 Tk for this. The wage amount was also very low to maintain their normal life. The workers of the selected tea gardens got 170 Tk by plucking 23 Kg leaf in the both Tea Estates.

4.7 Wage earnings and working hour of the tea garden workers

Wage earning	Amount in Tk.	Working Time	
Avg Daily	282.4		8 hr
Avg Monthly	11001		6 days/ week

Source: Author's estimation based on field survey, 2024

In both tea gardens, extra amount was paid per Kg for the extra plucking of leaf. This rate was 5 Tk per Kg. The working hour of these tea gardens was almost 8 hours. They also worked overtime to earn extra amount of money. But in Bangladesh Labour Act 2006 does not permit any workers to work more than eight hour in a day and order to pay a double rate for working overtime to workers. But unfortunately this was not occurred in these tea estates. On the other hand they had no land of their own. They got land from the employers to build their house. But there had no facility to get land for engaging them in other agricultural activities. So their income was very poor to maintain their normal livelihood pattern. In the selected tea garden workers, the average monthly

income was Tk 11001. But the national average of monthly household income is Tk 32422 (BBS HIES, 2022). There is a big gap between the calculated average income of tea workers and the national average monthly income. For mitigating this huge gap they regularly borrow money from different sources like NGOs.

Tea workers, those who were working at bungalow or as a car driver of tea garden manager, got more due to their working time was above 9 hours. Main duties of laborers were plantation, leaf plucking, withering green leaf; varieties plant nursing, drain and road working, cleaning, jungle cutting, weeding, spraying pesticide, herbicide, weedicide etc. They could not grow other crops because they had no own land. They could grow vegetables in their homestead area as a support to reduce their consumption expenditure. But the soil of tea gardens was not suitable to grow other vegetables. So they were fully depended on the vegetables of market.

4.1.9 Monthly household expenditure of tea workers

Household expenditure is depended on the income. If the income is high then the households will be able to expense higher amount. But the income of tea workers of the selected tea gardens was very low to expense higher amount.

4.8 Monthly household expenditure of tea workers

Category	Amount (Tk)
Avg food expenditure/month	11304
Avg non-food expenditure/month	5995
Avg total household expenditure/month	17299

Source: Author's estimation based on field survey, 2024

Average monthly expenditure in the selected tea gardens was 17299 Tk. This amount was very low to maintain their expenditure. So they always suffered from various problems in their life due to low income. Even they were always needed to take loan to meet their normal needs of life. According to Health Buletin (2020), the national average of monthly expenditure is 31500 Tk. But the average monthly expenditure of the sample tea workers was 17299 Tk which was very low from the national average. It is very hard to maintain their normal daily consumption with this expense.

4.1.10 Monthly household food expenditure of tea workers

By talking with the workers of the tea gardens, it was clear that the households took only vegetables with rice in a very lower amount. Among the vegetables they took potato maximum time because the price of potato is lower than the price of others vegetables. One or two times of a week they took lentil and some week they couldn't add lentil in their daily meal. So the workers suffered from protein deficiency. They were not able to buy fish from the market. They hardly took meat in a month. Sometimes they caught fish from the near channel. Some households reared poultry in their house and then they could take meat. From table 4.8, the average of the monthly expenditure on food of the selected households was 11304 Tk. According to Health Bulletin (2020), the national average of the monthly expenditure on food is 14009 Tk. The calculated average of the selected households was low than the national average. It is very hard to maintain their nutritional requirement to stay healthy. The per capita calorie intake in a day is increased by 3.2 percent from 2,318.3 kcal to 2393 kcal in 2022 (BBS, HIES, 2022). From the data which was collected from the two tea estates, we got that the tea garden family members got 352 kcal per day which is too low than the national standard which is 2393 Kcal per day which means the workers cannot maintain their per day calorie requirement. So, they suffered from malnutrition.

4.1.11 Sanitation facilities of tea workers

Sanitation facilities of the tea gardens were hygienic now. Though it was supposed sanitary latrine and other related activities to be constructed or maintained by the company but reality was different. The company constructed tube-well for the families. Most of the families collect water from these tube-wells. It was not too far from the families to collect water. Physically visiting it was found that company gives hygienic sanitation facilities.

4.9 Sanitation facilities of tea workers

Category	Amount	Percentage (%)
Hygienic	50	100
Non-hygienic	0	0

Source: Author's estimation based on field survey, 2024

4.1.12 Access to credit of tea workers

Though the wage was not sufficient to maintain all basic necessities of their life, maximum households of these tea gardens were depended on credit. The workers had access to NGOs but they do not take loan from bank. They said that they had no deposit with bank. The main reason not to have bank account was that the daily wages was not sufficient for their livelihood any more. Local NGOs are working in the selected tea gardens. Workers took credit from the NGOs. They paid their credit on weekly basis. The rate was different in two NGOs. They could take other loan before paying the total amount of previous credit. Then they paid the remaining amount of previous credit with the new loan amount. They also bought grocery items from the departmental store in debt. After getting the weekly wage then they repay the previous debt and buy the necessities items in debt again. By this way they maintained their life. About 12 percent of the respondents are using credit facilities.

4.10 Access to credit of tea workers

Category	Amount	Percentage (%)
Yes	26	52
No	24	48

Source: Author's estimation based on field survey, 2024

4.1.13 Medical services in the tea gardens

In the selected tea gardens, the estate bared a portion of any medical services. Even if any member of the family of tea workers needed any medical services then the estates gave a portion of this money in monetary term. There was a government community clinic in the tea gardens. The workers had the access in this clinic. But the services provided by the clinic were not satisfactory. Tuberculosis, leprosy and malaria are also common among tea plantation workers. A locally brewed alcohol known as *haria* is often consumed by both adult and young workers, who are oblivious of its adverse effects on their health. Though there had no MBBS doctor but the government employees namely "Health Provider" and "Health Assistant" were working there. 90 percent get the medical services from tea estate and 10 percent get it from outside.

4.11 Medical services in the tea gardens

Category	Amount	Percentage (%)
Bears	45	90
Not bears	5	10

Source: Author's estimation based on field survey, 2024

4.1.14 Households with access to electricity and solar energy

In the particular households of the tea gardens, most of the households had electricity facility. From the selected 50 households, 50 households had electricity. Previously it was too rare to get electricity facility.

4.12 Households with access to electricity and solar energy

Category	Amount	Percentage (%)
Electricity	50	100
No electricity	0	0

Source: Author's estimation based on field survey, 2024

4.1.15 Households with access to mobile phone and internet

In the selected area, among 50 households there were 47 households used mobile phone and the rest 3 had no mobile phone. Maximum number of households had mobile phone. The percentage of the households with access to mobile phone was 94 percent. The national average of households with access to mobile phone is 104.6 percent (Health Bulletin, 2020) which is higher than the percentage of the selected area. The percentage of households which did not have mobile was 6 percent. This number of households with access to mobile phone was higher than the households with no access to mobile phone. In the selected area, among 50 households, 37 members use internet and 13 does not use internet. The percentage of using internet is 74 which is much higher than the national percentage of using internet which is 38.9 percentage.

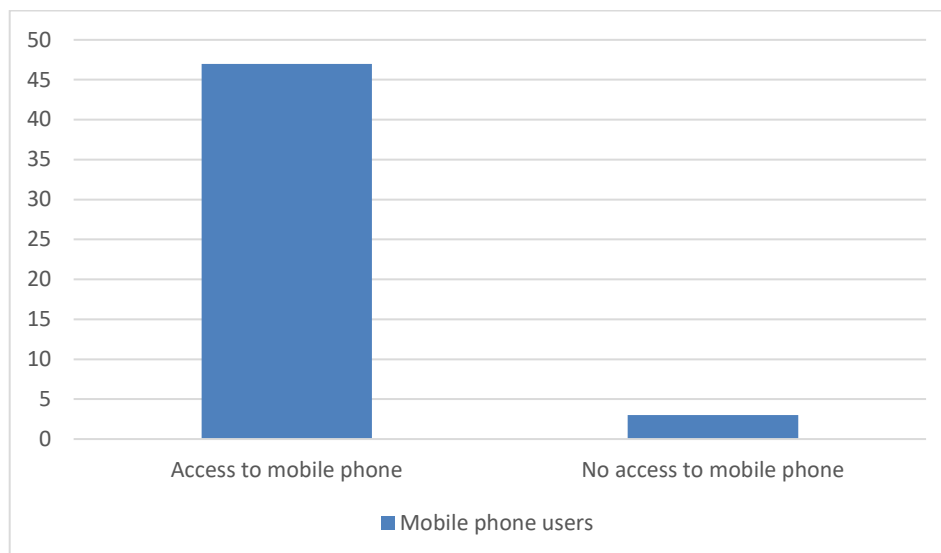


Figure 4.2 Households with access to mobile phone

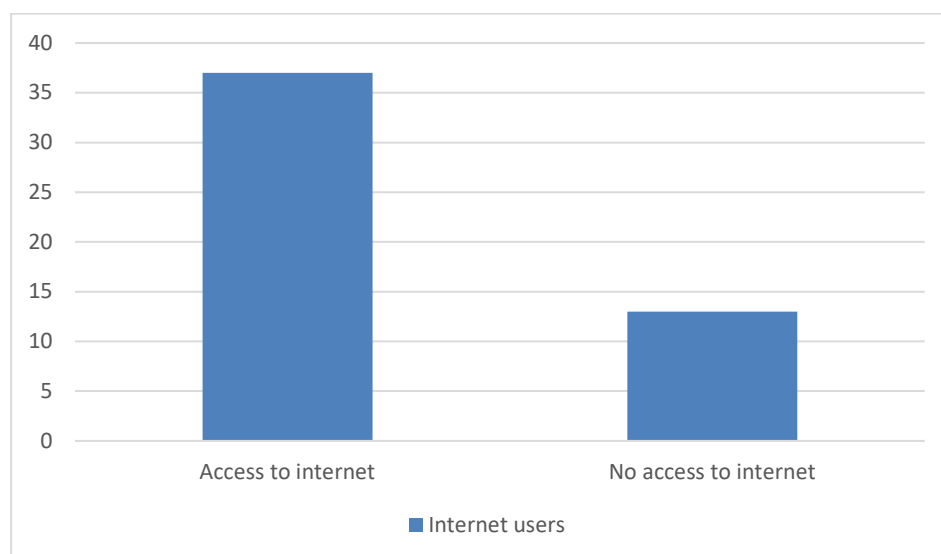


Figure 4.3 Households with access to internet

By assessing the selected tea gardens worker's socio-economic condition, it was clear that their livelihood condition was very miserable. They needed to fight in all situations to maintain their normal livelihood pattern. They were separated from the whole community of Bangladesh. For these reasons they were back warded from the improved socio-economic condition. The findings of the study indicate that the socio-economic profile differ from each other in respect of gender, age, family size, educational status, employed and unemployed members, monthly household income and expenditure, housing condition, sanitation facility, wage earnings, access to credit and medical services, access to electricity and mobile phone. The consequence of the work indicates that maximum numbers of tea workers in tea gardens were female. From the above

discussion it was clear that average family size of tea workers were lower than the national average and most of the workers were in middle aged. Monthly household income and expenditure were lower than the national average. Employed members of the households were near to the national average. But most family members were engaged in the tea garden. So their income was not satisfactory.

4.2 Income vulnerability of tea garden workers

The category of vulnerable tea workers to income such as relatively low vulnerable, low vulnerable, high vulnerable and very high vulnerable were calculated by the frequency distribution. The probability of tea workers become income vulnerable was presented in this chapter.

Income vulnerability is computed as the probability that the workers income will be less than the threshold level i.e. poverty line. The model was used as the basis for assessing income vulnerability of tea workers. According to the data of World Bank, 2016 the poverty line is \$1.9. This poverty line helped to describe the income susceptibility.

The calculation of frequency distribution was presented in table 5.2. Knowing the proportion of workers in each of the five categories who are financially vulnerable was helpful. The greatest number of workers were very vulnerable to drop into income vulnerability, meaning that the most frequency of high-vulnerability individuals fell into income weakness.

Table 4.13 Individuals category in to relative vulnerability group

Category of Vulnerability	Frequency	Percentage (%)
Relatively low	1	2
Low	04	8
High	45	90

Source: Own calculation from the vulnerability estimation, 2016

From the (Table 4.13), 90 percent of the workers in the sample as a whole were highly vulnerable to experiencing income vulnerability, which is defined as a vulnerability more than 0.5 or a probability of at least 50% to experience income vulnerability in the near future. This indicates that 90 percent of tea garden employees were more likely to

become financially vulnerable. Merely 8 percent of tea garden laborers were deemed lowly exposed to a decline in their wage.

1 percent of the employees fell into the category of quite low vulnerable. The greatest number of workers were highly vulnerable, meaning that their likelihood of experiencing income vulnerability was higher.

Md. Shafiul Azam and Katsushi S. Imai were studied on the vulnerability and poverty in Bangladesh in 2009. It was discovered by this study that there would be a far greater proportion of the vulnerable population in Bangladesh than there are already impoverished people. Total vulnerability was found to be 47.81 percent but the people who were in the current poverty around 39 per cent. So the people vulnerable to fall in poverty were higher than the current poverty. However, in this study of tea workers' income vulnerability, 96% of workers were extremely exposed to a decline in income susceptibility, which was twice as high as in the prior study. In the present study, there existed a higher probability of tea garden workers to become income vulnerable and only 5 percent had low vulnerability to fall in income susceptibility. In 2012, Md. Shafiul Azam and et.al. were also studied on the measuring household vulnerability in Bangladesh to idiosyncratic and covariate shocks. This study was found that rural vulnerability in Bangladesh was mainly poverty induced rather than risk induced. Around 78 percent of all vulnerable individuals were accounted for low expected mean consumption and only 22 percent of them were for high consumption volatility. Overall vulnerability in rural areas was 50 percent. This vulnerability level was smaller than the estimated vulnerability to fall in the income susceptibility.

4.3 Factors affecting income vulnerability of tea workers

Main purpose of this chapter is to define the causes affecting income susceptibility of the tea workers. The effect of the determinants namely gender, age, education, experience, family size, value of livestock, and physical resources, credit access and expenditure on the susceptibility of income were described in this chapter.

The framework in figure 6.1 recognizes the sensitivity of income vulnerability which is influenced by the exposures and this income vulnerability can reduce by taking some adaptive capacity of tea workers. The degree to which system components are likely to suffer harm as a result of exposures is known as income vulnerability and it can be

mitigated by the adaptive capacity (Figure 6.1). The exposures create sensitivity of income vulnerability. These exposures—gender, age, education, experience, size of family, and spending—make income vulnerability sensitive. The adaptive capability, such as the purchase value of physical assets, livestock assets, and loan availability, might lessen this kind of vulnerability. Tea workers are sensitive to various types of exposures based on their economic susceptibility. These conditions include both social i.e. access to credit and physical capital such as livestock assets and physical assets those influence the existing coping mechanisms, which take effect as the impacts of the exposure are experienced, as well as those coping mechanisms adjusted or created because of the experience. The affect of these factors of the tea garden worker's income susceptibility are discussed in this chapter.

Age, gender, experience, and education of the head of the families who works in the tea garden; household size, expenditure, purchase price of livestock assets, physical assets, access to credit, and expenditure of tea garden workers were utilized to find out the indicators of income susceptibility of tea garden workers.

Table 4.14 Factors that influence the income vulnerability of tea workers using regression model (Azam and Imai, 2009)

Variables	Coefficient	S.E	p-value
Gender (0/1 dummy)	- .004***	.001	-0.002
Age	0.00000675	.004	0.25
Education	.001***	.037	0.003
Experience	.00003	0.004	0.09
Family size	-.001 **	0.000	-0.04
Expenditure	-0.00000148 ***	0.000	-0.0001
Purchasing value of physical assets	-0.000000276	0.035	-0.29
Purchasing value of livestock assets	-0.0000000745 ***	0.041	-0.001
Credit access (0/1 dummy)	-0.000000236 ***	0.001	-0.002
R ²	0.62		

*** = 1% level of significant; ** = 5% level of significant; S. E= Standard Error

Source: Own calculation based on field survey data, 2024

The interpretation of the results of multiple regression model is discussed below:

At 1% level of significant, there is a significant but negative correlation between gender and vulnerability which means gender's impact may considerably reduce tea workers' wages. In the particular sample of tea workers, the proportion of female employees was highest. So, if female member increase in a household then economic vulnerability will decrease. As a result, households led by women were less vulnerable than those headed by men.

There is a positive correlation between age and vulnerability which means if age increases there is a possibility to fall in income vulnerability. It implied that if the age of workers increases then the income susceptibility will increase. Here, highest numbers of tea workers were young people. So, if the young workers will engage in other income producing activities then the individual will have the lower possibility to fall in income susceptibility.

At 1% level of significant, there is a significant and positive correlation between education and income vulnerability, which means, if degree of education increases then the income vulnerability increases. The family head's increasing degree of education will make them more vulnerable to changes in income. Even though very few of the laborers had formal education, they refused to leave the tea estate. As educated tea garden workers become tea workers generation after generation, they did not desire to participate in other income-generating enterprises. In order to raise their educational level, they had no encouragement to engage in other tasks.

There is a positive but insignificant correlation between experience and economic vulnerability which means the experience of tea workers did not significantly affect the tea workers to drop in income susceptibility. If the experience of tea workers rises then the income susceptibility will also increase. Because the experienced workers did not want to go to tea garden as they become old. It implied that they were willing to work less.

At 5% level of significance, there is a negative but significant correlation between family size and economic vulnerability which means, if family size increases then the income susceptibility reduces. The number of earning family members may rise with family size. The workers' susceptibility to income volatility will decline as a result of their expanded revenue source. The income vulnerability of large families is generally lower than that of small families.

At 1% level of significant, there is a significant but negative correlation between expenditure and economic vulnerability, which means, if expenditure or cost increases then the economic vulnerability decreases. They must find additional sources of money for them to continue with these higher expenses. Thus, income from different sources can lessen the vulnerability to changes in income.

There is a negative correlation between purchasing power of physical asset and economic vulnerability which means, if purchasing power of physical asset increases then the vulnerability of income decreases. Increasing their revenue will be beneficial for them. Having physical assets increases one's ability to adjust and lessens income vulnerability. At 1% level of significance, there is a negative but statistically significant correlation between purchasing power of livestock asset and economic vulnerability which means, if purchasing power of livestock asset increases then the income susceptibility reduces. By selling their holdings during difficult times, they can increase their capacity for adaptation and use the proceeds to adopt different coping mechanisms that lessen their reliance on income. By raising their income, it can assist tea workers in lowering their economic vulnerability

At 1% level of significance, there is a negative correlation between access of credit with economic vulnerability, which means, if access of credit increases then the economic vulnerability reduces. Taking out a loan from an NGO can reduce income vulnerability. It suggested that expanding credit availability will lessen tea workers' susceptibility to low-paying jobs

The R^2 value was 0.62 which means, 62 percent of the total variation may be elucidated by the explanatory variables.

CHAPTER 5

SUMMARY AND CONCLUSIONS

This chapter intends to provide summary of the whole study. In addition to this chapter will give some conclusions and recommendations of important findings of the study. This chapter combines all summary of review of the purpose of the study, restatement of the methodology, an overall discussion of result of the study. It also provides the limitation of this study. This will helpful for the further researchers to study on this research issue. From the experience of the study, further research agenda were discussed at the end of the chapter.

5.1 Summary of findings

One of Bangladesh's main sources of foreign exchange and income is the tea business. But the tea industry of Bangladesh in global context is insignificant. It is only 1.68 percent of the global tea production and 0.58 percent of the world tea export (Ali *et al.*, 2014). Due to their employment within the hierarchy, tea laborers comprised the majority of Bangladesh's tea gardening population. Their families have relied on tea estates for decades as their primary source of income, and they are landless (ILO, 2015). But these tea workers communities are one of the most vulnerable people of Bangladesh (Islam *et al.*, 2015). Sylhet, the northeastern region of Bangladesh, is major tea-producing area of the country. In this division, Sylhet is another major tea producing district. Therefore, Sylhet district was selected to study for income vulnerability analysis. For these reason, two tea gardens of this zilla were randomly chosen for the study.

This study assessed the income vulnerability of tea garden workers of the particular two tea gardens. An assessment of vulnerability is necessary and desirable not only because vulnerability is an inherently important dimension of well-being, but also because such an assessment serves other important instrumental functions. It also informs the design of income vulnerability reduction strategies (Chaudhury, 2003). Addressing vulnerability also has instrumental value. Because of various exposures, the household experience a wide range of income vulnerability. By surveying 50 households of the selected tea gardens, it was clear that why the households become more vulnerable due to their income. The factors which affect the tea workers income were also illustrated in this study. This chapter provides the effect of the determinants of the tea estate workers which affect them to fall in income susceptibility.

Therefore, this study was undertaken to assess the income vulnerability of tea garden workers. The research has the following goals:

- i. To document the socio-economic profile of tea workers
- ii. To assess the income vulnerability and its associated factors of tea garden workers

The socio-economic profile of tea workers in this study was documented. The results of the study documented the livelihood status of tea garden workers of the particular tea gardens and the findings are as follows:

Tea garden workers are hindu in religion but they are untouchable from other Bengali hindu community. They treat them as lower people. The people who lived in tea garden were called “Adibasi”. Most of the people were hindu.

There was higher number of female workers than male workers who worked in tea garden. In the selected 50 households there were 31 female workers i.e. 62 percent of total sample workers and 19 male workers which was 38 percent of selected workers.

Age variation of the tea garden workers was from 25 to 62 years. Based on the age, the tea workers were categorized by 4 groups and the groups were 0 to 14, 15 to 49 and 50 to 59 years and above 60 (Health Bulletin, 2020). From the result, it was estimated that family size of workers was not very large. Maximum family has 7 members. 86 percent of workers were belonged to the age group of 15 to 49 years and 6 percent were in the age group of 50 to 59 years and only 8 percent were in above 60-year age group. The highest numbers of family members in the selected tea workers were 13 and maximum number of families has 7 members. There were three categories of family namely small, medium and large. Most of the household were large like, 52 percent of the families were small in category. Therefore, 20 percent of the households were medium and the rest 28 percent were small family.

In the educational status, from the 50 respondents of tea workers, only 18 percent had passed primary level, illiterate was 82 percent and none had passed secondary level.

From the particular tea gardens, no households had found who had no employed members. The selected households had 10 percent one employed members. The number of households with two employed members and three employed members was 32 percent and 34 percent of total selected 50 households respectively. On the other hand,

there were 45.7 percent of total households had no unemployment and 54.3 percent members were unemployed.

The income of tea workers was very poor to maintain their normal livelihood pattern. In the particular workers of tea garden, the average monthly household's income was Tk 11001. But the tea garden worker's income of the particular tea gardens was very low to expense higher amount. Average monthly expenditure in the particular households of tea estates was Tk 17299. On the other hand, the average monthly expenditure on food of the selected households was Tk 11304.

Living condition of tea workers was miserable. Although the house for living was provided by employers but this was not enough for the tea garden workers. The house is very small in size and sometimes people and livestock's are lived in same room. So they lived in very unhygienic condition. Maximum households had electricity.

The wage amount was not very much deferred from the other tea gardens. The workers of the selected tea gardens get 170 Tk in 23 Kg in both tea estates. In both tea gardens, extra amount is paid per Kg for the extra plucking of tea. Some workers were permanent and some were temporary.

Sanitation facilities of the tea gardens were mostly hygienic. Though it is supposed sanitary latrine and other related activities to be constructed or maintained by the company. They used very unhygienic latrine and some also did not use latrine. For these reason their health condition was very poor and they suffered from various diseases. There was a tube-well for 15-20 families but these were far from other families. So it was very hard to collect water from this distance place.

Maximum households were taken loan from NGOs. They paid their credit on weekly basis. They can take other loan before paying the total amount of previous credit. Then they pay the remaining amount of previous credit with the new loan amount.

There was a government community clinic in the tea gardens. The workers had access in this clinic. This clinic gives all types of medical services themselves needed. Workers get all types of medicine from this clinic. But for any serious disease they did not get enough services from the community clinic. For these reasons they are needed to go in Sylhet zilla Hospital.

Most of the families had electricity. From the selected 50 households, 50 households had electricity. Among 50 households there were 47 households used mobile phone and the

rest did not have mobile phone. 37 from the 50 respondents had internet facilities and rest 13 persons had not internet facilities.

The second objective of the work was to determine the income vulnerability, which was calculated by the STATA software. For estimating income susceptibility, considerable household idiosyncratic features age, education, gender, family size, and experience were examined. Multiple regression model was used in this study. The household idiosyncratic features of the tea garden workers had positive impact on the income but age and education had negative relationship with the income of them.

Among 50 workers, 90 percent were in the category of high vulnerability, 8 percent were in low vulnerability and about 2 percent were in relatively low vulnerability.

On the other hand, second objective was to identify the associated factors of income vulnerability. The impact on the worker's income to become vulnerable and their adaptive mechanism to overcome these conditions were found in the result of the objective. In the model as adaptive capacity, gender, education, age, experience, family size as well as expenditure, livestock and physical assets, and credit access were included. In this portion, some variables had significant effect and some had insignificant effect on the workers income vulnerability. gender, education, age, experience, family size as well as expenditure, livestock and physical assets, and credit access had noteworthy impact on the tea workers income susceptibility. The variable family size was significant at 5 percent level and others variables gender, education, expenditure were significant at 1 percent level. These variables were used as exposures to sensitive in income susceptibility. On the other hand, in the adaptive capacity, purchasing value of livestock assets and credit access were significant at 1 percent level those affect the tea workers to fall in income susceptibility.

5.2 Conclusions

Based on the findings of the study of the tea garden worker's income susceptibility, it can be concluded that the workers were in income vulnerable situation. The socio-economic conditions of workers were very miserable. Their income was very low to maintain a minimum livelihood pattern. The educational status, living condition, and sanitation facilities, medical services etc. were very miserable in the tea gardens. The workers' vulnerability to a decline in income was very significant. They were more likely to become vulnerable due to their income. The determinants have a noteworthy impact on the susceptibility of tea workers' income.

Certain characteristics that expose people to income vulnerability are included in the elements of income susceptibility. These variables may have an impact on tea workers' pay, which may lead to their being more financially vulnerable. The exposure variables that significantly impacted the income susceptibility were education, gender, family size, expenditure. Compared to households headed by men, those headed by women were less susceptible to changes in income. Thus, the income vulnerability might be decreased by the female employees in the tea plantations. However, as a capacity for adaptation, acquiring livestock and physical assets with having credit access might lessen the tea worker's income susceptibility. Hereafter, the tea workers' ability to adapt can lessen their susceptibility to exposures that impact their income. It may be suggested to implement certain policies to enhance their standard of living and raise their income in order to lessen income vulnerability.

5.3 Recommendation from the findings

From the findings of the study, it was concluded that the tea workers of the selected tea gardens were most vulnerable to income. The result of the study concluded some recommendation for the tea workers:

1. From the analysis, we got that average number of age is 39 years of old and this is young age group. They are strong to do any kind of work. To enhance their income and to reduce their economic vulnerability, we need to encourage them to work in extra platform or other income generating activities besides working in tea garden.
2. We have seen that, there is a negative correlation between livestock asset acquisition with economic vulnerability. So, if we can encourage them to have

more livestock asset and rare more, then they get extra income to mitigate their dearth. Besides these, technical training facilities can also be generated for the tea workers especially for the women workers such as tailoring, cloth waving etc to make them more empower.

3. Medical services as well as sanitation and drinking water facilities should be improved by the employers. The services provided by the employers are not satisfactory and up to the mark.
4. Governmental and NGO's need to arrange extensive socio-economic development projects which can generate more income.

5.4 Further research agenda from the experience of present study

This study was used to assess the income susceptibility of tea workers of two estates of Sylhet district. In the socio-economic study of the research identified that the livelihood pattern of these two tea garden workers were very miserable. They were not aware of their rights. All workers said that, they were needed in the improvement of their livelihood status. Further research could be conducted on other tea gardens of Sylhet district on the same issue for the better understanding of income susceptibility of the tea garden workers because income susceptibility is an important research issue in recent situation. Further research can be carried on the tea garden worker's income susceptibility. The further researchers can include other parameters which were excluded from the research. Sylhet is one of the district with full of tea gardens. So the research on the same issues can be extended on other district to compare the overall condition of tea workers in other tea gardens. For the development of these tea garden workers the other research issues may be access to credit of tea workers, educational status, livelihood status, and female labour condition of tea gardens etc.

5.5 Limitations of the study

Main aim of the work was to assess the tea garden worker's income vulnerability. All empirical studies have the limitation. As a field survey of the study there was a number of limitations. Maximum number of workers in the tea gardens were illiterate even some proportion of workers had passed the primary education. So they could not give exact answers of the questions. Even some workers did not say their exact age. Some workers felt hesitate to give information about their assets. Some workers said that they were not

interested to give such type of information. The workers gave the answer of the questions from their memory. So there were some misinformation in the answers. In these tea gardens maximum workers took credit from the NGOs but they did not say the paid and unpaid amount of loan. Some workers did not understand the rate of interest. They called it "*kisti*" on local language which was paid on weekly basis.

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APPENDIX

Interview Schedule

Dept. of Management and Finance
Sher-e-Bangla Agricultural University

An Assessment of Income Vulnerability of Tea Garden Workers in Sylhet District

Sample No.

1. General information:

Name: Upazilla:

.....

District: Contact No.:

.....

Gender: ☐ Male (1) ☐ Female (2)

Name of the Tea Estate:

.....

2. Respondent's profile:

Sl. No.	Relationship	Age	Education	Occupation	
				Primary	Secondary: Yes= 1, No= 2
1	Self				
2	Spouse				
Family Size(member)					
Employed Members of the Household					
Unemployed Members of the Household					

*Educational Status: 1= Illiterate, 2= Primary; 3= SSC; 4= HSC

*Occupation: 1= Tea worker, 2= Agriculture, 3= Service, 4= Business, 5= Unemployed, 6= Others

3. Type of tea garden worker

- 1) Temporary workers (get all types of facilities & ration)
- 2) Temporary workers (don't get all types of facilities & ration)
- 3) Permanent workers (get all types of facilities & ration)
- 4) Permanent workers (don't get all types of facilities & ration)

4. Experience

- 1) Less than 5 year
- 2) 5-15 years
- 3) More than 15 years

5. Access to credit of tea workers

- 1) Yes (Name of NGO/ Bank:)
- 2) No

6. Acquisition value of physical(land) assets

- 1) Yes (Value:)
- 2) No

7. Acquisition value of livestock assets

- a. Yes (Value:)
- b. No

8. Income:

Wage amount: tk for kg of leaf

Extra amount paid: tk for kg of extra
leaf

Working hours: hours/day, for days/ week

Average daily plucking leaf: kg

***Average daily income: tk**

Ration (if gets): kg for tk

Ration (if gets): kg for tk

Income from other source (if any): tk; Source:
.....

Income from other source (if any): tk; Source:
.....

***Average monthly total income: tk**

9. Expenditure:

Average food expenditure per month: tk

Average monthly apparels expenditure: tk

Average monthly educational expenditure: tk

Average monthly medical expenditure: tk

Average monthly transportation: tk

Monthly interest payment: tk

Monthly savings/miscellaneous: tk

Average non-food expenditure per month: tk

Average total household expenditure: tk/month

Household Calorie Intake: for..... members, for 30 days

Item	Quantity/month	Total Cost(tk)	Calorie/unit	Total calories	Remarks
Rice					
Vegetable					
Potato					

Lentil					
Egg					
Fish					
Meat					
Milk					
Spices					
Oil					
Pan/Biri					
Total					

10. Living condition of tea workers

- 1) Miserable (One house consisting 2 rooms+ crowding situation)
- 2) Very miserable (Single room+ crowding situation)
- 3) Unsatisfactory (Very small sized single room+ crowding situation+ unhygienic)

11. Sanitation facilities of tea workers

- 1) Hygienic (Adequate well-constructed latrine and tube well facilities)
- 2) Not hygienic (Inadequate well-constructed latrine and tube well facilities)

12. Medical services in the tea gardens

- 1) Tea estate bears a portion of medical services
- 2) Tea estate doesn't bear a portion of medical services
- 3) Government support

13. Households with access to electricity and solar energy

- 1) Electricity
- 2) No electricity but have solar energy
- 3) No electricity

14. Households with access to mobile phone

- 1) Access to mobile phone
- 2) No access to mobile phone

15. Households with access to internet

- 1) Access to internet
- 2) No access to internet

Thanks for your kind co-operation