LIVELIHOOD STRATEGIES AND WOMEN EMPOWERMENT IN MIZORAM

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of

DOCTOR OF PHILOSOPHY

in

AGRICULTURAL EXTENSION

by

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DECLARATION

I, Zohmingmawii Sailo, hereby declare that the subject matter of this thesis is the record of work done by me, that the contents of this thesis did not form the basis of the award of any previous degree to me or to the best of my knowledge to anybody else, and that the thesis had not been submitted by me for any research degree in any other university/institute.

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CERTIFICATE – I

This is to certify that the thesis entitled "LIVELIHOOD STRATEGIES AND WOMEN EMPOERMENT IN MIZORAM" submitted to Nagaland University in partial fulfillment of the requirements for the award of degree of Doctor of Philosophy (Agriculture) in the discipline of Agricultural Extension is the record of research work carried out by Miss. Zohmingmawii Sailo, Registration No. Ph. D. /AEX/00232 under my personal supervision and guidance.

The results of the investigation reported in the thesis have not been submitted for any other degree or diploma. The assistance of all kinds received by the student has been duly acknowledged.

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DEDICATED TO MY LOVING FAMILY

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LIST OF ABBREVIATIONS

%	: Percentage
<	: Less than
>	: More than
&	: And
₹	: Rupees
@	: At the rate of
$\bar{x}$	: Mean
σ	: Standard Deviation
Σ	: Summation
&	: And
^{0}C	: Degree Celsius
^{0}E	: Degree East
^{0}N	: Degree North
ASF	: African Swine Fever
ATMA	: Agricultural Technology Management Agency
AO	: Agriculture Officer
CARE	: Cooperative for Assistance and Relief Everywhere
CD	: Critical Difference
cm	: Centimeter
DA	: Development Alternatives
DA	: Daily Allowance
DFID	: Department for International Development
et al.	: And co- workers
etc.	: et cetera
E/FCL	: Economic/ Financial Capital Index
E/NCL	: Environmental/ Natural Capital Index
FAO	: Food and Agriculture Organization
FAW	: Fall Army Worm
Fig.	: Figure
FIG	: Farmer Interest Group
FOCUS	: Fostering Climate Resilient Upland Farming System in North - East India
FPC	: Farmer Producer Company
FPO	: Farmer Producer Organization
ha	: Hectare
HCL	: Human Capital Index
HLS	: Household Livelihood Security
HO	: Horticulture Officer
ICT	: Information Communication Technology
i.e.	: That is

IFAD	: International Fund for Agricultural Development
IIED	: International Institute for Environment and Development
JICA	: Japan International Cooperation Agency
KVK	: Krishi Vigyan Kendra
LA	: Livelihood Approaches
LDI	: Livelihood Diversity Index
LS	: Livelihood Strategies
MFIs	: Micro Financial Institutions
MHIP	: Mizo Hmeichhe Insuihkhawm Pawl
MLA	: Member of Legislative Assembly
MLR	: Multiple Linear Regression
MIGs	: Micro Income Generating Activities
MOM	: Mission Organic Mizoram
mm	: Milli meter
MGNREGA	: Mahatma Gandhi National Rural Employment Guarantee Act
MN	: Most Needed
MNL	: Multinomial Logistic Regression
MRB	: Mizoram Rural Bank
MZSRLM	: Mizoram State Rural Livelihood Mission
N	: Needed
NN	: Not Needed
NABARD	: National Bank for Agriculture and Rural Development
NACB	: Nigeria Agricultural Credit Bank
NEIDA	: North East Initiative Development Agency
NERLP	: North East Rural Livelihood Project
Nos	: Numbers
NGO	: Non- Governmental Organization
NTFP	: Non-Timber Forest Products
OBC	: Other Backward Class
OLS	: Ordinary Least Square
VLW	: Village Level Worker
p	: Probability
PCA	: Principal Component Analysis
PCL	: Physical Capital Index
PM KISAN	: Pradhan Mantri Kisan Samman Nidhi
r	: Correlation coefficient.
R. D.	: Rural Development
RTS	: Ready to Serve
SASRD	: School of Agricultural Science and Rural Development
SBI	: State Bank of India
SC	: Scheduled Caste
SCL	: Social Capital Index
SDAO	: Sub- Divisional Agriculture Officer
SHG	: Self Help Group

SHG BF	: Self Help Group Bank Facilitator
SHG CF	: Self Help Group Credit Facilitator
Sl. No.	: Serial number
SL	: Sustainable Livelihood
SLA	: Sustainable Livelihood Approaches
Sq. km	: Square kilometer
TPPS	: Training Place Preference Score
T.V.	: Television
UNCDF	: United Nations Capital Development Fund Local Development Unit
UNDP	: United Nations Development Programme
USA	: United States of America
VFA	: Village Field Assistant
VLW	: Village Level Worker
YMA	: Young Mizo Association
viz.	: Videlicet (Namely)
WRC	: Wet Rice Cultivation
WSHG	: Women Self Help Group

ABSTRACT

A study was conducted under the topic "**Livelihood strategies and women empowerment in Mizoram**" whereby the personal, socio-economic and communication characteristics of women in the rural areas, livelihood strategies adopted by women, sustainability of selected livelihoods, level of empowerment of women through livelihood strategies, identification of the constraints faced by women related to livelihood and proposal of suitable livelihood strategies for empowerment were taken as objectives.

The study was conducted in the state of Mizoram where three districts viz. Lunglei, Aizawl and Serchhip were purposively selected. Two R.D blocks each were purposively selected from each district making it a total of six R.D Blocks. Two villages, each from the selected the blocks were selected making it a total of twelve villages. Three hundred respondents are selected using stratified proportionate random sampling method. The collected data are calculated and analyzed using appropriate statistical tools.

The study revealed that majority (73.67%) of the respondents belonged to middle age category (35-60 years). Majority (44.66%) of respondents received education up to High School level. Majority (82.67%) of the respondents were married and majority (71%) of the respondents were from nuclear family. Majority (71.33%) of the respondents had medium sized family with 4-7 members. It has been found that majority (32.33%) of the respondents were engaged in farming and animal husbandry. Majority i.e. 87 percent of the respondents were in the medium income category. Majority i.e. 78 percent of the respondents were in the medium monthly expenditure category. Majority (84.33 %) of the respondents had availed credit form SHG. Majority *i.e.* 73.33 percent of the respondents had medium access to input. Majority *i.e.* 70.33 percent of the respondents had medium farming experience. Majority *i.e.* 54.67 per cent used farming as their primary livelihood activity. Majority *i.e.* 67 per cent of the respondents had medium level utilization of personal localite sources, majority *i.e.* 67.33 per cent of the respondents had medium level utilization of personal cosmopolite sources and majority *i.e.* 64.33 per cent of the

respondents have medium level utilization of impersonal cosmopolite sources. Majority *i.e.* 80.67 per cent of the respondents were in medium category who attended training 2-4 times in the past 5 years. Pairwise comparison for variables like age, educational qauification, marital status, family size, respondent's income and monthly expenditure between all the districts have values lesser than CD so we can conclude that there is no significant difference between the three districts for these variables.

It has been found that out of 300 respondents, 284 were engaged in cultivation of different types of crops and 161 were earning income from livestock. Majority *i.e.* 60.33 per cent of the respondents were in medium livelihood diversity level. The PCA extracted four principle component factors with Eigen values greater than 1, explaining 74.84 per cent of the variance. Majority *i.e.* 60.33 per cent of the respondent are in medium livelihood diversity level. Majority *i.e.* 69.67 per cent of the respondent are in medium livelihood vulnerability level.

Majority *i.e.* 66.33 per cent of the respondents belonged to medium livelihood sustainability category. Majority *i.e.* 71 per cent of the respondents had medium overall empowerment. The multiple linear regression revealed that all the livelihood strategies had a significant impact on the empowerment of women. The livelihood strategies explained 32.2 per cent of variance embedded with consequent variable with the dependent variable women empowerment.

The constraint faced by women include production and marketing, socio-personal situational, extension related, economic, credit, financial and savings, political, SHG related and psychological. The suggested livelihood strategies for women empowerment were eco-tourism, handloom, handicraft, post harvest technology/ value addition, mushroom cultivation, floriculture, growing cash crops, growing off season crops, bakery and jewelry making

Keywords: ***Livelihood, sustainability, women empowerment, constraints***

CHAPTER-I

INTRODUCTION

INTRODUCTION

The term "livelihood" best reflects the idea of people or groups trying to make a living, trying to meet their diverse consumption and economic needs, trying to cope with uncertainty, trying to respond to new opportunities, and selecting between different value positions (Long, 1997). Its concept should be viewed as dynamic and comprehensive (Haan and Zoomers, 2005). It comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living (Chambers and Conway, 1992). Livelihood is never just a matter of finding or making shelter, transacting money, getting food to put on the family table or to exchange on the market place. It is also a matter of controlling the flow of information, managing connections and talents, and reaffirming individual importance and group identity. As essential to survival as providing food and shelter are the tasks of fulfilling obligations, maintaining security, establishing identity and status, and managing time are crucial to livelihood (Wallmann, 1984). In development theory and practice, the concept of "livelihoods" has grown in importance because it is thought to cover a wide range of issues and allow for the inclusion of a wide range of people's activities and assets in considering how they support themselves, as opposed to focusing more narrowly on economic, income-generating, or formal activities (Scoones, 1998).

A livelihood strategy is a collection of revenue-producing actions (Nielsen *et al.,* 2013). A smallholder household will engage in a livelihood strategy to provide for their needs where the primary objective is to ensure household economic and social security. (Koczberski *et al.,* 2001) The diverse livelihood approach is a way to take use of the variety of ways to increase household income. (Ellis, 2000; Scoones, 1998). Having a variety of sources of

income is crucial for rural survival because it promotes adaptability, resilience, and stability. Diverse livelihood systems are, therefore, less susceptible to shocks than are undiversified ones. They are also more likely to be sustainable over the long term because they enable effective adjustment to shifting conditions (Ellis, 2000).

A livelihood is sustainable if it can withstand stress and shocks, bounce back quickly, maintain or improve its capabilities and assets, and offer opportunities for future generations to live sustainably. It is also sustainable if it benefits other livelihoods both immediately and over the long term, both locally and globally. The sustainability of livelihood can be divided into two categories: environmental and social. Social sustainability is concerned with how well those living conditions can survive pressure from the outside world, whereas environmental sustainability is concerned with how those living conditions affect other lifestyles. Therefore, sustainability depends on how resources and capacities are used, maintained, and improved in order to maintain livelihoods. (Chambers & Conway, 1992).

In India, women contribute 65–70% of the labour in agriculture. Rural women lag behind urban women in embracing new technologies and in utilising contemporary scientific and information technologies since the majority of them are uneducated and unable to attend formal training courses while leaving their home obligations. Women experience oppression, poor health, work-related stress, and loss of basic rights and social position. (Hedge, 2005)

Women empowerment is the process of women elaborating and reimagining what they can be, do, and accomplish in a situation where they have previously been denied (Kabeer 2005, Mosedale, 2005). There are numerous ways to describe empowerment, but when discussing women's empowerment, it means welcoming and enabling those (women) who are outside the decision-making process to participate in it. This places a lot of

stress on participation in formal decision-making processes like politics and the ability to earn enough money to be able to participate in economic decision-making (Rahman, 2013). The process of empowering people gives them control over their own lives, society, and communities. People feel empowered when they have unrestricted access to the opportunities that are open to them in terms of their lifestyle, profession, and education. Raising the status of women through education, awareness, literacy, and training is a part of empowerment (Bayeh, 2016).

Mizoram, one of the states in North East India, has a geographical size of 21,097 sq km, which accounts for just 0.64 percent of the country's overall area. Its coordinates are 92°.15'E to 93°.29'E longitude and 21°.58'N to 24°.35'N latitude. It is surrounded by Myanmar in the east and south, Bangladesh and Tripura in the west and Assam and Manipur in the north.It shares a 404 km long international border with Myanmar and a 318 km long border with Bangladesh. It therefore occupies an area of strategic importance due its geographical location.

Mizoram has a moderate climate, which is neither too hot nor too cold throughout the year. It has a humid tropical climate with a short winter and a long, rainy summer. The monsoon has a direct impact on the entire region. From May to September, there is a pretty intense monsoon rain, and from January to December of 2016 there was an average annual rainfall of 2381.4 mm. There are 10,97,206 people living in Mizoram, with a population density of 52 people per square kilometre, according to the 2011 Census. There are 5, 55,339 men and 5, 41,867 women in the entire population. This suggests that women make up about half of the population of Mizoram.

60 percent of the state's working population is devoted to agriculture (Anonymous, 2018 a). During the 11th Plan, agriculture and related industries made up an average of 14% of the state's economy. About 80% of farmers in

Mizoram carry out jhum cultivation, despite government efforts to discourage the practice (JICA, 2015)

The Mizo society is a patriarchal and patrilineal society. It is a close-knit, egalitarian society. According to Sati (2019), the Mizo society is characterised by a primarily agrarian economy in which both men and women collaborate to sustain the family. Men's jobs included clearing the jungle, harvesting and transferring the harvest, was considered superior to the women's responsibilities, for example, growing vegetables, raising children, sewing clothing for the entire family, domesticating animals, and other tasks. (Lalrinchhani & Sangkima, 2004) In addition, women took part in the cultivation of jhum. While males returned home empty-handed, women had to carry all the agricultural tools and firewood on top of their regular jhum tasks. The domestic duties and other tasks they performed for their families' survival from early morning until late at night were not considered hard labour. In fact, the division of labour between men and women in the Mizo traditional society did not favour women (Vanchhawng, 2017). After marriage, Mizo society adheres to the patrilocal rule of residence. The paternal line is usually the one that inherits. Women have no voice in decisions made either within or outside the house.The proverb "Hmeichhe thu, thu ni suh, chakai sa, sa ni suh," which means "Crab's flesh is not a meat, a woman's words is not a word," can help explain the history of the social backdrop of Mizo women. This old proverb compared her to a crab, which the Mizo people considered to be inferior to all other animals since it lacks a head, stomach, ears, and other body parts. Another proverb that speaks to the notion that women's wisdom has a limit is "Hmeichhe finin tuikhur ral a kai lo," which translates to "The wisdom of women does not reach/cross beyond the village spring." These sayings alone provide insight into how men in Mizo society feel about women. Similar to other Indian communities, women's traditional roles in Mizo society were ones of submission to and reliance on men. (Lalhmingpuii & Namchoom, 2014)

When we consider the present situation, Mizo women have made major contributions to a variety of spheres of life. As a result, one Mizo adage that once disparaged women has been substantially changed, reading instead, "The wisdom of women has reached beyond the other side of the river." It has been noted that Christianity and the associated educational benefit acted as the primary channel for the incorporation of the modern concepts to the point that it allowed women to pursue careers outside the home. Despite these advancements, it has been argued that the new social structure is still far from establishing women's equality (Lahmingpuii & Namchoon, 2014) doors have been opened for women but in a limited way (Gangte, 2011).

Women made a commendable contribution in agriculture throughout the traditional era. Women still play a significant role, especially in rural regions, despite the fact that their role in agriculture has significantly diminished compared to the past owing to many factors such farm mechanization, urbanization, women's employment in industries other than agriculture, etc. Women, who had always been in charge of growing vegetables in the traditional culture, naturally took over the process of selling the output of their farms with the arrival of the market economy. This is evident from the fact that the vegetable vendors in various markets as well as roadside throughout the State are mostly women. Women often dry and ferment their crops, which allow them to store it for later use and generate revenue for the family. Therefore, it is clear that Mizo women have been contributing increasingly to the agricultural sector in rural areas up until the present (Ralte, 2015).

Empowerment of women enhances both the quality and the quantity of human resources accessible for development therefore; it is a necessity for the improvement of a society (Gupta & Yesudian, 2006). To ensure the sustainable development of the country, women's empowerment and achieving gender equality is essential for our society. Many world leaders and scholars have emphasized that women's empowerment and gender equality are essential to

sustainable development (Bayeh, 2016). Sustainable development accepts environmental protection, social and economic development (Shah, 2008) and without women's empowerment, women would not feel as vital to the process of development as men do. It is widely accepted that progress depends on both men and women participating fully. Sustainable development won't be aided by merely recognizing men's involvement. Women's empowerment should therefore be a crucial and essential element of the programme for sustainable livelihood in rural India (Hedge, 2005).

1.1STATEMENT OF PROBLEM

People in the rural areas of Mizoram are mostly dependent on agriculture and allied sectors for their livelihood. Women are engaged in different activities both inside and outside their home. In this present age where issues such as climate change, food security, environmental degradation etc. are prevailing, it is crucial to understand how people, especially women in the rural areas are coping and adapting with these changes to ensure sustainability of their livelihoods. Several researchers have looked into the empowerment of Mizo women from a variety of perspectives, including political, socioeconomic, entrepreneurial, and religious. However, no research into women's empowerment through various livelihood strategies has been undertaken. Therefore, the present study "**Livelihood strategies and women empowerment in Mizoram**" was undertaken with the following objectives:

1.2 OBJECTIVES

1 To study the personal, socio-economic and communication characteristics of women in the rural areas.

2 To find out livelihood strategies adopted by women in the study area.

3 To determine the sustainability of selected livelihoods in the study area.

4 To analyse the level of empowerment of women through livelihood strategies.

5. To identify the constraints faced by women related to livelihood in the study area and to propose suitable livelihood strategies for empowerment.

1.3 SCOPE AND IMPORTANCE OF THE STUDY

The goal of the current study was to assess the sustainability of the livelihood strategies used by rural women and their contribution to women's empowerment. The study aim to draw conclusions about the opportunities available to Mizo women and the livelihood strategies they have chosen to improve their quality of life and increase their income. In order to successfully examine the challenges faced by rural women, the study was conducted in selected districts of Mizoram. The study's results are anticipated to not only lessen the restrictions on women but also to help rural women achieve socioeconomic improvement.

1.4 LIMITATION OF THE STUDY

The scope of the current study was limited to 12 villages in the districts of Aizawl, Serchhip, and Lunglei. The conclusions from the studies might only be applicable to regions with comparable conditions. The study was compiled to be comprehended basing on the opinions given by the respondents. The objectivity, thus, highly depends upon the truthfulness of the compliance of the respondents towards the student researcher. The progress of the study was impeded by Covid -19 which obliged the student researcher to curb the area and the size of the sample study.

1.5 ORGANIZATION OF THE THESIS

Thesis has been organized under the following chapters:

1. Chapter 1 “INTRODUCTION” **.** It consists of the statement of problems, objectives, scope and limitation of the study.

2. Chapter 2 “REVIEW OF LITERATURE”. It is focused on dealing with the relevant available literatures related to the present study.

3. Chapter 3 “RESEARCH METHODOLOGY”. This contains the research methods and procedures followed in the study.

4. Chapter 4 “FINDINGS and DISCUSSION”. This chapter discusses the findings of the study and imperative discussion.

5. Chapter 5 “SUMMARY AND CONCLUSION”. It summarizes the study and gives implications, recommendations and suggestions for further study.

References and **Appendices** have been included at the end of the thesis

CHAPTER-II

REVIEW OF LITERATURE

REVIEW OF LITERATURE

This chapter deals with the review of literature based on the broad objectives of the present study. The literature review has been presented under the following heads:

2.1 Concept of livelihood strategies

2.2 Conceptual framework for livelihood analysis

2.3 Personal, socio-economic and communication characteristics of women in the rural areas.

2.4 Livelihood strategies adopted by women in the study in the study area.

2.5 Sustainability of selected livelihood strategies in the study area.

2.6 Empowerment of women through livelihood strategies

2.7 Livelihood strategies for empowerment.

2.8 Constraints faced by women

2.1 Concept of livelihood strategies.

UNDP (1997) stated that individual and household livelihood strategies differ due to differences in asset ownership, income levels, gender, age, caste, and social or political position.

Ellis (1998) disclosed that in addition to money-generating activities, a household's primary source of income is determined by a variety of cultural and social choices that are included in a livelihood strategy.

DFID (1999) affirmed that livelihood strategies relate to the range and synthesis of acts and choices people make to attain their livelihood objectives, such as productive endeavors, financial planning, reproductive choices, etc. DFID separated household livelihood strategies into three categories: migration, livelihood diversification, and agriculture intensification.

Walker *et al.* (2001) expressed that livelihood strategy is a deliberate set of lifestyle choices, goals, and endeavours that are meant to guarantee a good

standard of living for individuals and their families or other social groups. It takes into account biophysical, political/legal, economic, social, cultural, and psychological variables.

UNCDF (2005) stated that livelihood strategy is the collection of actions people choose to do in order to achieve their livelihood goals.

Brown *et al.* (2006) expressed that "livelihood strategy" of the household is the chosen combination of resources and activities.

FAO (2007) conveyed that livelihood strategies are a variety of choices and actions that people frequently make in peaceful and stable times to achieve their livelihood goals (e.g. productive activities, investment strategies, reproductive choices). The two kinds of livelihood strategies include non-resource-based activities like trade, services, and remittances, as well as resource-based activities like farming, raising livestock, weaving, collecting, and gathering.

Zhang *et al.* (2015) intimated that livelihood strategies of a peasant are dynamic, which implies that when environmental background, livelihood assets, policies, and systems go through significant changes, households have a tendency to alter their livelihood strategies in order to accommodate a new man-land interaction.

Sun *et al.* (2019) enunciated that livelihood strategies are the range and combination of actions that convert possessed livelihood assets into anticipated livelihood results. Methods for categorising alternative livelihoods include the asset-based approach, the activity selection approach, and the income-based approach.

2.2. Conceptual framework for livelihood strategy analysis

UNDP (1997) employed an asset-based approach for analyzing livelihood strategy, emphasizing that expanding access to and sustainable use of the resources that people rely on is essential to eradicating poverty. UNDP has created a methodology (or rather a procedure) that consists of five steps for

the design, implementation, and evaluation of sustainable livelihood programmes: participatory assessment; analysis of the micro, macro, and sectoral policies; evaluation and determination of the potential modern technology that could supplement indigenous knowledge systems; identification of social and economic investment mechanisms; and confirmation that the first four are integrated.

Carney (1998) expressed that DFID Sustainable Livelihood Framework is built around five principal categories of livelihood assets, graphically depicted as a pentagon to underline their interconnections and the fact that livelihoods depend on a combination of assets of various kinds and not just from one category. As a result, an important aspect of the analysis is assessing how easily people can access different resources (physical, human, financial, natural, and social), as well as how well they can use those resources. Understanding the setting in which people live, the resources at their disposal, the livelihood strategies they use in defiance of established institutions and policies, and the livelihood objectives they want to achieve are the main goals of DFID's livelihood approaches (LA).

D. A. (1999) extrapolated that creation of a sustainable livelihood strategy for the organization Development Alternatives (D. A.) incorporates the notion of long-term sustainable growth. To achieve sustainable livelihoods for low-income women, the following techniques are used: developing and disseminating appropriate technologies to generate alternate income; promoting the sustainable use and regeneration of natural resources through appropriate management techniques. The SLs approach is inconsistent since it differs for each project and location. It is dynamic because it adapts to the way of life of the locals, assisting them in better understanding what constitutes a sustainable way of life for themselves.

CARE (2000) used the Household Livelihood Security (HLS) framework for its programme analysis, planning, monitoring, and evaluation.

CARE seeks to operationalize its livelihood approach through a dynamic and interactive programming process that identifies: potential geographic areas where poverty is concentrated using secondary data; vulnerable groups and the livelihood constraints that they face; analytical data (guided by CARE's overall livelihood model), taking note of trends over time and identifying the indicators that will be monitored; and selecting the set of communities for programming. It emphasizes empowerment as a fundamental component of its approach in order to overcome constraints, particularly in the economic sphere. This includes both personal empowerment (the enhancement of people's confidence and skills, or their human capital), and social empowerment (the establishment and/or strengthening of existing, representative, community-based organisations to build community members' capacity to plan and implement priority advancement).

Krantz (2001) disclosed that the concept of Sustainable Livelihood (SL) represents an effort to go beyond traditional definitions and methods of poverty eradication. More attention is being paid to the numerous causes and processes that either limit or improve impoverished people's ability to make a living in a way that is sustainable in terms of the economy, the environment, and society. The SL concept suggests a more comprehensive and integrated strategy for combating poverty.

Kanji *et al*. (2005) expressed that livelihoods framework provides a comprehensive and intricate method for understanding how people make a living. It can be studied thoroughly from every angle or used as a loose guide to a variety of livelihood-related topics.

IFAD (2007) strategy focused on the variables that affect poor people and their means of subsistence, as well as the interactions between these variables. The Sustainable Livelihood Approaches (SLA) can be used to plan new development-related activities as well as evaluate how well they complement existing efforts to promote sustainable living. The support system

put poor people and people from rural areas at the centre of the forces influencing the evolution of their way of life. These resources cover environmental, technological, intellectual, and human realms, as well as health, education, finance, and social assistance. Their vulnerability context, which is based on prevalent political, institutional, and social tendencies, has a significant impact on access to these resources.

2.3 Personal, socio-economic and communication characteristics of women in the rural areas.

Fadiji *et al.* (2005) studied sources and use of extension information among maize farmers in rural Northern Nigeria. The findings showed that the relevant sources of extension information available to the respondent farmers were in this order of importance; radio, extension agent, fellow farmers, agricultural shows, village head, slides/film shows, traders, written material and television. Furthermore, findings revealed that the respondents utilized extension information, to a great extent on the following technologies/recommendations; improved maize, seed rate, seed dressing, plant spacing, fertilizer application, post-harvest processing, and storage.

Damisa and Yohanna (2007) investigated the role of rural women in farm management decision making and discovered that the majority of the women in Kaduna State, Nigeria's Chikum and Igabi Local Government Areas were not formally educated and came from low-income families.

Okwoche and Obinne (2010) performed a comparative analysis of socio-economic characteristic of rural women Co-operators in Nigeria. They discovered that majority of women cooperative members had an average age of 38 years, with a range of 31 to 50 years. The average farm size was 5.10 hectares, and the household size was 6-8 members with 12 years of education. Their findings also revealed that women cooperatives earn more and have better access to agricultural credit than non-cooperatives.

Owolabi *et al.* (2011) conducted an assessment of farmer's (women) access to agricultural extension, inputs and credit facility in Sabon-Gari Local Government Area of Kaduna State, Nigeria. Their study had revealed that 63 per cent of the respondents fell within the youth group. About (30%) of the respondents had formal education and only two (3%) were found to have secondary education, 9 per cent had vocational training, 12 per cent had primary education, and 7 per cent had adult education. The study also highlighted that majority (67%) of the respondents were married, 13.3 per cent were widow while 8 per cent were single and 12 per cent were divorced. The findings on number of children indicated that majority (48%) have between one and three children. Results further revealed that 65% of the respondents have between 0.1 and 1.0 ha hectare of land. It has also been found that 37% of the respondents had been farming for between 1-10 years, 18% for 31-40 years and 17% had 41-50 years of farming. Also 13% had 11-20 years farming experience whereas 12% have been farming for 21-30 years and only 3% had -50 years and above of farming experience. 42% of the respondents sourced funds from personal saving (adashi) while 28% made their financial help through cooperatives. 20% got financial assistance through institutions mostly from Nigeria Agricultural Credit Bank (NACB).The study had further revealed that majority 42% of farmers had no frequent extension contact. Only 33% of the respondents had frequent extension contact with extension agents whereas 25% had no contact at all with extension agents.

Ali (2011) looked into the adoption of mass media information for decision-making among vegetable growers in Uttar Pradesh. The results showed that vegetable growers use diverse sources of information on crop production techniques. However, input dealers and relatives, friends or progressive farmers have been reported to serve majority of the farmers for supply of information on production techniques. Information on market prices for selling the produce is acquired from the local market/mandi followed by

input dealers. Moreover, the farmers receive most of the information on change in government policies on agriculture from input dealers followed by the mass media.

Ajah and Nmadu (2012) evaluated small-scale maize farmers' access to farm inputs in Abuja, Nigeria. The findings revealed that maize farmers' access to various types of farm input varied significantly (p.05). Land was the most accessible farm input, with a mean access value of 3.03, while tractor services (0.64) and loans (0.58) were the least accessible. According to the grand mean access value (1.73), maize farmers had limited access to all farm inputs.

Kabir *et al.* (2012) studied the impact of small entrepreneurship on sustainable livelihood assets of rural poor women in Bangladesh. They found that the average age of women entrepreneurs in Bangladesh was 39 years, indicating that they are of active age, making them more capable and energetic to engage in their entrepreneurial activities.

Chakravarty *et al.* (2013) probed women's empowerment in India, with a focus on the state of Jharkhand. They discovered that the majority of the respondents (33 %) were between the ages of 30 and 40, with 12 between the ages of 20 and 30, and only 5 over the age of 40. The majority of respondents (39%) had completed the 10^{th} standard, 7 were illiterate, and 4 had completed higher secondary education courses. 97 per cent of those polled were married, 2 per cent were unmarried, and 1 per cent were widows. Only 13 per cent of respondents own their homes, while 87 per cent live in rental homes.

Abi-Ghanem *et al.* (2013) studied access to agricultural inputs, technology and information, communicating with farmers, and the role of women in agriculture in Iran. According to 83.6 percent of programme attendees, access to agricultural inputs is currently insufficient to successfully promote productive agricultural practices. The majority of trainees in both sessions (57.3%) responded that most farmers receive training from other local farmers and family members.

Alonso and Trillo (2014) found that the highest percentage (28%) of women in rural areas of Spain belonged to household of four members.

Ankeweta *et al.* (2014) investigated livelihood as poverty coping strategy of rural women in Song Local Government Area, Adamawa State. The study shows that, 70% are between the age of 28- 43years, most of the respondents are married 55%, the result shows that 67 per cent of the household have large family size of 6 and above, furthermore, 41.8% of the respondents had attained education up to primary school .

Ronald *et al.* (2015) inspected the preference sources of information used by seaweeds farmers in Unguja, Zanzibar. The findings of the study showed that neighbours and or friends, radio, family/parents and personal experience are types of information sources used in the study area, but television and radio was mostly preferred consulted by respondents. The study results also revealed that the barriers to accessing agricultural information through information sources in the study area were associated with inadequate funds, lack of information services, poor infrastructure and inadequate extension agents. It is therefore recommended that the government should support rural electrification, ICTs infrastructure and improve transport system so that modern agricultural information sources/facilitates are available, accessible and used in these areas.

Devaki *et al*. (2015) studied the socio-economic profile of livestock farm women of Thiruvallur district, Tamil Nadu. It could be observed from the findings that over one half (53.00 %) of the farm women involved in livestock enterprises belonged to young age group. Exactly one half (50.00%) of the respondents were illiterates, whereas an almost equal per cent of respondents studied up to primary (21.00 %) and secondary (26.00 %) school level and only 3.00 per cent were educated up to higher secondary level. Majority (59.00 %) of the farm women had nuclear family, while the remaining 41.00 per cent had joint family. It could be observed that more than one-half (54%) of the

farm women had less than five members in their family, while their remaining (46.00 %) were having more than five members. It is clear that majority (61.00 %) of the farm women were involved in home management, agriculture and dairy activities, while the remaining (39.00 %) had home management, dairying, and other jobs as their occupation. More than one-half (53.00 %) of the farm women respondents maintained small livestock units, followed by large (36.00 %) and medium (11.00%) livestock units. The findings also revealed that an equal proportion of the respondents belonged to low (50.00 %) and high (50.00%) income groups. 57.00 per cent of the farm women had low level of mass media exposure followed by high (43.00 %) level. Majority (58.00 %) of the respondents had medium to high level of extension agency contact and others (42.00 %) with low level of extension agency contact. It is evident from the study that 45 per cent of the farm women availed credit while the remaining 55.00 per cent had not availed any credit provided by various sources. Among those who availed credit, majority (40.00 %) of the respondents obtained credit from private sources followed by nationalized banks (31.00 %), Co-operatives (22.00 %) and traders (7.00 %). It was found that one-half (50.00 %) of the respondents have low level of cosmopolite local contact followed by high (40.00%) and medium (10.00 %) levels, which may be due to the existence of traditional norms and beliefs.

Mosharraf *et al.* (2016) identified information sources preferred by the farmers of Dowakola and Malotipur, Bangladesh in receiving farm information. The majority of the respondents (90%) fell in low to moderate preference category of information sources. Among the fifteen (15) selected information sources; neighbor, television, experienced farmers, radio, input dealer, newspaper, local extension agent and farm laborer were major sources preferred by the majority of the farmers for getting information. While farm publications followed by NGO worker and Upazila Fisheries Officer were least preferred by the farmers as information sources. The main reasons for such

preferences; competency of information sources, adequacy, timeliness, personal judgment, material incentive from the source and most importantly credibility of the source (safety, dynamisms, qualification etc.) were rated by the farmers.

Kandeeban and Velusamy (2016) disclosed training needs of rural women in hilly areas of Dindugal Tamil Nadu for their empowerment. According to the findings, 66 per cent of rural women preferred handicraft training, 47 per cent preferred pickle making, 37 per cent preferred goat rearing, 24 per cent preferred honey value addition, and 23 perc ent preferred dairy farming. The majority of respondents (95%) prefer the Panchayat union office as convenient training location and which is followed by 93 per cent who preferred village school, followed by the farmer's field (78%) and the research station (67%). As training methods, the majority of rural women (87%) preferred demonstrations, followed by study tours (63 %).

Yadav and Revanna (2017) guided a study on socio-economic status of the farm women of Tumakuru district of Karnataka state, India. It has been revealed through their study that more number of the farm women (47%) were in the age group of middle age, majority of the respondents 33.67 per cent were illiterates followed by 26.33 per cent of them with primary school education. Majority of the subjects (70.33%) were married, whereas, 29.67 per cent of farm women were unmarried. Most of the farm women were living in nuclear family (89%) followed by joint family type (11%). 61 per cent possessed medium size family as they had 5-8 members in family. The data revealed that 69.33 per cent of the farm women were involved in agriculture, 16.33 per cent farm women were engaged in animal husbandry, 10.67 per cent of farm women were affianced in silk worm rearing activities. Majority of the respondents 45.33 per cent belong to middle income category. 13 per cent of farm women were landless, 35 per cent of the respondents had up to 2.5 acres of land, among respondents 32.67 and 12.67 per cent had 2.6 to 5.0 and 5.1 to

10.0 acres of agriculture land respectively, whereas, only 6.67 per cent of respondents land holding was more than 10 acres. Farm women spent more money on education of their children, followed by celebrating festivals and ceremonies, clothes, household equipment, routine maintenance of the house, health and transport.

Yasaswini *et al.* (2017) researched the socio-economic conditions of rural women of Andhra Pradesh. The study had revealed that the sources of income for the ladies in Arepalli Rangampet is agriculture, tailoring, rearing animals like cows, goats, sheep; selling vegetables and fruits; working in provisional stores and cloth stores; working in Educational institutions and in Sulabh International as sweepers.

Joshi (2018) carried out an assessment of training needs of farm women in Western Uttar Pradesh. The socio-personal profile of the respondents showed that majority (40%) were of age group 35-50 years. Most of the respondents (40%) were illiterate followed by twenty per cent educated up to elementary and twenty per cent respondents educated up to primary level. A few were qualified up to high school (10%), intermediate (7%) and graduation (2%). In farming experience, majority of respondents (33%) were having experience up to ten years, followed by women having experience of twenty to thirty years. Majority (97%) belonged to male headed households while only 3 per cent households were female headed. Training need assessment revealed that Livestock care & management, Value addition, Scientific storage, Drudgery reduction, Post-harvest technology, Weed management and control, Procuring bank credit, Marketing of goods and Leadership development ranked 1^{st} to 9^{th} were the areas where training was needed by the women farmers.

Chunera and Amardeep (2018) through their investigation on socio-economic and communication characteristics of farmers and farm women in climate vulnerable regions of Uttarakhand state, India found that majority 66.33 per cent of the respondents belong to middle age group, high percentage

of the respondent studied up to primary and middle school and 10.33 per cent were illiterate. It was observed that (50 %) farm women were involved in secondary occupation like animal husbandry, service/job, wage earner, business. Most opted secondary occupation for women was animal husbandry. They have also found that (36 %) belonged to the lower income group. Most of the farm women (70%) had a medium level of farming experience. It was also found that only 6.67 per cent farm women were the office bearer of one or more society/ organization. While studying the communication indicator it was found that almost half (54.67 %) of the farm women had a low level of information seeking behavior. Furthermore, regarding the training exposure, it was found that 70 per cent of farm women had no training exposure.

Tamilazhaki and Awasthi (2018) from their study on women empowerment through SHGs found that majority (63.3%) of the respondents belonged to young age group i.e. below 35 years. 100% of the respondents belonged to the weaker section of society (SC & OBC). The educational qualification of the respondents was up-to secondary (33%) and higher secondary school (33%). 90% of the respondents had nuclear type of family.

Tijani and Tijjani (2019) conducted a study on socio-economic factors influencing women participation in agricultural productivity in Damaturu Local Governmen Area, Yobe state, Nigeria. Analysis of the findings showed that 30% of the women farmers were within 31–35 years of age. The result also indicated that majority (54%) of the women farmers were married, while 11 per cent were single in the study area. 47 per cent of the women farmers had no formal education, while 10% had tertiary education. The finding showed that most 56 per cent of the women farmers had less than 2 hectares of land, while 12 per cent had 5 hectares and above in the study area. The result also indicated that 34 per cent of the women farmers had between 11–15 years farming experience, while 10 per cent had 20 years and above in the study area. The finding also revealed that majority 65 per cent of the women farmers

obtained their farm land through leasers, while 10 per cent had through traditional rulers.

Gopalasundar (2020) in his scrutiny on the socio-economic conditions of women agricultural labourers in Thanjavur District of Tamil Nadu, discovered that the average size of a family is five members, 96.5 percent of respondents have nuclear families, all respondents are married, 74% are between 30-35 years old, and 10% have completed high school.

Kosshak *et al.* (2020) examined the socioeconomic factors influencing women's participation in agricultural production in Jos South Local Government Area of Plateau State, Nigeria. According to the findings, the majority of the women (45.0%) were in their active age range, were mostly married (65.0%), and had a family size of 6-10 people (59.2%). Women have the highest level of education (39.3%), with the majority having 16 to 20 years of farming experience. Furthermore, the majority (60.0%) acquired land for farming by borrowing and was engaged in mixed farming (63.3%). According to the study, maize (76.5%) is the most commonly grown crop, and broiler (56.1%) is the most commonly reared animal.

Shaikh *et al.* (2020) carefully deliberated the role of mass media in dissemination of agricultural information among farmers of Hyderabad, Sindh – Pakistan. The results denoted that (55.6% extremely high) farmers get the majority of their agricultural knowledge from television, followed by (40.0% very high) print media and (23.3% very high) radio. It was further seen that newspapers are the most popular reading material among respondents (48.8%), followed by pamphlets (21.6%), and leaflets (16.6%). However, very experienced farmers prefer books (5.5%) and magazines (7.2%) to find information about agriculture.

Anyasi *et al*. (2020) administered an inquiry to uncover small-scale crop farmers' access to farm inputs in the North Central Zone, Nigeria. Their study had emphasized that that 52% of the small scale farmers were over 40 years. It

was also found that as much as 80.73% of the small scale farmers had formal education. Mean farming experience was 15.5 years. Majority of the small scale crop farmers had an average household size of 6- 10. The data revealed that access to land was the highest with a mean access value of 2.14 followed by access to labour with a mean access value of 2.06. The inputs that small scale farmers had least access to were fertilizer and tractor services with mean access values of 1.53 and 1.02, respectively. The mean response values indicated that the small scale farmers had moderate access to land, labour, herbicide, insecticide and rodenticide. On the other hand, access to fertilizer, rodenticide and tractor was very low.

Ibil *et al.* (2021) carried out a research to evaluate sustainable livelihood strategies and potential socio-economic development activities in Kampung Kesindu, Simunjan. Their study had highlighted that the sources of income for the respondents in the study area were Rubber (34.73) piggery (32.9 %), employment (9.92%), pepper planting (7.78%), home garden for vegetables (5.62 %), fishing (4.67%), remittances (2.82%), small scale business (0.70 %), cocoa (0.48%), fruit trees (0.29%) and rice (0.06%).

Bhagat and Singh (2022) from their investigation on the socio-economic conditions of women agricultural labours in Jharkhand found that majority i.e. 37.1 per cent of the respondents belong to 25-35 age groups.

Vivek and Sahana (2021) circumspect the socio-economic characteristics of the farmers following E-tendering system for Arecanut in Karnatak. Results showed that more than half of the farmers were of middle age (59.00%) group and one third of the farmers had education up to high school (37.00%) followed by PUC (24.00%) and graduation (19.00%). Majority of the farmers were of small (42.00%) farmer category with medium (73.00%) trading experience. Whereas, nearly three fourth of the farmers had low (70.00%) cyber proficiency and medium (78.00%) mass media participation. Over two third of the farmers had medium (68.00%) decision-

making ability, medium (70.00%) level of economic motivation and medium (69.00%) level of innovativeness. More than half of the farmers had medium (56.00%) level of market orientation with medium (65.00%) level of risk orientation.

2.4 Livelihood strategies adopted by women in the study in the study area.

Pender *et al.* (2001) studied the strategies for sustainable agricultural development in the Ethiopian Highlands. They had highlighted certain livelihood strategies in the Ethiopian highlands which are cereals-cattle, cereals-small ruminants, cereals-other storable annuals, cereals-perishable annuals, cereals-perennials, and cereals-off-farm activities.

Hassan *et al.* (2002) examined the impact of international trade and Multi-national Corporation on the environment and sustainable livelihoods of rural women in Akwa Ibom State, Niger Delta Region, Nigeria. Their study had shown that there is a well-defined gender role in the study area. The main livelihood activities include crop farming, fishing, trading/ marketing, processing and collection and selling of non-timber forest products.

Marschke and Berkes (2006) investigated livelihood diversification in Cambodian fishing community which showed that diversification is a commonly used strategy for coping and adapting to stress and shocks. Diversifying household livelihood activities includes diversifying fishing activities (with specialization by individual family members) and non-fishing activities (e.g., operating small businesses from the home is popular in Koh Sralao). In periods of resource decline, for example, fishing households might send one income generator to the city to try and secure an alternative income source.

Zenteno *et al*. (2012) analyzed the relation between forest dependence and livelihood strategies in the Bolivian Amazon, applying the Sustainable Livelihood Framework. Through this analysis, they have identified six

livelihood strategies (multitasking, Brazil nut, Brazil nut and timber, services, hunting, and livestock). Their results revealed that forest income is highly related to cash income from Brazil nut, while income from agriculture and timber exploitation is associated with higher levels of education. Brazil nuts serve as a safety net and start-up capital for certain livelihood strategies in the study region.

Soltani *et al*. (2012) studied poverty, sustainability, and household livelihood strategies in Zagros, Iran. Their study revealed that most households (64%) follow a mixed strategy with a combination of forestry, animal husbandry, and subsistence agriculture. Households following a livelihood strategy that is highly dependent on forest extraction and livestock grazing (27%) are the poorest, whereas those that combine cultivation of commercial crops with non-farm work (9%) are able to earn higher incomes. An increasing share of households was adopting a strategy of non-farm and/or commercial practices, as well as outmigration to urban areas.

Alemu (2012) conducted an inquiry called livelihood strategies in Rural South Africa for Poverty Reduction. The following four major livelihood strategies were identified during the study– only farm, non-farm, farm and non-farm, and non-labour. The four broad livelihood strategies were sub-divided into seven specific livelihood strategies – 'farm and non-farm wage', 'farm and non-farm non-wage', 'only non-farm wage', 'only non-farm non-wage', remittances, pensions, and grants. Close to 56% of rural households depend on non-labor sources of income (remittances, pensions, and social grants), 'farm and non-farm' – account for about 16 % of rural households, 'non-labour' accounts for about 28 % of rural households. The majority of households (23 %). in this group earn wages from non-farm related activities.

Eneyew and Bekele (2012) scrutinized determinants of livelihood strategies in Wolaita, Southern Ethiopia. Data analysis presented that

agriculture has a leading contribution to the total income of sample households (64.1%) followed by nonfarm (22.8%) and off farm (13.1 %.). The multinomial logit result showed that age, education and sex of household head, credit, land size, livestock and agro-ecology are the factors that reduced the likelihood of diversification; while, family size, dependency ratio, frequency of extension contact, membership to cooperatives, input use, and remittance increased the likelihood of diversification.

Worku and Woldetsadik (2013) evaluated the livelihood strategies of rural women with emphasis on income diversification and demographic adjustment in Central Ethiopia. The findings showed that women were engaged in sporadic and uncontrolled work of income-generating activities such petty trading, selling firewood, processing and selling indigenous beverages, etc. Migration was unable to significantly alter peoples' means of subsistence. Despite the observed modest improvements in rural livelihood conditions, rural communities in general and female-headed households in particular engaged in various non-farm and off-farm activities as a survival strategy and means of improving livelihood, moved to the nearest towns and cities, and made demographic adjustments by reducing the number of new births.

Sati *et al.* (2014) explored the sustainable livelihood strategies and options of Upper Minjiang River Basin, Sichuan Province, China. Their study indicated that the respondents in the study area were engaged with cultivation of different temperate fruit crops such as peach, apple, cherry, walnut, pomegranate etc. and different vegetables such as celery, okra, tomato, potato, garlic, cowpea, beans, chives etc. Rearing of different livestock such as pig, poultry, duck, rabbit, sheep, bees etc. is also common in the study area. They further added that tourism is a promising sector for livelihood sustainability in the study area.

Ifeanyi-obi and Matthews-Njoku (2014) inspected the socio-economic factors affecting the choice of livelihood among rural dwellers in southern Nigeria. Through their study it has come to light that the rural dwellers were engaged in various livelihood activities such as farming, trading, sand gathering, transportation, civil service, contracting, food vendors, tailoring, mechanic, carpentry, welding, palm wine tapping, local gin distillation, aluminium work, plumbing, fishing, broom wearing, basket weaving, mushroom gathering, snail picking, cloth weaving, pottery etc.

Akeweta *et al.* (2014) analysed the potential of different livelihoods as poverty coping strategy of rural women in Song Local Government Area, Adamawa State, Nigeria. The research deduced that the women in the study are involved in a lot of livelihood activities, such as piggery, brewing of local drink (kunu, subo drink, fura da nunu, burkutu), sesame seed production, cowpea, bambara nuts, maize and groundnut production, trading, and the sales of fuel wood, hairdressing, pottery and sales of fruits. Women in the six districts are involved in series of strategic acts. For poverty coping strategies women are employed in both dry and wet season, they are involved in both monetary and non monetary activities. Agricultural activities include production and sells of livestock (19%), Production and sells of food crops (21%) and Crop processing (9%). Non- agricultural activities are sales of labour (5.8%), trading (10.3%), sales of local drinks (3.7%), handcraft (4.6%), pottery (0.6%), sales of cooked/roasted/fried food (16%),sales of NTFP (10%). Monetary activities are shelling of groundnut (7.3%), trading (7.8%), sale of labour (4.4%), sale of NTFP (10.6%), contribution from Fadama (1%), sale of livestock (16%), crop production (14.5%), sale of nunu (2.8%), hand craft (3.5%), migration (3.1%), sale of boiled or roasted maize (2.6%), sale of boiled cassava (1.6%), frying and selling yam (7%). Non-monetary strategies include reduced household consumption (3.5%), work exchange group (gayya) (8.1%),

migration (1.3%) intensive resource use (2.1%) and reduction of household size (2.6%).

Xu *et al.* (2015) explored the extent to which farmers in the Three Gorges Reservoir area remain highly dependent on agriculture despite rapid urbanization and industrialization. The study showed that close to 56% of households exhibit a low dependence on agriculture. The following variables had a significant influence on livelihood strategy: the maximum years of education of any household member; the age of the household head; the number of laborers in a household; household location; and formal and informal social networks. Regardless of whether the household had children, house value and fixed assets had no significant influence on livelihood strategy.

Appels (2015) conducted a study to identify rural livelihood strategies in the southern highlands of Tanzania. Through the study four main livelihood strategies were identified during the cluster analysis: maize farmer (23.69 %), maize + other crop farmer (34.56%), diversified farmer (23.17%) and rice farmer (18.58%). Non- farm activities carried out by maize farmers are wage labour (16.71 %), petty trading (60.21%), mining, forestry , others (22.25%). For maize + other crops farmers, maize is the second of third most important crop followed by bean which occupies 29% of the cultivated area. Majority of the diversified farmer cultivate two or three crops.

Khatiwada *et al.* (2017) examined household livelihood strategies and implication for poverty reduction in rural areas of Central Nepal. The non-farm wage, business/enterprise, commercial farming, remittance-oriented, and diversified subsistence methods pursued by rural households in central Nepal were defined as five separate clusters of livelihood strategies. According to the findings, the majority (61%) of households diversified their sources of income away from agriculture. The most lucrative approach, taken by 16% of the families, is livelihood diversification to business/enterprise methods, which are

followed by commercial farming, which accounts for 13% of the sample and is more pertinent to reducing poverty. The main determining factors for the adoption of higher-returning livelihood choices include land ownership, education, agriculture and skill development, loan availability, and proximity to a road and a market hub.

Addisu (2017) performed a study to identify livelihood strategies and diversification in western tip pastoral areas of Ethiopia. The distribution of households with livelihood categories showed on-farm (10.5%), on-farm and non-farm (15.8%), on-farm and off-farm (12%) and on-farm, non-farm and off-farm (61.7%) strategies. Key informant interview have indicated the most important livelihood strategies with their order of importance as livestock production, crop production, fishery and trading. Farming and breeding were the primary jobs for almost all of sample households. The fishery was the third most existent job with 72.9% of engagement by sample households. In addition, trading, employment and craftsman were practiced in the percentage of 24.8, 10.5 and 3.8, respectively. More than half of the households covering 53.4% pursued three jobs as a means of income and food. And only 4.5% practice five jobs. The Simpson diversity index revealed that 15.04, 30.07 and 54.89 per cent of the households were less, medium and high diversifiers, respectively. The mean diversification score of the households was 0.5775.

Yobe *et al*. (2017) executed an investigation to identify livelihood strategies and their determinants among smallholder farming households in KwaZulu-Natal province, South Africa. The outcome depicted that rural household members with more years of formal learning were less likely to choose “Livestock reliant” as their dominant strategy, while those with less educated or uneducated household members adopt this as their main livelihood strategy. Rural household members with formal education were found to engage in activities such as mixed farming and migration, as well as the receipt of social grants in coming up with their livelihood strategy. The results

revealed that households with a larger size are engaged in migration, cropping and livestock farming activities. Rural households with limited access to agricultural land selected either "Agricultural wage/cropping reliant" or "Mixed activity reliant" a livelihood strategy. Access to arable land meant that rural households in the study areas were likely to choose the "Mixed farming/migration/social grant reliant" as their dominant strategy. The adoption of different livelihood strategies by the households in the two study areas reveals the importance of location in constructing a livelihood portfolio. The households located in Umzimkhulu were more likely to choose either "Livestock reliant" or "Mixed activity reliant" as their dominant strategies. The results show that households with savings were more likely to select the "Mixed farming/migration/social grant reliant" livelihood strategy.

Dinku (2018) studied the determinants of livelihood diversification strategies in Borena pastoralist communities of Oromia regional state, Ethiopia. According to the income portfolio analysis, the percentage share of the broad livelihood activities covers approximately 64.1 per cent, nonfarm 22.8 per cent, and off-farm 13.1 per cent in decreasing order. Further research revealed that off-farm activities (daily wage, market brokering, and environmental gathering) are primarily pursued by lower-income groups. Nonfarm activities such as rural craft are also more popular among the poor than among their counterparts. Thus, off-farm activities appear to be more of a coping mechanism for poor pastoral community groups than a means for all pastoral community groups to accumulate wealth and reduce poverty. According to the interviews, the poor tend to focus on off-farm activities with low entry barriers (gathering, charcoal making and fire wood collection and wage).

Yang *et al.* (2018) performed a comparative analysis of rice and dry land terrace systems in China to investigate the livelihood assets and strategies of rural households. In terms of livelihood strategies, they have classified

household strategies as pure agricultural, non-agricultural, and part-time agricultural. Households in the Honghe Hani Rice Terraces System have a higher proportion of nonagricultural livelihood strategies, whereas those in the Shexian Dry land Terraces System have a more diverse distribution.

Manlosa *et al.* (2019) administered a survey to identify the livelihood strategies, capital assets, and food security in rural Southwest Ethiopia. Principal component and cluster analysis were used to identify five types of livelihood strategies, which differed primarily in the food and cash crop that comprised the strategies. In decreasing order of food security, the livelihood strategies were 'three food crops, coffee and khat' (a flowering plant native to eastern and southern Africa) 20.17 per cent, 'three food crops and khat'17.10 per cent; 'two food crops, coffee and khat', 23.14 per cent; 'two food crops and khat', 26.11 per cent; and 'one food crop, coffee and khat', 13.05 per cent.

Sun *et al*. (2019) lead an inquisition for classifying livelihood strategies adopting the activity choice approach in Rural China. According to their research, self-employment is the most lucrative livelihood strategy, with high physical and financial capital accumulations as the foundation. Wage-employed households benefit from a more educated labour force while shouldering a heavy burden caused by children's education. Furthermore, rural households, particularly self-employed and wage-employed households, face a slew of social issues as a result of labour migration. Non-labor households have lower income and asset endowments due to older family members and an unhealthier labour force, which is primarily due to the ageing population and the diseases and disabilities that accompany it.

Sharaunga and Mudhara (2020) ushered a study called analysis of livelihood strategies for reducing poverty among rural women's households: a case study of Kwazulu-Natal, South Africa. The dominant livelihood strategies pursued by women in the study areas that were identified through application of PCA on variables that indicate women's major sources of income. These

sources of income were crops, livestock, agriculture wage, agricultural produce vending, formal employment, no-agriculture wage, non-agriculture produce vending, craftwork, remittance and social grant.

Mao *et al.* (2020) conducted an inspection to unearth rural households' livelihood strategy choice and livelihood diversity of main ethnic minorities in Chongqing, China. A total of 459 rural household were surveyed for the study and 29 kinds of livelihood activity was recorded. Their study had revealed that full-time job, both full-time and part-time job, part-time agriculture, part-time job and subsidized livelihood strategy are livelihood strategies adopted by Tujia and Miao rural households in Chongqing, China. Planting, other part-time jobs, government subsidies, construction workers and breeding are the livelihood activities with the largest number of engaged household members in the region. The characteristics of the identified livelihood strategies are diversified and various in natural, financial, human and finance capital. A number of livelihood capitals impact the way that household choose their livelihood strategies, but the livelihood capitals have no significant impact on the livelihood diversity.

Pratiwini *et al*. (2020) scrutinized sustainable livelihood strategies rural household in Sanden District Bantul Regency, Indonesia. The study disclosed that majority (43.3 %) of the respondents have consolidated strategy followed by 36.7 per cent of the respondent with survival strategy and lastly by 20 per cent with accumulation strategy.

Sharma (2020) orchestrate a study called livelihood diversification in rural households of Sikkim. The results have shown that 77.34 per cent households are engaged in diversification and have a mixed livelihood strategy. The highest or the most common livelihood strategy is on farm + nonfarm activities as the combination of these strategies is adopted by 59.7 percent of households. It is further followed by combination of on farm and off farm activities with 15.67 percent households, combination of off farm and

non-farm activities with 7.66 percent household participation and combination of on farm, off farm and non-farm with participation of 5.7 percent households. In other words, a majority of rural households in Sikkim practice at least two livelihood activities.

Abera *et al.* (2021) examined the determinants of rural livelihood diversification strategies among Chewaka resettlers' communities of south-western Ethiopia. The results showed that agriculture (43.2%), agriculture plus non-farm (25.5%), agriculture plus off-farm (19.3%) and a combination of agriculture plus non-farm plus of-farm (12%) activities are the most pertinent livelihood strategies in the study area. They have found that agriculture has a leading contribution to the total households' income (72.5%) followed by non-farm (20%) and off-farm activities (7.5%). Multinomial logit model result revealed that land holding size, educational status, livestock holding, sex, age, market distance, credit access, annual income, access to training and household sizes were the major determinants of livelihood diversification strategies.

2.5 Sustainability of selected livelihood strategies in the study area.

Bjødstrup *et al*. (2011) examined sustainable livelihood strategies in Tema Mawang. According to their findings, Tema Mawang's livelihood strategies are based on a combination of subsistence and cash crop cultivation, with wage labour serving as an alternative income source for the majority of households. Rice is the main subsistence crop, while rubber is the main cash crop. The main distinction between livelihood strategies is the degree of diversification. Whereas the wealthy have a diverse strategy with multiple sources of income, the poorer families rely on fewer activities. This strategy is found to be sustainable by Cramb (1993). More diverse livelihood strategies are more sustainable than less diverse strategies because they make the household less vulnerable to changes or shocks. Because the level of diversification is linked to wealth status, poorer families will find it difficult to

increase their sustainability because they are extremely vulnerable to even minor changes.

Kabir *et al.* (2012) used the sustainable livelihood analysis framework as an analytical tool which revealed that livestock and poultry entrepreneurship are significant and positively associated with financial capital, physical and social capital, vegetables entrepreneurship is significant and positively associated with natural capital and physical capital, fisheries entrepreneurship is also positive and significantly associated with human capital. They also discovered that the role of NGOs, microcredit, and institutional support has a significant impact on the living standards of women entrepreneurs. Their research also demonstrated how entrepreneurs can achieve a sustainable livelihood by gaining access to a variety of livelihood assets.

King *et al.* (2013) examined the role of cooperatives as sustainable livelihood strategy in Rural Mexico. They discovered that the organic tomato-growing cooperative in Guanajuato is reviving an internal market and expanding economic opportunities for its members, potentially reducing the need for migration. Both communities have taken control of their projects by forming cooperatives and implementing their own plans based on participatory decision-making. Each community was able to achieve some of its economic and political goals in terms of securing alternative sustainable livelihoods.

Meena and Singh (2013) inspected the changing behaviour of SHG members in Bihar, India. The data were collected at two point of time i.e. before and after situation. The impact of the SHG approach on instilling a positive behavioural orientation has resulted in significant changes in the behaviour of the members, thereby enhancing sustainable livelihood in the study area.

Tang *et al.* (2013) investigated agricultural practices and sustainable livelihoods in the Loess Plateau, China. They discovered that agricultural practices such as building terraces, converting sloped farmlands to forestland

and grassland and expanding orchards have all had positive and significant effects on farmer's livelihood assets, strategies, outcomes, and vulnerabilities.

Ifeanyi-obi and Matthews-Njoku (2014) highlighted the socio-economic factors affecting the choice of livelihood among rural dwellers in southern Nigeria. Among many livelihood activities of the respondents, only farming and trading was found to be sustainable.

Prajapati *et al.* (2014) assessed the impact of agricultural modernization on sustainable livelihood among the tribal and non- tribal farmers of Gujarat. Their study indicated that in case of tribal group, there was positive and significant association between the sustainable livelihood seven criteria for agricultural modernization viz., extent of use of organic fertilizers, framing pattern, seed selection, available modern sources of energy equipment, extent of use of chemical fertilizers, use of plant protection measures and extent of use of improved diary practices. While in case of non-tribal group, all the 13 criteria of agricultural modernization studied possessed positive and significant association with sustainable livelihood.

Yuliati and Isaskar (2018) studied social capital and sustainable livelihood strategies in downstream area of Bengawan solo river, East Java, Indonesia. The findings revealed that livelihood assets conditions, i.e., natural, human, social, physical, and financial resources were not sustainable in the targeted villages. Also, most villagers prefer to adopt exploiting social family network (remittances) and accumulation strategy as their livelihood strategies.

Abillah *et al*. (2021) examined the sustainability of livelihood strategies of Riparian Communities in Murang'a County, Kenya. It is concluded that livelihood strategies of riparian communities such as cultivation, livestock rearing, firewood collection, employment, water collection/ irrigation, casual labourer, sand harvesting, brick making, fishing, commercial, industrial, recreation and logging were not sustainable due to a high rate of encroachment, inadequate enforcement of laws and policies. The study recommends enhanced

sustainability of livelihood strategies of riparian communities through empowerment, capacity building and well-coordinated livelihood strategies by all stakeholders in wetlands management that will lead to the wise use of wetlands ecosystems in Kenya and in other parts of the world.

2.6 Empowerment of women through livelihood strategies

Young (1993) stated ‘empowerment enables women` to take control of their own lives, set their own agenda, organize to help each other and make demands on the state for support and on the society itself for change’

Karl (1995) According to Karl the word ‘Empowerment’ captures the sense of gaining control and participation in decision-making.

Chen and Mahmud (1995) defined empowerment is a process of positive change that strengthens women’s fallback position and bargaining power within a patriarchal structure, and identify different causal pathways of change; material, cognitive, perceptual and relational.

Kabeer (1997) studied women, wages and Intra-household Power Relations in Urban Bangladesh. According to research, women's lives have changed significantly as a result of the expanded chances for waged employment. Wage employment led to increased central position within their current domestic partnerships, ensured better life for their children, added investment in their dreams and renegotiated terms of unsatisfactory relationships. Factory wages have changed the constraints under which female employees make decisions, which have improved women's capacity to achieve their unique and common goals within the family.

Sudan (2007) examined the effects of an integrated watershed development project on the empowerment of women through microfinance and women's self-help groups. The study found that 250 beneficiaries had received training through the establishment of WSHGs, and that 50 percent of them had

enrolled in MIGAs on a sustained basis and been earning up to Rs. 500 per month in the Ramnagar Sub-watershed. Additionally, the inter-loaning programme has been launched, and WSHG members are eligible for loans of up to Rs. 5000. The monthly savings of WSHGs have increased to Rs. 1000 thanks to the creation of savings accounts in nationalized banks. The recipients' livelihoods and income have both improved as a result of all of these.

Varghese (2011) assessed women empowerment in Oman based on Women Empowerment Index. The findings exhibit that there is a positive and substantial association between income level, educational attainment, women's employment status, and asset acquisition and women's empowerment. But media exposure had a poor or insignificant impact on women's emancipation. The results of a qualitative investigation also indicated that women in Sohar make wise decisions. Another result is that, in contrast to social empowerment, women in Oman are better at making decisions for their households and their economies. The outcome also demonstrated that the majority of women in the Sohar region are aware of their obligations and rights.

Lemke *et al.* (2012) examined the potential for smallholder agricultural projects supported by civil society to give rural black and coloured South African women sustainable livelihoods. The study found that involvement in these programmes gave women access to a variety of assets for their livelihood, including land, equipment, infrastructure, stipends, and money from selling their produce, as well as networking opportunities for education and capacity-building (human assets, social assets). According to the findings, even if these initiatives are not yet sustainable, they encourage a sense of possibilities, visions, ownership, and rights that may have a long-term impact on these women's livelihoods.

Chakravarty *et al.* (2013) executed an inquiry to explore the existing linkages between SHGs and women empowerment and its impact upon the socioeconomic status of women in Jharkhand. Their study had revealed that 80

per cent of the participants joined the group for income generation while only 6 per cent are allowed to spend their income on their own. Further, 82 per cent of the participants don't visit doctors in times of illness nor are they aware of the free medical services provided by the government. They concluded that while SHG have helped in income generation it does not generally improve the socio- economic condition of the respondents. They also advised SHGs to extend their perspective and see empowerment as a multifaceted societal process, giving related problems including women's health, their decision-making roles, and access to basic health and amenities and infrastructure facilities full consideration.

Mukhia (2016) performed a sociological study called women's empowerment through self help groups in Sikkim. Results showed that 17.5 per cent of respondents found self-employment in the agricultural sector, 22.5 per cent in the livestock sector, and 25 per cent created small businesses, which helped the SHG members become more economically independent. According to research, 65 per cent of respondents are now financially independent and don't rely on their husbands or families to meet their fundamental necessities. 91.25 per cent of respondents said they thought they had learned leadership skills that aid in achieving social empowerment. 87.5 per cent of respondents said they consistently participate in all SHG-organized programmes. After joining SHGs, 97.5% of respondents say they feel more confident, and 96.26% say they have developed networks and acquired respect from others. Additionally, it was discovered that 25% of women in SHGs had equal say in decisions regarding the purchase of land and other assets, 31.25 % had the ability to spend their income as they saw fit, and 12.5% had control over family businesses, demonstrating that SHG has increased their decision-making power.

Pahwa (2017) researched Delhi's female empowerment and how livelihood affects it. Women in the study region used labour, domestic service,

street vending, and self-employment as their primary sources of income. The survey found that women's participation in the workforce has undoubtedly increased their confidence and made the majority of them self-sufficient. According to the statistics examined, the majority of respondents have attained economic empowerment. The responders, however, are classified as having limited political and family influence. It is challenging to describe the respondents to the interviews as socially empowered, nevertheless.

Tamilazhaki and Awasthi (2018) acquired information from a sample of 60 respondents from 10 Self-Help Groups in the Tamil Nadu district of Tiruppur's Udumalpet block. Findings highlighted that the women used a variety of livelihood strategies, including dairy farming (53.34%), sewing sarees (10%), raising goats (13.34%), cooking (13.34%), and tailoring (10%). The indices of economic empowerment, such as expenditure (113 to 350%), annual income (128 to 382%), and savings (425 to 892%), indicated favourable gains when the respondents joined the self-help groups. They are now more involved in household decisions, which has boosted women's empowerment.

Alemu *et al.* (2018) appraised the impact of self-help groups (SHGs) in apple production on empowering women in the Chencha district of Southern Ethiopia. Propensity score matching is used to analyze the impact of a cross-sectional survey of SHG members and non-members. The findings indicated that SHG membership has positive and significant effects on community empowerment, indicating that SHGs provide a useful forum for women to exchange information and enhance awareness of their legal rights. However, the results also suggest that group membership at the household level can have unfavourable effects. The attitudinal differences between treatment and control group indicate more conflictive relations between spouses, arguably due to an intensified fight to assert control over household resources.

2.7 Suitable livelihood strategies for empowerment

Gregory (2004) investigated sustainable livelihood and grass-roots empowerment in Kerala. The study recommended that omen in rural areas may

become more empowered to have sustainable livelihoods by developing a sense of ownership of the natural resources as well as of the public utility infrastructure, rain harvesting , health education, health insurance system etc., access to health services, Proper sanitation facilities, an effective waste-disposal cum recycling system, formation of labour cooperatives, universal distribution of labour opportunities, enhanced skills of the less fit, co-operative enterprises, cooperative farming, education both formal and informal, Indigenous knowledge system, decentralised governance, neighbourhood vigilance bureau and participatory learning approach could lead to empowerment among women in the rural area to enhance sustainable livelihood.

Garba (2010) did a case study on Nigerian women and recommends a three-pronged strategy consisting of awareness-building, skills and capacity development, and political action within a framework of endogenous empowerment.

Alonso and Trillo (2014) propounded a strategy for enhancing women empowerment in Spain which is focused mainly on self-employment, i.e. the implementation of business initiatives in different sectors. Their proposal is aimed at improving women's economic independence by encouraging employment through the endeavour in traditional activities but not particularly focused on agricultural production. The goal is to capitalise on the potential of cultural and handicraft traditions and transform them into complementary tourist resources. First-rate products with distinctive personalities and brands are produced by a network of women and can include baked goods, natural cosmetics, jewellery, costume jewellery, basketry, ceramics, and leather goods. The creation of this network of female producers would need the use of internet trading, information and communication technologies (ICTs), and an increase in the educational attainment of rural women.

Banerjee (2014) recommended that one of the most important strategies for women's empowerment is to restructure Indian higher education. Higher education for women is critical in releasing their energy and creativity and preparing them to meet the world's complex challenges. Investment in developing their capacity in terms of education, skill development, and technology transfer via technical training is required. Higher Education must train women to be leaders with decision-making capacities in order to achieve the best for themselves and the country by increasing women's visibility and self-sufficiency.

Wattoo *et al.* (2015) proposed strategies for empowering women and gender equality through micro finance in Pakistan. They suggested that in order to enhance women empowerment through micro finance, women must hold the position of executives or senior managers in the MFIs/institutions, gender sensitive management system and procedure must be introduced. More women must be provided assistance to become a part of the microfinance human resource team and provide particular encouragement to organization that supports it.

Murombo (2019) appraised women's economic empowerment for sustainable livelihoods through the land reform in Zimbabwe. It was suggested through this study that giving land to women, promoting women to senior positions, involving women in development and management activities would lead to empowerment of women.

Fatihin *et al*. (2021) studied community empowerment facilitator strategy in Pendopo Kembangkopi Indonesia. The study showed that there are three major activities conducted in the study region namely education, action, and advocacy. Education is conducted by presenting Pendopo Kembangkopi as a learning center that provides teaching and learning materials for the surrounding community by organizing discussion and training forums for the community. Action by helping and providing technical guidance to the

community through business development services, healthy residential environment management, diversified work, organic agriculture, and healthy food for the community with a Sustainable Livelihood Approach. Advocacy is conducted by providing market access support to the community, connecting to sources of credit and capital to support community businesses, connecting to learning resources outside the environment, as well as providing program recommendations based on the results of social analysis with the SLA and criticisms and recommendations to stakeholders related to environmentally friendly regional governance.

2.8 Constraints faced by women

Hassan *et al.* (2002) studied the impact of international trade and multinational corporations on the environment and sustainable livelihoods of rural women in Akwa Ibom state, Niger Delta Region, Nigeria. They have discovered that Nigerian women, who work as small-scale farmers, are at risk from agricultural import. Women farmers are negatively impacted by land degradation as well. In terms of controlling and owning land, discrimination against women is another issue. Women are threatened with eviction from their own land and the ability to produce due to their countries' inheritance laws. Women were denied the opportunity to participate in several programmes as ther are frequently not regarded as farmers.

Damisa and Yohanna (2007) identified the role of rural Nigerian women in farm decision making and their results indicated that woman participation in farm management decision making is quite low. The results specified that less than 20 per cent of the women were consulted in each of the farm operations, with the exception of the sourcing of farm credit, where about 28 per cent were consulted. Additionally, the results showed that less than 13 per cent of the women's opinions were taken into account in each of the farm operations, with the exception of storage and marketing, where approximately 46 per cent were.

However, in all of the farm operations, just 1.5 per cent to 2.5 per cent made the ultimate call.

Subedi (2008) highlighted women farmers' participation in agriculture training in Kavre District of Nepal. Findings brought to light that 78.57 per cent women farmers have constraints like house hold activities and livestock, far distance to training centre, economic condition if trainings arranged in far distance, culture and lack of female extension trainers. Extension workers find it difficult to engage women about their acceptance of innovation and knowledge because they rely on men for decision making. According to 70 per cent of the extension workers, participation of women in training was moderate and suggested that there is a need to increase the presence of women in trainings.

Kabir *et al.* (2012) assessed the impact of small entrepreneurship on sustainable livelihood assets of rural poor women in Bangladesh and found that poor livelihood assets, vulnerabilities and weak transforming structures and process are the constraints for sustainable livelihoods of entrepreneurs and associated group.

Lemke *et al.* (2012) analyzed the prospects of smallholder agricultural programs for rural black and coloured South African women. They have identified various operational challenges which include divergent expectations on the side of project facilitators and participants; lack of communication; participant dependency on the organizations; lack of access to markets; and programs' lack of financial sustainability.

Tanwir and Safdar (2013) explored rural woman's constraints to participation in rural organizations. According to their research, women's double responsibilities and triple tasks, a lack of access to goods and services, ownership-related problems, a credit crunch, a lack of education among rural women, and low nutritional status were the main obstacles they faced.

Alonso and Trillo (2014) studied the socio-economic condition of women in Spain. They highlighted the constraints faced by women in the study area which include low rate of employment, strong gender gap, a tendency to work for hire and prevalence of tertiary sector's activities. It was further mentioned that the women earn on average a lower income than men in the rural areas. Additionally, the phenomena of depopulation, especially among better-educated women, masculinization, working on farms with the man as sole owner, etc., have brought many rural women on the verge of poverty and social exclusion.

Pluess *et al.* (2016) suggested building blocks for women empowerment which includes access to safe and equitable employment opportunities; access to and control over economic resources and opportunities, education and training, social protection and child care, access to and control over reproductive health and family formation, freedom from the risk of violence, voice in society and policy influence and freedom of movement.

Kumari *et al.* (2016) executed an analysis of constraints faced by farm women in agriculture in Samastipur district of Bihar. According to the findings, male domination (82%), a lack of credit (76%), and the dual roles that women play at home and on the farm (90%) are the most obstacles that farm women must overcome. Women's progress was further hampered by their inability to make decisions, poor communication with extension agents, a lack of skills and expertise, and their illiteracy. Women perform all manual agricultural labour, and by performing multiple duties, they are burdened even more.

Patra *et al.* (2018) studied constraints and opportunities for women in agriculture in India. Their research has shown that the main challenges faced by rural women are access to land, water, credit, and other agricultural inputs, as well as technology, innovative techniques, extension services, and education. Giving women the credit they deserve for their work while also

ensuring that they have access to land, credit facilities, resources, modern technologies, and other pertinent agricultural innovations will encourage many women to work in agriculture and help to lower the rate of poverty among women farmers.

Joshi (2018) carried out an assessment of training needs of farmwomen in Western Uttar Pradesh. It has been found through the study that constraints such as lack of need based training (83%), drudgery in farming (75%), lack of women specific programs (73%), multiple responsibilities of women (67%), lack of women extension workers (67%), lack of access to resources (57%), lack of knowledge (43%), lack of land rights (37%) and secondary status of women (28%) were faced by women in the study area.

CHAPTER-III

RESEARCH METHODOLOGY

Figure 3.2: Map of Mizoram

RESEARCH METHODOLOGY

According to Kothari, “Research methodology is a way to systematically solve the research problem”.

The research methods and procedures adopted in the study are described under the following heads:

3.1 Research design

3.2 Locale of the research

3.3 Sampling procedure

3.3.1Selection of district

3.3.2 Selection of block

3.3.3 Selection of village

3.3.4 Selection of respondents

3.4 Selection of variables and their empirical measurements

3.5 Procedures followed for data collection

3.6 Hypothesis formulation

3.7 Analysis of data

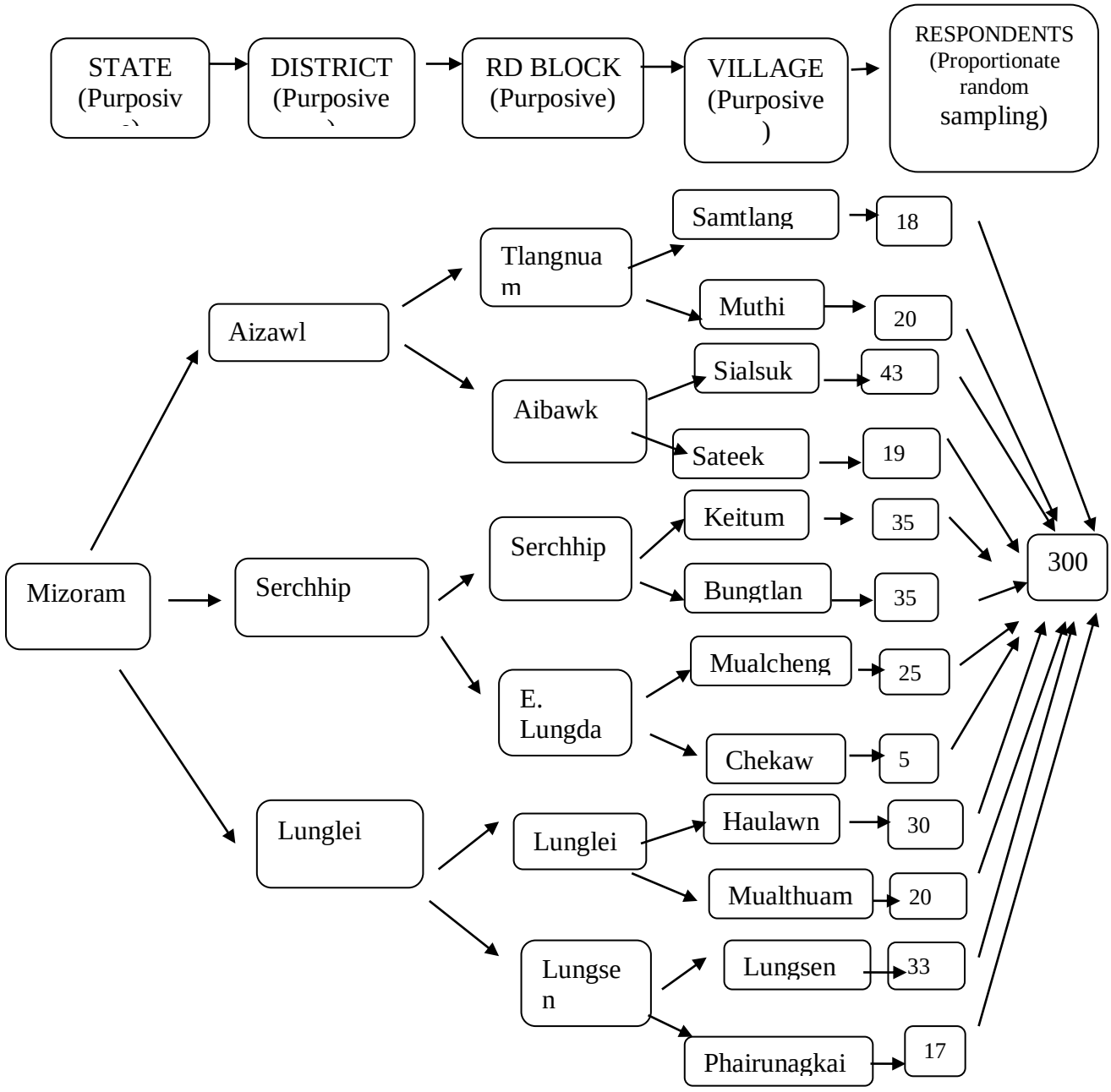

Figure 3.3: Sampling plan

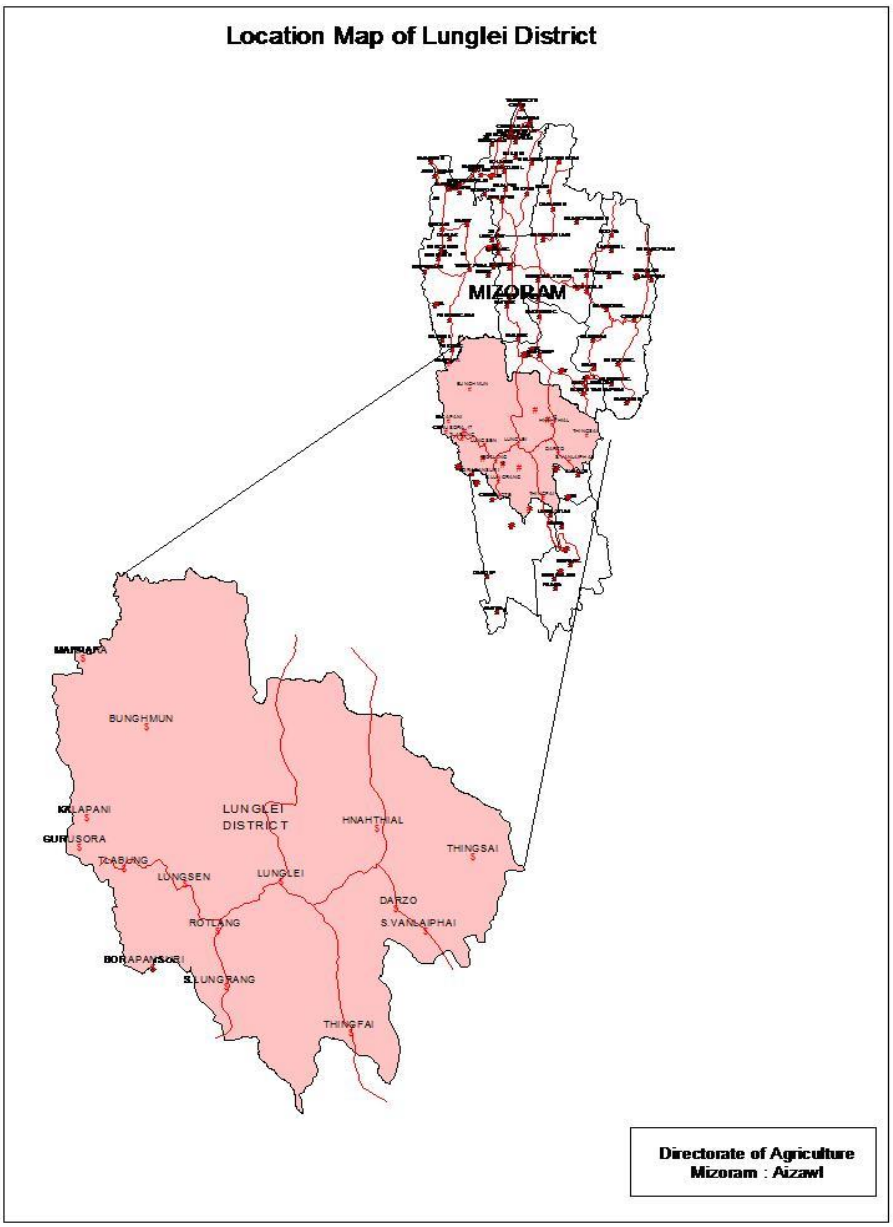

Figure 3.3.1 Location map of Lunglei District

3.1 RESEARCH DESIGN

According to Kerlinger (1995), research design is the plan, structure and strategy of investigation so as to obtain answers to the research question and to control variance.

Descriptive and analytical research design was used for the study. A descriptive study is a fact finding related mainly to the present and abstracting generalisations through the cross-sectional study of the present situation. It is mainly concerned with the collection of data and interpretation of data. It clearly states the characteristic of a particular situation or group or individuals in descriptive design and the variables are assumed to be known. Hence, the hypothesis is also formulated implicitly or explicitly at the level of statistical regularities descriptively. Analytical research is a specific type of research that involves critical thinking skills and. the evaluation of facts and information relative to the research being conducted. Analytical research focuses on understanding the cause-effect relationships between two or more variables, Use of the analytical method is critical to solving the sustainability problem because it appears that current processes are inadequate. They are intuitive, simple and based on how activist approach everyday problems. (Sharma, 2017)

3.2 LOCALE OF THE RESEARCH

3.2.1 Locale of the research:

The present study was conducted in the state of Mizoram. As of 2013, 55% to 60% of the working population of the state are annually deployed on agriculture (Agriculture statistical abstract, 2012-2013) which is followed by handloom and horticulture. Since 84.53 per cent of the total geographical area is covered by forest (Forest Survey Report, 2021), the rural people also depend on forest-based livelihood activities. It has been observed that the department

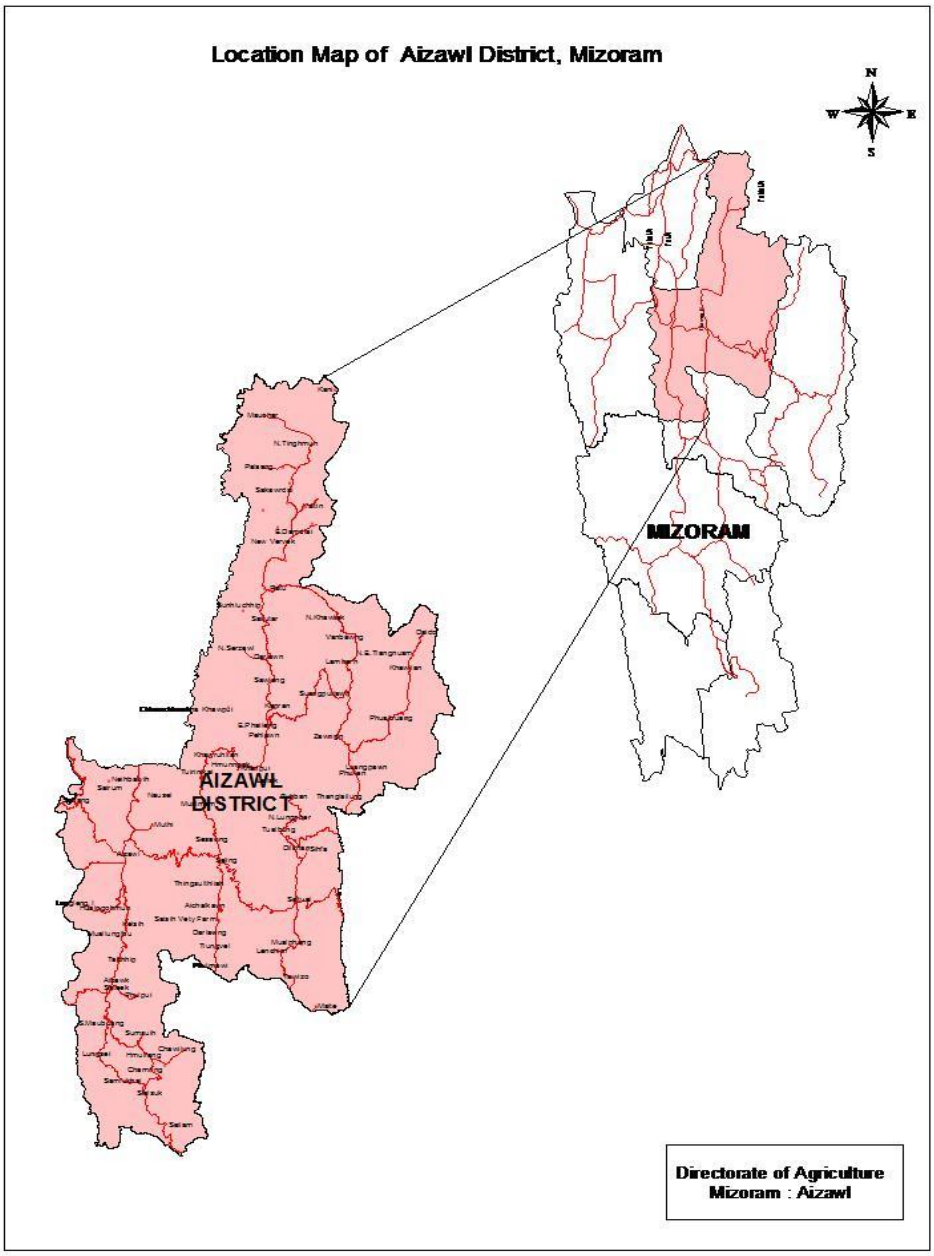

Figure 3.3.2: Location map of Aizawl district

of agriculture and allied sector has been actively working for improving the socio-economic condition of the rural people through various sustainable livelihood strategies. Therefore, the state of Mizoram is purposively selected for the present study.

3.3 SAMPLING PROCEDURE

Sampling procedure for the selection of respondents has been displayed in the flow chart as detailed in the Figure 3.3

3.3.1 Selection of district

There are 11 districts in Mizoram namely, Aizawl, Lunglei, Siaha, Champhai, Lawngtlai, Serchhip, Mamit, Kolasib, Saitual, Khawzawl and Hnahthial. From these districts, Aizawl, Serchhip and Lunglei Districts were purposively selected. Aizawl district represent the North, Serchhip district represent the central part of Mizoram and Lunglei district represent the South.

3.3.2 Selection of Blocks

From each of the selected district, two Rural-Development Blocks were purposively selected based on the sex ratio (2011 census) within the village. From Aizawl district Tlangnuam R. D. Block and Aibawk R. D. Block was purposively selected. From Serchhip district, Serchhip R. D. Block and East Lungdar R. D. Blocks were purposively selected. Lastly, from Lunglei district, Lungsen R. D. Block and Lunglei R. D. Block were purposively selected. Out of these six development block three *i.e.* Tlangnuam, Lunglei and Lungsen has sex ratio below the state average (967) at 943, 938 and 949 respectively while the remaining three i.e. Aibawk, East Lungdar and Serchhip is above the state average at 1035, 974 and 977 respectively.

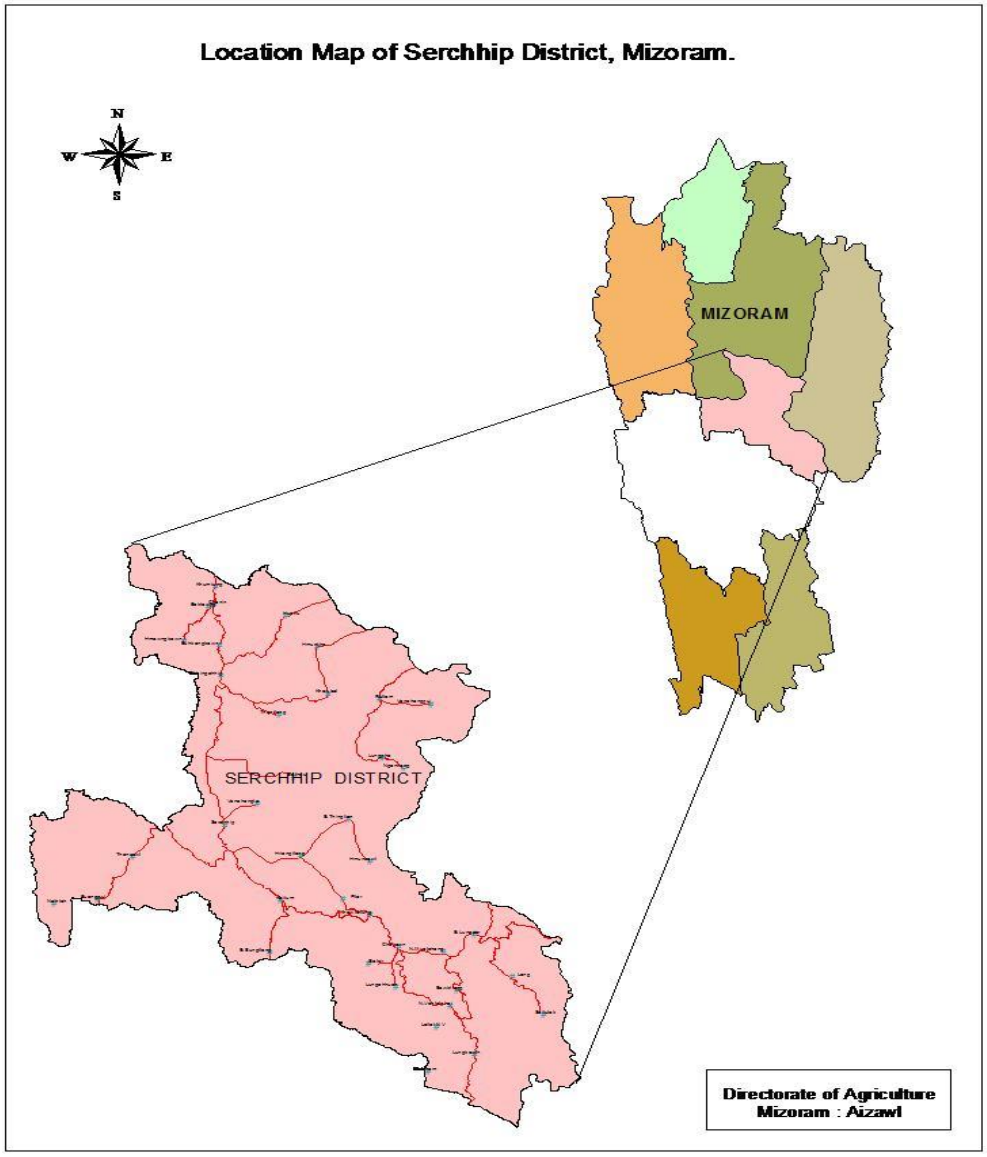

Figure 3.3.3: Location map of Serchhip district

3.3.3 Selection of Villages

Two villages were selected from each of the selected 6 R. D. Blocks making a total of 12 villages. The villages were selected purposively based on certain criteria *viz*., access to market, significant production of crops (both agricultural and horticultural), existence of people's organization like SHGs, FIGs, MHIP, and other NGOs.

3.3.4 Selection of respondents

In the selected villages, a total of 300 rural women were selected as respondents based on proportionate random sampling method.

3.4 SELECTION OF VARIABLES AND THEIR EMPIRICAL MEASUREMENT

The variables selected along with their empirical measurements for the present study are given below:

Table3.4 Variables and their empirical measurement

Sl. No.	**List of variables**	**Empirical measurement**
	Independent variables	
1.	Age	Chronological age of the farmer.
2.	Relationship with head of the family	Structured schedule
3.	Educational qualification	Scale of Mansingh (1993) with slight modification.
4.	Marital status	Structured schedule
5.	Type of family	Structures schedule

6.	Size of family	Structured schedule
7.	Occupation	Structured schedule
8.	Income source	Structured schedule
9.	Annual Income	Structured schedule
10.	Monthly expenditure	Structures schedule
11.	Credit acquisition	Structured schedule
12.	Access to input	Structures schedule
13.	Farming experience	Structured schedule
14.	SHG experience	Structured schedule
15.	Migration pattern	Structured schedule
16.	Source of information	Structured schedule
17.	Information source utilization	Structured schedule
18.	Mass media exposure	Structured schedule
1-9.	Training exposure	Structured schedule
	Dependent variable	
1.	Sustainability of livelihood strategies	Livelihood strategies sustainability index
2.	Women empowerment	Women empowerment index

A. Empirical measurements of independent variables

1. Age

Age was operationalized as the number of the completed years of the respondents at the time conducting the interview. The respondents were categorized into three main groups as young, middle and old age. The following table depicts the method of categorization of the respondents based on age.

Sl. No.	Category of age	Age (Years)
1.	Young	< 35 years
2.	Middle	35-60 years
3.	Old	> 60 years

2. Relationship with the head of the family

'Head of the family' is a term commonly used by family members to describe an authority position within their lineage (Rosenthal and Marshall, 1987). Based on the relationship the respondents had with the head of the family they were divided into six categories *viz.*, self, wife, daughter, sister, sister-in-law, daughter-in-law and the scoring was given from 1 to 6 respectively. The empirical measure of variables relating to relationship of the respondents with the head of the family was done by frequency and percentage.

Sl. No	Category	Score
1.	Self	1
2.	Wife	2
3.	Daughter	3
4.	Sister	4
5.	Sister-in-law	5
6.	Daughter-in-law	6

3. Educational qualification

Educational qualification was operationalized as the ability of the respondents to read and write or the extent of formal education undertaken by

the respondents. Respondents are categorized on the scale of Mansingh (1993) with slight modification. The empirical measure of variables relating to educational status was done by frequency and percentage.

Sl. No.	Category	Score
1.	Illiterate	0
2.	Functional literate	1
3.	Primary	2
4.	Middle	3
5.	High School	4
6.	Higher Secondary	5
7.	Graduate	6
8.	Post Graduate	7

4. Marital status

Based on the marital status the respondents were categorized into four categories *viz*., married, un-married, widow, separated. The scoring was done from 1 to 4 for analysis. The empirical measure of variables relating to marital status was done by frequency and percentage.

Sl. No.	Category	Score
1.	Un-married	1
2.	Married	2
3.	Separated	3
4.	Widow	4

5. Type of family

The type of family is categorized according to blood relation living together *viz.*, joint and nuclear family. The empirical measure of variables relating to type of family was done by frequency and percentage.

Sl. No.	Category	Score
1.	Joint	1
2.	Nuclear	2

6. Family size

Family size was conceived as the total number of members in the family. Respondents were categorized into three sub categories based on the mean ($\bar{x}$) and standard deviation (σ). The numerical value of the family size was taken for the analysis. The following table depicts the method of categorization of the respondents based on family size.

Sl. No.	Category	Score range
1.	Small	Below ($\bar{x}$– σ)
2.	Medium	Between ($\bar{x}$ - σ) and ($\bar{x}$ + σ)
3.	Large	Above ($\bar{x}$+ σ)

7. a. Occupation of respondents

Occupation of respondents refers to the profession, job and employment for earning livelihood of the respondents. The respondents were classified into the following categories based on their occupation.

Sl. No.	Category	Score
1.	Farming	1
2.	Farming and animal husbandry	2

3.	Farming and government job	3
4.	Farming, government job and animal husbandry	4
5.	Farming and business	5
6.	Farming, business and animal husbandry	6
7.	Farming and handloom	7
8.	Farming, handloom and animal husbandry	8
9.	Farming, handloom and business	9
10.	Farming, business and government job	10
11.	Farming and tailoring	11
12.	Farming, tailoring and animal husbandry	12
13.	Farming, tailoring and business	13
14.	Tailoring	14
15.	Tailoring and animal husbandry	15
16.	Tailoring and business	16
17.	Business	17
18.	Business and animal husbandry	18
19.	Laborer	19
20.	Farming and laborers	20
21.	Farming, laborer and animal husbandry	21
22.	Animal husbandry and job	22

7. b Occupation of spouse

Occupation of spouse refers to the profession, job or work performed by the spouses for their livelihood. No spouse category was used for unmarried, separated or widowed respondents. The respondents were grouped into the following category:

Sl. No.	Category	Score

1.	No spouse	0
2.	Farming	1
3.	Farming and animal husbandry	2
4.	Farming and Government job	3
5.	Farming and business	4
6.	Farming and self employment	5
7.	Farming and regular job	6
8.	Farming and labour	7
9.	Business	8
10	Others	9

8. Income source of respondents

Income source of the respondents include various activities that are used by the respondents as a means of earning cash. They are sorted as given in the table and scoring is done as follows:

Sl. No.	**Category**	**Score**
1.	Farming	1
2.	Fishery	2
3.	Sericulture	3
4.	Forest based	4
5.	Animal husbandry	5
6.	Wages	6
7.	Handloom	7
8.	Tailoring	8
9.	Business	9
10.	Property	10
11.	Remittance	11
12.	Pension	12
13.	MGNREGA	13
14.	PM KISAN	14

15.	Old age/disability pension	15

8. b Income source of entire household

The income source of the entire household includes that of the spouse, children and other family members that contribute to the total annual income. Scoring is done as given in the table and they are categorized accordingly.

Sl. No.	Category	Score
1.	Farming	1
2.	Fishery	2
3.	Sericulture	3
4.	Forest based	4
5.	Animal husbandry	5
6.	Apiary	6
7.	Wages	7
8.	Business	8
9.	Handloom	9
10.	Tailoring	10
11.	Property	11
12.	Remittance	12
13.	Pension	13
14.	MGNREGA	14
15.	PM KISSAN	15
16.	Old age/disability pension	16

9.a. Annual income of respondents

It referred to the total earnings in term of rupee in a year from all the available sources (*i.e.* primary and secondary sources) by the members in the

family of the respondents. The respondents were sorted into three groups as follows:

Sl. No.	Category	Score range
1.	Low	Below ($\bar{x}$– σ)
2.	Medium	Between ($\bar{x}$ - σ) and ($\bar{x}$ + σ)
3.	High	Above ($\bar{x}$+ σ)

9.b. Annual income of respondents' entire household

It referred to the total earnings in term of rupee in a year from all the available sources by the members in the family of the respondents. The respondents were organized into three groups as follows:

Sl. No.	Category	Score range
1.	Low	Below ($\bar{x}$– σ)
2.	Medium	Between ($\bar{x}$ - σ) and ($\bar{x}$ + σ)
3.	High	Above ($\bar{x}$+ σ)

10. a. Monthly expenditure of respondents' entire household

Monthly expenditure refers to the entire amount of money that is used by the respondents and their family. It includes money spent on food items, electricity and water bill, rent, health, education, transport, clothes, entertainment, donation to church and various NGOs and miscellaneous items. The respondents were classified into three groups as follows:

Sl. No.	Category	Score range
1.	Low	Below ($\bar{x}$– σ)
2.	Medium	Between ($\bar{x}$ - σ) and ($\bar{x}$ + σ)
3.	High	Above ($\bar{x}$+ σ)

10. b. Contribution of respondents on family monthly expenditure

The respondents are grouped into different category depending on their monetary contribution towards their family monthly expenditure and ranking is done as follows:

Sl. No.	Category	Score
1.	Nothing	1
2.	Very less	2
3	Less	3
4.	Moderate	4
5.	Most of the contribution	5
6.	All the contribution	6

11. Credit acquisition

Credit acquisition refers the sources of credit for the respondents. They are categorized as institutional and non-institutional sources. Depending on the sources from which credit is availed the respondents are categorized as given in the table.

Sl. No.	Category	Score
Institutional		
1.	Bank	1
2.	SHG	2
Non-institutional		
3.	Relatives	3
4.	Friends	4

12. Access to input

Respondent's access to various types of input such as improved seeds, fertilizers, insecticides, herbicides, water, irrigation facility, tractor services and power tiller services for their farms is taken into consideration. The accessibility of inputs for the respondents were given in a four-point continuum such as highly accessible, fairly accessible, low access and not accessible or not needed with a score of 3, 2, 1 and 0 respectively. The respondents are categorized into three groups on the basis of mean and standard deviation as follows:

Sl. No.	Category	Score range
1.	Low	Below ($\bar{x}$– σ)
2.	Medium	Between ($\bar{x}$ - σ) and ($\bar{x}$ + σ)
3.	High	Above ($\bar{x}$+ σ)

13. a. Farming experience

Farming experience refers to the total number of years a particular respondent is engaged in farming and its allied activities. They are sorted into three groups as follows:

Sl. No.	Category	Score range
1.	Low	Below ($\bar{x}$– σ)
2.	Medium	Between ($\bar{x}$ - σ) and ($\bar{x}$ + σ)
3.	High	Above ($\bar{x}$+ σ)

13. b. SHG Experience

SHG experience refers to the total number of years a particular respondent is involved in SHG. The respondents are classified as follows:

Sl. No.	Category	Score range

1.	Low	Below ($\bar{x}$– σ)
2.	Medium	Between ($\bar{x}$ - σ) and ($\bar{x}$ + σ)
3.	High	Above ($\bar{x}$+ σ)

13. c. Experience in livelihood activities

Experience in livelihood activities refers to the total number of years a particular respondent is involved in earning income from their various livelihood activities. The respondents are categorized as follows:

Sl. No.	Category	Score range
1.	Low	Below ($\bar{x}$– σ)
2.	Medium	Between ($\bar{x}$ - σ) and ($\bar{x}$ + σ)
3.	High	Above ($\bar{x}$+ σ)

14. Livelihood

Livelihood refers to the activities that are carried out by the respondent in order to earn their living. The various livelihood activities that are carried out by the respondents are divided into primary and secondary depending on their contribution in the total income. If a particular livelihood contributes more than the others it is kept as a primary source of livelihood and if a livelihood is not used as the main source of income it is kept as a secondary livelihood. For those respondents have more than two income source there is a tertiary livelihood activity. Each of the livelihoods activity is scored as follows. The empirical measure of variable relating to livelihoods was done by using frequency and percentage.

Sl. no	Category	Score		
		Primary	Secondary	Tertiary

1	Farming	1	2	3
2	Animal husbandry	1	2	3
3	Job	1	2	3
4	Business	1	2	3
5	Handloom	1	2	3
6	Tailoring	1	2	3
7	Others	1	2	3

15. Source of information

Sources of information refer to all the sources of information that is used by the respondents for their livelihood and other necessary information. The sources are divided into personal localite, personal cosmopolite and impersonal cosmopolite sources. The respondents who have used these sources are given a score of 1 whereas those that do not use them are given a score of 0 as follows. The empirical measure of variables relating to the source of information was done by frequency and percentage.

Sl.no	**Category**	**Score**
1	Used	1
2	Not used	0

16. Information source utilization

Information sources utilization referred to the various sources of information utilized by the respondents for sustainable livelihood. Information sources utilized was classified based on the use of mass media sources, formal information and informal sources using Ramachandran scale (1974).

A) Personal cosmopolite

Personal cosmopolite sources of information include the information sources of the respondents from their own village. These sources are relatives, friends, neighbours, progressive, local leaders (NGO's, church etc.) and Panchayat members for their livelihood. Their frequency of use was scored as Most often (3), often (2), sometimes (1) and never (0). Based on the total score the respondents were classified into three categories *viz.*, low, medium and high using mean ($\bar{x}$) and standard deviation (σ) as follows:

Sl.no	Category	Score
1.	Low	Below ($\bar{x}$– σ)
2.	Medium	Between ($\bar{x}$ - σ) and ($\bar{x}$ + σ)
3.	High	Above ($\bar{x}$+ σ)

B) Personal cosmopolite

Personal cosmopolite sources include the information received from different sources such as AO, HO, VLW/VFA, KVK, Veterinary, ATMA, MZSRLM and others (NEIDA, FOCUS and NABARD). Their frequency of use was scored as Most often (3), often (2), sometimes (1) and never (0). Based on the total score the respondents were classified into three categories *viz.*, low, medium and high using mean($\bar{x}$) and standard deviation (σ) as follows:

Sl.no	Category	Score
1.	Low	Below ($\bar{x}$– σ)
2.	Medium	Between ($\bar{x}$ - σ) and ($\bar{x}$ + σ)
3.	High	Above ($\bar{x}$+ σ)

C) Mass media information sources

Under the mass media sources, nine sources of information viz., radio, television, smart phone, mobile apps, internet, newspaper printed media (folder, leaflet, farm publication, bulletin etc.),exhibition, mass meeting were included. Their frequency of use was scored as Most often (3), often (2), sometimes (1) and never (0). Based on the total score the respondents were classified into three categories *viz.*, low, medium and high using mean($\bar{x}$) and standard deviation (σ) as follows:

Sl.no	**Category**	**Score**
1.	Low	Below ($\bar{x}$– σ)
2.	Medium	Between ($\bar{x}$ - σ) and ($\bar{x}$ + σ)
3.	High	Above ($\bar{x}$+ σ)

17. Mass media exposure

Under mass media exposure, the respondents are distributed based on their age group i.e. young (<35 years), middle age (35-60 years) and old (>60 years) and the usage of the mass media sources. The mass media sources include radio, television, smart phone, mobile apps, internet, newspaper printed media (folder, leaflet, farm publication, bulletin etc.), exhibition, mass meeting and they are given a score of 1-9 as given in the table. The distribution of respondents based on mass media is as follows:

Sl. No.	**Category**	**Score**
1	Radio	1
2	T.V.	2
3	Smart phone	3
4	Mobile apps	4
5	Internet	5
6	Newspaper	6
7	Printed media (folder, leaflet, farm	7

	publication, bulletin etc.),	
8	Exhibition	8
9	Mass meeting	9

11. a Training exposure

Training exposure is the extent to which the respondents are exposed to trainings related any type of livelihood strategies adopted by them. A score of 1 was given to respondents who have attended trainings and 0 for those who have not attended trainings. Further, total no of trainings attended by the respondent was also calculated and they are further classified into three categories using mean ($\bar{x}$) and standard deviation (σ) as follows:

Sl. No.	Category	Score range
1.	Low	Below ($\bar{x}$ – σ)
2.	Medium	Between ($\bar{x}$ - σ) and ($\bar{x}$ + σ)
3.	High	Above ($\bar{x}$+ σ)

11. b Training need assessment

For training need assessment, the responses were collected in three-point continuum scale such as Most Needed (MN), Needed (N) and Not Needed (NN) by assigning scores of 2, 1, and 0 respectively. The respondents were classified using frequency and percentage. Weighted score for different thrust areas were further calculated which is used for ranking their importance.

$$\text{Weighted score} = \frac{(No\ of\ MNx2)+(No\ of\ Nx1)+(No\ of\ NNx1)}{Total\ no\ of\ MN+N+NN}$$

11. c. Training place preference

Training place preference refers to the place that is most preferred by the respondents for attending the training programs that is organized by different organization. The places mentioned were Village community hall, NGO premises within the village, KVK and anyplace. The respondents were

asked to rank their preference by using a four-point continuum scale such as Very High, high, Moderate and low by assigning a score of 4 to 1 respectively. The empirical measure of the variables relating to training place preference was done by frequency and percentage.

Sl. No.	Extent of preference	Score
1	Very high	4
2	High	3
3	Moderate	2
4	Low	1

Further the training place preference score was calculated to rank the preference of the respondents by using the following formula

$$\textbf{TPPS} = \frac{(No\ of\ Rvhpx4)+(No\ of\ Rhpx3)+(No\ of\ RMPx2)+(No\ of\ Rlpx1}{Total\ no\ of\ Rvhp+Rhp+Rmp+Rlp}$$

Where,

TPPS = Training place preference score

Rvhp =Respondent with very high preference

Rhp =Respondent with high preference

Rmp =Respondent with moderate preference

Rlp =Respondent with low preference

12. Comparison of variables between districts:

For the comparison of variables between the three districts i.e. Lunglei, Aizawl and Serchhip districts one way analysis of variance (one-way ANOVA) was used. The comparison between the districts was done by calculating the critical difference. When the difference between any pair-wise treatments is equal to or more than critical difference we say that there is significant difference between the two means.

13. Dependence on agriculture:

Following Xu *et al.,* 2015 the share of agriculture net income to total net income of respondents was calculated for each respondent and used to categorize the respondents into four groups according to the share of net income from agriculture, and thus dependence on agriculture and interpreted in terms of livelihood strategies. The respondents were classified as follows:

LS Class	Agriculture Income Share	Dependence on Agricultural Income
LS 1	<20	Less dependent
LS 2	>20-40	Moderately dependent
LS 3	>40-60	Highly dependent
LS 4	>60	Extremely dependent

14. Livelihood diversification

Livelihood diversification refers to the process of rural households' maintaining survival and improving their living standards by continuously increasing the types of production activities they engage in and expanding their livelihood asset investment (Niehof, 2004).

Livelihood diversity index: The diversity of rural households' livelihoods can be calculated through the Shannon Wiener Index of the various livelihood income sources of the households. The index is a commonly used diversity index to describe biodiversity in ecosystems in ecology study (Moreno *et. al*, 2018). This index considers not only the number of livelihood strategy types that household members engaged in, but also the evenness of income from adopted strategy types. The formula is as follows (Liu *et al.,* 2018):

$$LDI = \sum_{i=1}^{n} -pi \ln pix \quad i = 1, 2, \ldots, n \quad (1)$$

Where, LDI refers the livelihood diversity index, pi refers the ratio of the ith livelihood income to the total income.

n=number of livelihood strategies adopted

i=total no of respondents

The respondents are further classified into the following three categories based on the mean and standard deviation as follow:

Sl. No.	Category	Score range
1.	Low	Below ($\bar{x}$ – σ)
2.	Medium	Between ($\bar{x}$ - σ) and ($\bar{x}$ + σ)
3.	High	Above ($\bar{x}$+ σ)

15. Livelihood vulnerability Index

Vulnerability is understood to be the result of the interaction between the biophysical drivers (include climatic exposure) and the function of the system's sensitivity and adaptive capacity (Shah *et al.,* 2013). Livelihood Vulnerability was assessed based on trends, shocks and seasonality.

The Livelihood Vulnerability Index uses a weighted-average approach (Hahn *et al.,* 2009), where each sub-component contributes equally to the overall index even though each major component comprises a variable number of sub-components. Because each of the sub-components was measured on a different scale, they were standardized as an index using

Livelihood Vulnerability Index=$\sum_{i=1}^{3} wixi$

Where I= 1,2,3,.....

i.e. LVI =$W_1X_1+W_2X_2+W_3X_3$

Here, W_1= Weight for Trends

W_2= Weight for Shock

W_3= Weight for Seasonality

X_1= Trends Index

X_2= Shocks Index

X_3= Seasonality Index

Now, 'W' here stands for weight of vulnerability and $W_1 = \frac{CVi}{C}$, formula was used to calculate weight of vulnerability index,

Where $C = \sum_{i=1}^{n} CVi$

$CVi = \frac{SDi}{Mean\ i}$

Based on the score obtained the respondents are further divided into the following categories based on mean and standard deviation as follows:

Sl. No.	Category	Score range
1.	Low	Below ($\bar{x}$ – σ)
2.	Medium	Between ($\bar{x}$ - σ) and ($\bar{x}$ + σ)
3.	High	Above ($\bar{x}$+ σ)

B. Dependent variables and their empirical measurement

1. Sustainability of livelihood strategies adopted:

To measure the sustainability of the livelihood strategies adopted, the DFID (Department for International Development) framework was used with necessary modification, whereby the assets of livelihood components as per DFID framework *viz.*, Human capital, Physical capital, Environmental/Natural

capital, Economic/Financial capital and Social capital of the respondents were assessed.

1.1 Human Capital

Human capital Index (HCI) was measured on the following eight pillars of livelihood *viz.*, education, occupational skill, occupational knowledge, traditional skill, skill training attended, health facilities, health status, and nutritional status. Human capital Index was calculated using the following formula

$$HCI=\frac{Human\ capital\ score\ (value)-Min\ (value)}{Max\ (value)-Minimum\ (value)}$$

Based on the score obtained the respondents are further divided into the following categories based on mean and standard deviation as follows:

Sl. No.	Category	Score range
1.	Low	Below ($\bar{x}$ – σ)
2.	Medium	Between ($\bar{x}$ - σ) and ($\bar{x}$ + σ)
3.	High	Above ($\bar{x}$+ σ)

1.2 Physical capital

Physical capital Index (PCI) was measured on the following ten pillars of livelihood *viz.*, housing, drinking water facility, electricity, solar panels, cooking fuel, road connectivity within and outside the village, vehicle owned, agricultural land, farm equipment and household items. Physical capital Index was calculated using the following formula

$$PCI=\frac{Physical\ \ capital\ score\ (value)-Min\ (value)}{Max\ (value)-Minimum\ (value)}$$

Based on the score obtained the respondents are further divided into the following categories based on mean and standard deviation as follows:

Sl. No.	Category	Score range
1.	Low	Below ($\bar{x}$ – σ)
2.	Medium	Between ($\bar{x}$ - σ) and ($\bar{x}$ + σ)
3.	High	Above ($\bar{x}$+ σ)

1.3 Environmental/ Natural capital

Natural capital Index (E/NCI) was measured on the following eight pillars of livelihood *viz.*, forest resources for consumption purpose, forest resources for other purpose other than consumption, water resources for household consumption, water resources for other purpose other than household consumption, land resources for agriculture, land resources for non-agricultural purposes, use of abiotic resources and use of animal resources. Natural capital Index was calculated using the following formula

$$\text{E/NCI}=\frac{Human\ capital\ score\ (value)-Min\ (value)}{Max\ (value)-Minimum\ (value)}$$

Based on the score obtained the respondents are further divided into the following categories based on mean and standard deviation as follows:

Sl. No.	Category	Score range
1.	Low	Below ($\bar{x}$ – σ)
2.	Medium	Between ($\bar{x}$ - σ) and ($\bar{x}$ + σ)
3.	High	Above ($\bar{x}$+ σ)

1.4 Economic/Financial Capital

Economic/Financial capital Index (E/FCI) was measured on the following six pillars of livelihood *viz*., wages, remittance, total income, savings, savings done at and other cash asset. Financial capital Index was calculated using the following formula

$$\text{E/FCI}=\frac{Financial\ capital\ score\ (value)-Min\ (value)}{Max\ (value)-Minimum\ (value)}$$

Based on the score obtained the respondents are further divided into the following categories based on mean and standard deviation as follows

Sl. No.	Category	Score range
1.	Low	Below ($\bar{x}$ – σ)
2.	Medium	Between ($\bar{x}$ - σ) and ($\bar{x}$ + σ)
3.	High	Above ($\bar{x}$+ σ)

1.5 Social Capital

Social capital Index (SCI) was measured on the following seven pillars of livelihood *viz.*, relatives, close friends, help received, help given, assistance in terms of money, food and extra labor. Social capital Index was calculated using the following formula

$$\text{SCI}=\frac{Social\ capital\ score\ (value)-Min\ (value)}{Max\ (value)-Minimum\ (value)}$$

Based on the score obtained the respondents are further divided into the following categories based on mean and standard deviation as follows:

Sl. No.	Category	Score range
1.	Low	Below ($\bar{x}$ – σ)
2.	Medium	Between ($\bar{x}$ - σ) and ($\bar{x}$ + σ)
3.	High	Above ($\bar{x}$+ σ)

1.6 Sustainability of livelihood strategies:

Sustainability of livelihood strategies was calculated using the following formula:

Livelihood sustainability index=$\sum_{i=1}^{3} wixi$

Where I= 1,2,3,.....

i.e. LSI =$W_1X_1+W_2X_2+W_3X_3+W_4X_4+W_5X_5+W_6X_6$

Here, W_1= Weight for Human capital

W_2= Weight for Physical capital

W_3= Weight for Natural capital

W_4 = Weight for financial capital

W_5= Weight for social capital

X_1= Human capital Index

X_2= Physical capital Index

X_3= Natural capital Index

X_4= financial capital Index

X_5= Social capital Index

Now, 'W' here stands for weight of sustainability and $W_1 = \frac{CVi}{C}$, formula was used to calculate weight of sustainability index,

Where C=$\sum_{i=1}^{n} CVi$

CVi= $\frac{SDi}{Mean\, i}$

The respondents are further divided into three category using mean and standard deviation as follows:

Sl. No.	Category	Score range
1.	Low	Below ($\bar{x}$ – σ)
2.	Medium	Between ($\bar{x}$ - σ) and ($\bar{x}$ + σ)
3.	High	Above ($\bar{x}$+ σ)

2. Women empowerment: Women empowerment was measured using different components such as economic, social, political, educational, psychological and familial.

2.1. Economic empowerment

2.1.1 Economic motivation

It is the degree to which the respondents place the occupational success in terms of profit maximization and relative value placed on economic end. For this purpose, five point scales *i.e.* strongly agree, agree, undecided, disagree and strongly disagree developed by Supe (1969) was used.

Six statements were read out and the respondents were asked to give their opinion. The degree of agreement and disagreement were recorded in a five-point scale. It included five positive statements and one negative statement. The scoring procedure for statement is given as follows:

Category	Score	
	Positive statement	Negative statement
Strongly agree	5	1
Agree	4	2
Undecided	3	3

Disagree	2	4
Strongly disagree	1	5

The theoretical scale value varies from 6 to 30 and based on the mean and standard deviation, it was categorized as follows

Sl. No.	Category	Score range
1.	Low	Below ($\bar{x}$ – σ)
2.	Medium	Between ($\bar{x}$ - σ) and ($\bar{x}$ + σ)
3.	High	Above ($\bar{x}$+ σ)

2.1.2 Risk preference

It is the degree to which the respondents is oriented towards risk and uncertainty and has courage to face problems in livelihood activities. The variable was measured by employing the scale developed by Supe (1969). The scale consisted of six statements of which one statement is negative. Each statement was rated on five-point continuum. The scoring procedure for statement was as follows:

Category	Score	
	Positive statement	Negative statement
Strongly agree	5	1
Agree	4	2
Undecided	3	3
Disagree	2	4
Strongly disagree	1	5

The theoretical scale value varies from 6 to 30. On the basis of the total score obtained, respondents were classified into the following three categories, based on the mean and standard deviation as given below:

Sl. No.	Category	Score range
1.	Low	Below ($\bar{x}$ – σ)
2.	Medium	Between ($\bar{x}$ - σ) and ($\bar{x}$ + σ)
3.	High	Above ($\bar{x}$+ σ)

2.1.3 Marketing orientation

Marketing orientation is measured by the scale developed by Samantha (1977). The scale consisted of six statements. Each statement was rated on a five-point continuum ranging from strongly agree through strongly disagree and undecided.

Category	Score	
	Positive statement	Negative statement
Strongly agree	5	1
Agree	4	2
Undecided	3	3
Disagree	2	4
Strongly disagree	1	5

The theoretical scale value varies from 6 to 30. On the basis of the total score obtained, respondents were classified into the following three categories, based on the mean and standard deviation as given below:

Sl. No.	Category	Score range
1.	Low	Below ($\bar{x}$ – σ)
2.	Medium	Between ($\bar{x}$ - σ) and ($\bar{x}$ + σ)
3.	High	Above ($\bar{x}$+ σ)

2.1.4 Management orientation

It refers to the degree to which a respondent manage human and material resources for maximizing efficiency in livelihood activities. This variable was measured with the scale developed by (Singha, 1991) where 7 items were administered on five-point continuum ranging from strongly agree, agree, undecided, disagree and strongly disagree where a score of 5 to 1 were assigned to the statement respectively. The management orientation score for any respondent varied from 7 to 35. Based on the mean and standard deviation of the obtained scores, respondents were categorized as;

Sl. No.	Category	Score range
1.	Low	Below ($\bar{x}$ – σ)
2.	Medium	Between ($\bar{x}$ - σ) and ($\bar{x}$ + σ)
3.	High	Above ($\bar{x}$+ σ)

2.1.5 Achievement motivation: It was operationalized as the desire for excellence to attain sense of personal accomplishment. It was measured with the help of scale developed by Visweswaram (1969).

The instrument consisted of six statements and responses obtained on five-point continuum ranging from strongly agree, agree, undecided, disagree and strongly disagree and weightage of 5,4,3,2 and 1 respectively were assigned to responded categories in case of positive statement and the scoring was reverse for negative statement. The total score of respondents on their achievement motivation was arrived at by summing up the weightage of responses for each statement. Thus, the total score for each respondent on her motivation range from 6 to 30. Based on the mean and standard deviation of the obtained scores, respondents were categorized as:

Sl. No.	Category	Score range
1.	Low	Below ($\bar{x}$ – σ)

2.	Medium	Between ($\bar{x}$ - σ) and ($\bar{x}$ + σ)
3.	High	Above ($\bar{x}$+ σ)

2.1.6 Decision making ability: In the present study, decision making ability has been operationalized as the degree to which a respondent justifies her selection of most efficient means from among the available alternatives, on the basis of information and judgement, for achieving maximum economic profit from her livelihood activities.

Scale developed by Supe (1969), with slight modification was used to measure the decision making ability of the respondents. The instrument consisted of six statements and responses obtained on five-point continuum ranging from strongly agree, agree, undecided, disagree and strongly disagree and weightage of 5,4,3,2 and 1 respectively were assigned to responded categories in case of positive statement and the scoring was reverse for negative statement. The total score of respondents on their decision making ability was arrived at by summing up the weightage of responses for each statement. Thus, the total score for each respondent on her decision making ability range from 6 to 30. Based on the mean and standard deviation of the obtained scores, the final categorization was done as follows:

Sl. No.	**Category**	**Score range**
1.	Low	Below ($\bar{x}$ – σ)
2.	Medium	Between ($\bar{x}$ - σ) and ($\bar{x}$ + σ)
3.	High	Above ($\bar{x}$+ σ)

2.1.7 Economic empowerment

Economic Empowerment measure the economic status of women using the different components such as economic motivation, risk preference, marketing orientation, management orientation, achievement orientation,

achievement motivation and decision-making ability. The Formula for calculating economic empowerment index is as follows:

Economic empowerment index= $\frac{Economic\ empowermnet\ (value) - Min\ (value)}{Max\ (value) - Minimum\ (value)}$

Based on the mean and standard deviation of the score obtained, the levels of economic empowerment of the respondents were categorized as below:

Sl. No.	Category	Score range
1.	Low	Below ($\bar{x}$ – σ)
2.	Medium	Between ($\bar{x}$ - σ) and ($\bar{x}$ + σ)
3.	High	Above ($\bar{x}$+ σ)

2.2. Social empowerment

2.2.1 Social participation: It refers to the extent to which respondent is associated with various organization in terms of membership, extent of participation and/ or status in the organization in the village. The scoring was done in the following manner.

Sl. No.	Category	Score
1.	No membership	0
2.	Member	1
3.	Office bearer	0,1,2.....n

For finding the extent of participation in the organization the following scoring was adopted:

Sl. No.	Category	Score
1.	Never	0

2.	Occasionally	1
3.	Regularly	2

The score for all different categories was added and based on the mean and standard deviation of the obtained score, respondents were categorized as:

Sl. No.	Category	Score range
1.	Low	Below ($\bar{x}$ – σ)
2.	Medium	Between ($\bar{x}$ - σ) and ($\bar{x}$ + σ)
3.	High	Above ($\bar{x}$+ σ)

2.2.2 Cosmopoliteness: It is operationalized as the degree to which the respondent is oriented outside her community or village.

In the present study cosmopoliteness was measured by using the procedure adopted by Nandapukar (1980) and Venkataramaiah (1991) with slight modification. The scale consisted of three statements for which the responses obtained were given scores as 1 for 'yes' and 0 for 'no'. Based on the mean and standard deviation of the obtained scores, respondents were categorized as:

Sl. No.	Category	Score range
1.	Low	Below ($\bar{x}$ – σ)
2.	Medium	Between ($\bar{x}$ - σ) and ($\bar{x}$ + σ)
3.	High	Above ($\bar{x}$+ σ)

2.2.3 Social empowerment: Social empowerment measures the social status of women using the different components such as social participation and cosmopoliteness. The Formula for calculating social empowerment index is as follows:

Social empowerment index= $\frac{Social\ empowermnet\ (value) - Min\ (value)}{Max\ (value) - Minimum\ (value)}$

Based on the mean and standard deviation of the score obtained, the levels of social empowerment of the respondents were categorized as below:

Sl. No.	Category	Score range
1.	Low	Below ($\bar{x}$ – σ)
2.	Medium	Between ($\bar{x}$ - σ) and ($\bar{x}$ + σ)
3.	High	Above ($\bar{x}$+ σ)

2.3. Political empowerment

2.3.1 Political awareness: Political awareness is often defined as: ‘‘the extent to which an individual pays attention to politics and understands what he or she has encountered ’’ (Zaller, 1992). In the present study political awareness was measured using a scale developed by Matilda (2006). The respondent’s answers to statements are given a score as follows:

Sl. No.	Response	Score
1.	Not at all	0
2.	To a limited extent	1
3.	To a moderate extent	2
4.	To a large extent	3
5.	Fully	4

The respondents are further divided into three categories based on mean and standard deviation as follows:

Sl. No.	Category	Score range
1.	Low	Below ($\bar{x}$ – σ)
2.	Medium	Between ($\bar{x}$ - σ) and ($\bar{x}$ + σ)
3.	High	Above ($\bar{x}$+ σ)

2.3.2 Political participation: Political participation includes a broad range of activities through which people develop and express their opinions on the world and how it is governed, and tries to take part in and shape the decisions that affect their lives. In the present study political participation was measured using a scale developed by Matilda (2006). The respondent's answers to statements are given a score as follows:

Sl. No.	Response	Score
1.	Not at all	0
2.	To a limited extent	1
3.	To a moderate extent	2
4.	To a large extent	3
5.	Fully	4

The respondents are further divided into three categories based on mean and standard deviation as follows:

Sl. No.	Category	Score range
1.	Low	Below ($\bar{x}$ – σ)
2.	Medium	Between ($\bar{x}$ - σ) and ($\bar{x}$ + σ)
3.	High	Above ($\bar{x}$+ σ)

2.3.3 Political empowerment: Political empowerment measures the political status of women using the two components *viz*., political awareness and political participation. The Formula for calculating political empowerment index is as follows:

Political empowerment index= $\frac{Political\ empowermnet\ (value) - Min\ (value)}{Max\ (value) - Minimum\ (value)}$

Based on the mean and standard deviation of the score obtained, the levels of political empowerment of the respondents were categorized as below:

Sl. No.	Category	Score range
1.	Low	Below ($\bar{x}$ – σ)
2.	Medium	Between ($\bar{x}$ - σ) and ($\bar{x}$ + σ)
3.	High	Above ($\bar{x}$+ σ)

2.4. Educational empowerment: Educational empowerment measures the educational status of women. The formula for calculating educational empowerment index is as follows:

Educational empowerment index= $\frac{Educational\ empowermnet\ (value) - Min\ (value)}{Max\ (value) - Minimum\ (value)}$

Based on the mean and standard deviation of the score obtained, the levels of educational empowerment of the respondents were categorized as below:

Sl. No.	Category	Score range
1.	Low	Below ($\bar{x}$ – σ)
2.	Medium	Between ($\bar{x}$ - σ) and ($\bar{x}$ + σ)
3.	High	Above ($\bar{x}$+ σ)

2.5. Psychological empowerment: Psychological empowerment measures the psychological status of women. The Formula for calculating psychological empowerment index is as follows:

Psychological empowerment index= $\frac{\text{Psychological}\ \ empowermnet\ (value) - Min\ (value)}{Max\ (value) - Minimum\ (value)}$

Based on the mean and standard deviation of the score obtained, the levels of psychological empowerment of the respondents were categorized as below:

Sl. No.	Category	Score range
1.	Low	Below ($\bar{x}$ – σ)
2.	Medium	Between ($\bar{x}$ - σ) and ($\bar{x}$ + σ)
3.	High	Above ($\bar{x}$+ σ)

2.6. Familial empowerment: Familial empowerment measures status of women in their decision making on various household activities. The formula for calculating familial empowerment index is as follows: sarounga

Familial empowerment index= $\frac{\text{Familial } empowermnet\ (value) - Min\ (value)}{Max\ (value) - Minimum\ (value)}$

Based on the mean and standard deviation of the score obtained, the levels of familial empowerment of the respondents were categorized as below:

Sl. No.	Category	Score range
1.	Low	Below ($\bar{x}$ – σ)
2.	Medium	Between ($\bar{x}$ - σ) and ($\bar{x}$ + σ)
3.	High	Above ($\bar{x}$+ σ)

WOMEN EMPOWERMENT INDEX

Empowerment is a multi-dimensional process that helps people to gain control over their own lives. In the present study, an attempt was made to measure the extent of empowerment of rural women in Mizoram. For the purpose of measurement, Empowerment Index was constructed. The index constructed has the following dimensions; Economic empowerment, Social empowerment, Political empowerment, Educational empowerment, Psychological empowerment and Familial empowerment

Economic empowerment is the composite measure of six components such as economic motivation, risk preference, marketing orientation,

management orientation, achievement motivation and decision making ability. Social Empowerment is the composite measure of two components such as social participation and cosmopoliteness. Political empowerment is the composite measure of two components such as political awareness and political participation. Educational, psychological and familial empowerment are measured based on different scales.

Overall empowerment index: The overall Empowerment Index was calculated based on simple average of each dimensions multiplied by weight of above dimensions. Formula used for calculating Overall Empowerment Index is given below:

Overall empowerment Index=$\sum_{i=1}^{3} wixi$

Where I= 1,2,3,.....

i.e. OEI =$W_1X_1+W_2X_2+W_3X_3+W_4X_4+W_5X_5+W_6X_6$

Here, W_1= Weight for economic empowerment

W_2= Weight for social empowerment

W_3= Weight for political empowerment

W_4 = Weight for educational empowerment

W_5= Weight for psychological empowerment

W_6= Weight for familial empowerment

X_1= Economic Empowerment Index

X_2= Social Empowerment Index

X_3= Political Empowerment Index

X_4= Educational Empowerment Index

X_5= Psychological Empowerment Index

X_6= Familial Empowerment Index

Now, 'W' here stand for weight of empowerment and $W_1 = \frac{CVi}{C}$, formula was used to calculate weight of empowerment index,

Where $C = \sum_{i=1}^{n} CVi$

CVi= $\frac{SDi}{Mean\ i}$

The calculated Overall Empowerment Index value should lie between 0 and 1. Based on these values the mean and standard deviation were calculated and the respondents are categorized as follows.

Sl. No.	Category	Score range
1.	Low	Below ($\bar{x}$ – σ)
2.	Medium	Between ($\bar{x}$ - σ) and ($\bar{x}$ + σ)
3.	High	Above ($\bar{x}$+ σ)

3.5 TOOLS AND TECHNIQUES USED FOR DATA COLLECTION

Data was collected using an interview which was constructed on the basis of the objectives of the study. The schedule was prepared with references from similar research materials from within and outside the state.

3.5.1 Development of interview schedule

Research schedule which consisted of four parts was developed after collection of various questionnaires from previous studies related to topic while keeping in view of the objectives of the study. The first part consisted of general information about the personal, socio-economic and communication characteristics of the respondents. The second part consisted of information about the livelihood assets of the respondents. The third part consisted of information about empowerment of the respondents. Finally, the fourth part

included information on constraints faced by the respondents and the measures suggested by them.

3.5.2 Method of data collection

The study consisted of two types of data collection viz., primary data and secondary data. The primary data were collected through personal interview by the investigator using interview schedule developed for the purpose. The secondary data were collected from other relevant sources such as books, thesis, journals etc.

3.6 HYPOTHESIS FORMULATION

According to Kerlinger, "Hypothesis is a combination of statement of the relation between two or more variables". Hypothesis is a necessary link or a bridge between the theory and investigation in the process of discovery for addition of knowledge.

The following null hypothesis has been developed for the study:

$H_0$1: There is no significant relationship between the selected independent variables and sustainability of livelihood strategies adopted.
$H_0$2: There is no significant relationship between the selected independent variables and empowerment.

3.7 ANALYSIS OF DATA

The collected data were classified, tabulated and systematically analyzed with appropriate statistical tools for drawing valid conclusion. Following are the statistical tools used for analysis of available data. SPSS20 was used for the analysis of Multiple linear regression, Principal Component Analysis, Multinomial logistic regression and correlation coefficient.

3.7.1. Frequency

Frequency is the rate at which something occurs over a particular period of time or in a given sample.

3.7.2. Percentage

Percentages are used for making simple comparisons. For the calculation of percentage, the frequency is divided by the total number of respondents which id multiplied by 100.

3.7.3. Arithmetic mean

Mean is the sum total of all the observations divided by the number of observation (N).

$$\bar{x}=\frac{\Sigma_1^N \mathrm{x}}{\mathrm{N}}$$

Where, $\bar{\chi}$ = mean of the scores

Σ= sum of individual score

N= number of observation

3.7.4. Standard deviation

Standard deviation is defined as the square root of the sum of squared deviation about the mean divided by the number of cases.

$$\sigma = \sqrt{\sum_{i=0}^{n} \frac{(xi-\bar{\chi})2}{N}}$$

Where, σ= standard deviation

x= individual score

N= number of observations

3.7.5. Correlation coefficient

Correlation coefficient is the index of the degree of relationship between two continuous variables. It is symbolized by 'r'. The correlation coefficient (r) is given as the ratio of covariance of the variables X and Y to the product of standard deviation of X and Y. The data will be analyzed by simple correlation analysis.

$$r = \frac{N\Sigma XY - \Sigma(X)(Y)}{\sqrt{[N\Sigma X^2 - \Sigma(X)^2][N\Sigma Y^2 - \Sigma(Y)^2]}}$$

Where, X and Y= original score in variables X and Y

ΣXY = each X multiplied by corresponding Y, then summed

ΣX = sum of X scores

ΣX^2= each X squared, then summed

$\Sigma(X)^2$ = sum of X scores, squared

ΣY = sum of Y scores

ΣY^2= sum of Y squared, then summed

$\Sigma(Y)^2$= sum of Y scores, squared

3.7.6. Multiple linear regression

Multiple linear regression (MLR), also known simply as multiple regression, is a statistical technique that uses several explanatory variables to predict the outcome of a response variable. The goal of multiple linear regression is to model the linear relationship between the explanatory (independent) variables and response (dependent) variables. In essence, multiple regression is the extension of ordinary least-squares (OLS) regression because it involves more than one explanatory variable.

$$y_i = \beta_0 + \beta_1 x_{i1} + \beta_2 x_{i2} + \ldots + \beta_p x_{ip} + \epsilon$$

Where, for $i=n$ observations**:**

yi=dependent variable

xi=explanatory variables

$\beta 0$=y-intercept (constant term)

βp=slope coefficients for each explanatory variable

ϵ=the model's error term (also known as the residuals)

3.7.7. Ranking

Ranking is an expression of respondent's priority about their thoughts and feelings. The method of analysis for ranking of items depends on frequency of responses on a particular statement.

3.7.8 Principal Component Analysis

Principal component analysis (PCA) is a popular technique for analyzing large datasets containing a high number of dimensions/features per observation, increasing the interpretability of data while preserving the maximum amount of information, and enabling the visualization of multidimensional data. Formally, PCA is a statistical technique for reducing the dimensionality of a dataset. This is accomplished by linearly transforming the data into a new coordinate system where (most of) the variation in the data can be described with fewer dimensions than the initial data.

After normalization of the data, factor analysis for each data set was run choosing Principal Component Analysis for extraction. Varimax rotation with Kaiser normalization was used for rotation as it maximizes the sum of the variances of the squared loadings as all the coefficients will be either large or near zero, with few intermediate values. The KMO and Bartlett test of sphericity evaluate all available data together. A KMO value over 0.5 and a significance level for the Bartlett's test below 0.05 suggest there is substantial correlation in the data. Four factors was extracted using PCA with Eigen values greater than 1.

3.7.9 One way Analysis of variance (One way ANOVA)

Method of Analysis of variance as given by Snedecor and Cochran (1976) was used for the present study. The result for significance and non-significance were determined by calculating the respective values of 'F' and by comparing the calculated value with the corresponding (t) table value at 5% probability level. The standard error of difference (SED) between the mean of each variables was calculated as follows:

$$SED = \frac{\sqrt{2x Error\ mean\ square}}{No.of\ respondents}$$

Critical Difference (CD) for the significant 'F' value was calculated by multiplying the standard error of difference with corresponding 't' value at 5% probability level.

3.7.10 Multinomial Logistic Regression

In statistics, multinomial logistic regression is a classification method that generalizes logistic regression to multiclass problems, i.e. with more than two possible discrete outcomes. That is, it is a model that is used to predict the probabilities of the different possible outcomes of a categorically distributed dependent variable, given a set of independent variables (which may be real-valued, binary-valued, categorical-valued, etc.).

To identify the determinants behind respondent's decision to engage in various livelihood strategies the assumption is that in a given period at the disposal of its asset endowment, a rational respondent choose among the four mutually exclusive livelihood strategy alternatives that offers the maximum utility. Following Greene (2003), suppose for the i^{th} respondent faced with j choices, we specify the utility choice j as:

$U_{ij} = Z_{ij}\ \beta + \varepsilon_{ij}$ ..... …… (1)

If the respondent makes choice j in particular, then we assume that U_{ij} is the maximum among the j utilities. So the statistical model is derived by the probability that choice j is made, which is:

Prob (U_{ij} >U_{ik}) for all other $K \neq j$ ………………………………………. (2)

Where, U_{ij} is the utility to the i^{th} respondent form livelihood strategy j

U_{ik} the utility to the i^{th} respondent from livelihood strategy k

If the respondent maximizes their utility defined over income realizations, then the respondent's choice is simply an optimal allocation of their asset endowment to choose livelihood that maximizes their utility (Brown *et al.*, 2006). Thus, the i^{th} respondent's decision can, therefore, be modelled as maximizing the expected utility by choosing the j^{th} livelihood strategy among J discrete livelihood strategies, i.e,

$$\max_j = E(U_{ij}) = f_j(x_i) + \varepsilon_{ij};\ j = 0 \ldots J \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3)$$

In general, for an outcome variable with J categories, let the j^{th} livelihood strategy that the i^{th} respondent chooses to maximize its utility could take the value 1 if the i^{th} respondent choose j^{th} livelihood strategy and 0 otherwise. The probability that a respondent with characteristics x chooses livelihood strategy j, P_{ij} is modelled as:

$$P_{ij} = \frac{\exp(X_i^{'}\beta_j)}{\sum_{j=0}^{J}\exp(X_i^{'}\beta_j)},\ \text{J=0... 3} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (4)$$

With the requirement that $\sum_{j=0}^{J} P_{ij} = 1$ for any *i*

Where: P_{ij} = probability representing the i^{th} respondent's chance of falling into category *j*

X = Predictors of response probabilities

β_j = Covariate effects specific to j^{th} response category with the first category as the reference.

Appropriate normalization that removes an indeterminacy in the model is to assume that $\beta_1 = 0$ (this arise because probabilities sum to 1, so only J parameter vectors are needed to determine the J + 1 probabilities), (Greene,

2003) so that $\exp(X_i\beta_1) = 1$, implying that the generalized equation (4) above is equivalent to

$$\Pr(y_i = j / X_i) = P_{ij} = \frac{\exp(X_i\beta_j)}{1+\sum_{j=1}^{J}\exp(X_i^{'}\beta_j)}, \quad \text{for } j = 0, 2\ldots J \text{ and}$$

$$\Pr(y_i = 1 / X_i) = P_{i1} = \frac{1}{1+\sum_{j=1}^{J}\exp(X_i^{'}\beta_j)}, \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{(5)}$$

Where: y = A polytomous outcome variable with categories coded from 0… J.

Note: The probability of P_{i1} is derived from the constraint that the *J* probabilities sum to 1. That is, $p_{i1} = 1 - \sum p_{ij}$. Similar to binary logit model it implies that we can compute J log-odds ratios which are specified as;

$$\ln\left[\frac{p_{ij}}{p_{iJ}}\right] = x'\left(\beta_j - \beta_J\right) = x'\beta_j, if, J = 0 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{(6)}$$

CHAPTER-IV

RESULTS AND DISCUSSION

RESULTS AND DISCUSSION

The findings of the present investigation on the livelihood strategies and women empowerment are presented under the following heads:

4.1To study the personal, socio-economic and communication characteristics of women in the rural areas.

4.2 To find out livelihood strategies adopted by women in the study area.

4.3 To determine the sustainability of selected livelihoods in the study area.

4.4 To analyse the level of empowerment of women through livelihood strategies.

4.5 To identify the constraints faced by women related to livelihood in the study area and to propose suitable livelihood strategies for empowerment.

4.1 PERSONAL, SOCIO-ECONOMIC AND COMMUNICATION CHARACTERISTICS OF WOMEN IN THE RURAL AREAS.

In the present study, characteristics like age, educational qualification, marital status, type of family, size of family, occupation, income source, annual income, monthly expenditure, credit acquisition, access to input, farming experience, migration pattern, source of information, information source utilization, mass media exposure and training exposure had been selected for detailed analysis as discussed below.

4.1.1 PERSONAL CHARACTERIS S OF WOMEN

4.1.1.1 Age

The chronological age of the beneficiaries at the time of interview was taken in to consideration. The respondents were distributed into the following categories:

Table 4.1.1.1 Distribution of respondents based on age N=300

Sl.no	Respondent	Family size	F	P	Mean	S.D
1.	Lunglei	Young (<35)	18	18	44.78	11.03
		Middle (35-60)	75	75		
		Old (>60)	7	7		
2	Aizawl	Young (<35)	15	15	47.08	10.36
		Middle (35-60)	78	78		
		Old (>60)	7	7		
3	Serchhip	Young (<35)	25	25	42.03	10.50
		Middle (35-60)	68	68		
		Old (>60)	7	7		
4	Pooled	Young (<35)	58	19.33	44.63	10.60
		Middle (35-60)	221	73.67		
		Old (>60)	21	7		

Table 4.1.1.1 revealed that majority (73.67%) of the respondents belonged to middle age category (35-60) followed by 19.33 per cent and 18.33 per cent of the respondents who belonged to the age group of less than 35 years and more than 60 years respectively. The Table also highlighted that the mean age of the respondents was 44.63 and the standard deviation was 10.60

This is in line with the findings of Okwoche and Obinne (2010), Yadav and Revanna (2017), Joshi (2018), Chunera and Amardeep (2018) and Vivek and Sahana (2021)

It can be seen from the Table that majority of the respondents were middle aged followed by young age which implies that the work force is

constituted by people belonging to less than 60 years' age group. Women in this age group have enough experience to run their livelihood activities smoothly, and they also have less responsibility at home because their children are older and capable of caring for themselves and perform household chores, thus, giving them more time to focus on their respective livelihood activity. We can conclude that most of the women were in their active and productive age group.

4.1.1.2 Relationship with the head of family

Due to the patriarchal nature of Mizo society, men are held in high regard when it comes to making decisions about household activities, including the purchase of assets and mobility in and out of the home. It is important to determine the respondent's relationship with the family's head because it influences their ability to make decisions and live choices.

Table 4.1.1.2 Distribution of respondents based on relationship with the head of family N=300

Sl. No.	Relationship	Lunglei		Aizawl		Serchhip		Pooled	
		F	P	F	P	F	P	F	P
1.	Self	12	12	9	9	9	9	30	10
2.	Wife	66	66	83	83	83	83	232	77.33
3.	Daughter	13	13	3	3	4	4	20	6.67
4.	Sister	1	1	1	1	0	0	2	0.67
5.	Sister-in-law	1	1	0	0	0	0	1	0.33
6.	Daughter-in-law	7	7	4	4	4	4	15	5
	Total	100	100	100	100	100	100	300	100

As evident from Table 4.1.1.2, majority of the respondents are wives (77.33 %) followed by the respondents who are themselves the head of the household (10%).This is followed by daughters (6.67%), daughter-in-law

(5%), sister (0.67%) and sister-in-law (0.33). This is in line with the findings of Joshi (2018).

It is discovered that for those respondents who are the head of the family themselves, almost all decisions regarding the household's livelihood activities are up to them, and they do not need to seek permission from anyone. Those respondents who are married must seek their spouses' opinions. The same is true for respondents who are daughters, sisters-in-law, or daughters-in-law, as they must obtain permission from the head of household or other family members. The Mizo society is essentially patriarchal, with a strong emphasis on male dominance. As the head of the household, the husband has unrestricted and dictatorial power over his wife and other family members. The patriarch has virtually unrestricted control and authority over his offspring (Paul, 2019). Patriarchy has been an accepted norm in the Mizo society from the past and it has been followed to this day.

4.1.1.3 Educational qualification

Information about formal education completed by the respondents was gathered with the presumption that formal education enhances the likelihood of causing a change in a person's behaviour, adopt new technologies, switch to high-yield crops, achieve scale economies, improve access conditions, and eliminate less productive labour from farming (Jayne *et al.,* 2016). The respondents' degree of formal education was taken into account while creating the categories below.

Table 4.1.1.3 Distribution of respondents based on their educational qualification N=300

Sl. No.	Educational qualification	Lunglei		Aizawl		Serchhip		Pooled	
		F	P	F	P	F	P	F	P
1.	Illiterate	0	0	0	0	0	0	0	0

2.	Functional literate	0	0	0	0	0	0	0	0
3.	Primary	6	6	0	0	0	0	6	2
4.	Middle	12	12	10	10	11	11	33	11
5.	High school	42	42	60	60	57	57	143	47.66
6.	Higher secondary	39	39	21	21	27	27	87	29
7.	Graduate	8	8	8	8	4	4	20	6.67
8.	Post graduate	9	9	1	1	1	1	11	3.67
	Total	100	100	100	100	100	100	300	100

Table 4.1.1.3 contains the information about the distribution of respondents based on their educational qualification. The Table highlighted that maximum (44.66%) number of respondents received education up to High School level followed by 29% who attended up to Higher Secondary School, 11 % who attended up to Middle School, 6.67 % who attended up to Graduate level and 3.67% with a Post-graduate degree. There were no respondents who were illiterate or functional literate. This is in line with the findings of Chakravarty *et al.* (2013) and Devaki *et al*. (2015)

The Table indicated that all of the respondents had completed some level of formal schooling. Yet, the majority of them have only completed high school because it is the only degree of education offered in the majority of the villages. The bulk of them lack the financial means to attend school in adjacent towns or in the district capitals, where higher education is offered. Since they felt their educational background was inadequate, some respondents expressed their concern over the difficulty in pursuing careers in the public and private sectors.

4.1.1.4 Marital Status

In order to fully understand the demographic characteristics of the respondents, data on marital status was collected.

Table 4.1.1.4 Distribution of respondents based on their marital status

N=300

Sl. No.	Marital status	Lunglei		Aizawl		Serchhip		Pooled	
		F	P	F	P	F	P	F	P
1.	Married	74	74	87	87	87	87	248	82.67
2.	Unmarried	12	12	3	3	2	2	17	5.67
3.	Widow	7	7	6	6	6	6	19	6.33
4.	Separated	7	7	4	4	5	5	16	5.33
	Total	100	100	100	100	100	100	300	100

Table 4.1.1.4 showed that majority (82.67%) of the respondents were married, followed by widow (6.33%), Un-married (5.67%) and separated (5.33%). Married women desire to support their families and offer their kids a solid education, which motivates them to engage in a variety of livelihood activities.

It can be concluded that majority (82.67%) of the respondents were married. This finding is in accordance with that of Owolabi *et al.* (2011), Chakravarty *et al.* (2013), Yadav and Revanna (2017), Tijani and Tijjani (2019) and Kosshak *et al.* (2020) where majority of the respondents are married.

4.1.1.5 Type of family

The respondents' type of family is categorised into nuclear and joint families based on kin composition.

Table 4.1.1.5 Distribution of respondents based on family type N=300

Sl.	Type of family	Lunglei	Aizawl	Serchhip	Pooled

No.		F	P	F	P	F	P	F	P
1.	Joint	32	32	22	22	33	33	87	29
2.	Nuclear	68	68	78	78	67	67	213	71
	Total	100	100	100	100	100	100	300	100

Table 4.1.1.5 emphasized the allocation of respondents in accordance with their type of family. The study indicated that majority (71%) of the respondents were from nuclear family and the remaining 29 per cent were from joint family. It can be seen from the Table that 32, 22 and 33 per cent of the respondent from Lunglei, Aizawl and Serchhip district were respectively from joint family. Also, 68 percent, 78 percent and 67 percent of the respondent from Lunglei, Aizawl and Serchhip district were respectively from nuclear family. This is in line with the findings of Devaki *et al*. (2015), and Tamilazhaki and Awasthi (2018)

As a result, we may say that the majority of respondents are from nuclear households. The possible reason could be due to the Mizo tradition where the youngest son inherits the family property and the other older sons left their paternal home after marriage.

4.1.1.6 Family Size

Family size denotes the total number of members living together under a common roof and having common kitchen.

Table 4.1.1.6 Distribution of respondents based on their family size N=300

Sl. No	Respondent	Family size	F	P	Mean	S.D
1.	Lunglei	Low (<3)	3	3	5.25	1.83
		Medium (3-7)	83	83		
		High (>7)	14	14		
2	Aizawl	Low (<3)	5	5		

		Medium(3-7)	82	82	5.15	1.91
		High(>7)	13	13		
3	Serchhip	Low (<4)	11	11		
		Medium (4-7)	77	77	5.33	1.7
		High (>7)	12	12		
4	Pooled	Low (<3)	13	13		
		Medium (3-7)	248	82.67	5.24	1.81
		High (>7)	39	39		

Table 4.1.1.6 suggests that maximum (71.33%) of the respondents had medium sized family ranging from 4-7 members, followed by 15.67 per cent with a small sized family having less than 4 members and 13 per cent with large sized family of more than 7 members. The mean family size of the respondents was 5.24 with a range of 2-11 members and the standard deviation was 1.81. This is in line with the findings of Gopalasundar (2020).

The majority of families in Mizoram have three children, which makes the average family size in the region small. This may be because of the introduction of family planning practises in the state in the late 1970s. Most people do not want to have more children because they are concerned about their ability to provide for their children's fundamental needs, including food, shelter, and education.

According to Kanwal (2021) about 35% of married women in the Indian state of Mizoram used a modern method of contraception, in the financial year 2016. Tubal ligation—the surgical removal or blockage of fallopian tubes—was used around 17 percent of the time. The government had implemented a number of policies to promote increased knowledge, accessibility, and use of modern contraceptives. This included the Mission Parivar Vikas initiative, which targeted family planning in 146 areas with high fertility rates spread over seven different states in the nation.

4.1.2 SOCIO- ECONOMIC CHARACTERISTICS OF WOMEN

4.1.2.1 Occupation

A person's primary activity or line of employment is referred to as their occupation. The respondents worked a variety of jobs, thus they were divided into the following categories based on their line of work.

Table 4.1.2.1.1 depicted that majority (32.33%) of the respondents are engaged in farming and animal husbandry where either one is the primary occupation. 24 per cent are engrossed in farming only and 10 percent managed farming, business and animal husbandry where either business or animal husbandry is the primary occupation and farming is the tertiary occupation. 7.33 of the respondents are committed to both faming and business.

It can also be inferred from the Table that 3 per cent of the respondents are occupied in faming and handloom. It has also been found that 2.67 per cent have taken up both farming and govt. Job; farming and tailoring; and business and animal husbandry. The majority of respondents who are in business sell goods like food, meat, veggies, clothing, cosmetics, etc. It can be also seen from the Table that 2.33 per cent are immersed in business alone. They are primarily business owners of restaurants, groceries shops, quarries, etc. the entire family is typically working on it as they need more labour. Government jobs include health worker, teacher and anganwadi worker, majority of them are anganwadi workers who receive minimal salary and are mostly involved

Table 4.1.2.1.1 Distribution of respondents based on their occupation

N=300

Sl. No.	Occupation	Lunglei		Aizawl		Serchhip		Pooled	
		F	P	F	P	F	P	F	P
1.	Farming and animal husbandry	31	31	39	39	27	27	97	32.33
2.	Farming	18	18	19	19	35	35	72	24
3.	Farming, business and animal husbandry	14	14	10	10	6	6	30	10
4.	Farming and business	5	5	9	9	8	8	22	7.33
5.	Farming and handloom	9	9	1	1	3	3	13	4.33
6.	Farming, Govt. job and animal husbandry	7	7	2	2	0	0	9	3
7.	Farming and Govt. job	1	1	1	1	6	6	8	2.67
8.	Farming and tailoring	4	4	3	3	1	1	8	2.67
9.	Business and animal husbandry	2	2	5	5	1	1	8	2.67
10.	Business	2	2	4	4	1	1	7	2.33
11.	Farming, handloom and animal husbandry	3	3	1	1	1	1	5	1.67

12.	Farming, tailoring and animal husbandry	1	1	0	0	3	3	4	1.33
13.	Farming and laborers	0	0	1	1	3	3	4	1.33
14.	Farming, laborer and animal husbandry	0	0	0	0	4	4	4	1.33
15.	Farming, tailoring and business	2	2	0	0	0	0	2	0.6
16.	Farming, handloom and business	1	1	0	0	0	0	1	0.3
17.	Farming, business and Govt. job	1	1	0	0	0	0	1	0.3
18.	Laborer	0	0	1	1	0	0	1	0.3
19.	Tailoring	0	0	1	1	0	0	1	0.3
20.	Tailoring and animal husbandry	0	0	1	1	0	0	1	0.3
21.	Tailoring and business	0	0	0	0	1	1	1	0.3
22	Animal husbandry and Pvt. Job	0	0	1	1	0	0	1	0.3
	Total	100	100	100	100	100	100	300	100

in other occupation as well.

The Table has also reflected that 1.67 per cent were engaged in farming, handloom and animal husbandry while 1.33 percent each are engaged in Farming, tailoring and animal husbandry; Farming and labourers and Farming, laborer and animal husbandry. We can also see that 0.6 per cent of the respondents were involved in farming, laborer and animal husbandry, while 0.3 per cent each are concerned with farming, handloom and business; farming, business and govt. job; laborer; tailoring; tailoring and animal husbandry; tailoring and business; animal husbandry and SHG bank facilitator.

The Table signified that almost all (90.18%) the respondents are engaged in farming in combination with other occupation. Thus, it can be concluded that the area is predominated by agriculture and allied activities. This is in line with the findings of Yadav and Revanna (2017)

4.1.2.1.2 Spouse occupation

Spouse occupation refers to the type of work that is performed by the spouse of the respondents.

Table 4.1.2.1.2 emphasized that 22 percent of the spouse are involved in farming and labour work while 17 per cent are engaged in farming only. 11.67 per cent are working in the farms and raising livestock at the same time. Another 11 per cent are having Government job but are also occupied with farming. Here, government job mostly refer to teaching, postal job, road constructor etc. The Table has also displayed that 3.67 per cent each of the spouse were immersed in farming and driving; farming and carpentry work. Carpentry work includes construction of houses, making furniture such as bench, chair, cupboard, wardrobe etc. that are mostly used in the villages. Another 3 per cent are engrossed in farming and business. It can also be seen from the Table that 2 per cent are involved in farming and self employment,

Table 4.1.2.1.2 Distribution of respondents based on spouse occupation

N=300

Sl. No.	Spouse occupation	Lunglei		Aizawl		Serchhip		Pooled	
		F	P	F	P	F	P	F	P
1.	No spouse	26	26	13	13	13	13	52	17.33
2	Farming and labour	24	24	8	8	34	34	66	22
3	Farming	11	11	24	24	16	16	51	17
4	Farming and animal husbandry	5	5	22	22	8	8	35	11.67
5	Farming and Govt service	20	20	3	3	10	10	33	11
6	Farming and driving	3	3	3	3	5	5	11	3.67
7	Farming and carpentry	4	4	5	5	2	2	11	3.67
8	Farming and business	5	5	4	4	1	1	10	3
9	Farming and self employment	1	1	1	1	4	4	6	2
10	Business	1	1	3	3	1	1	5	1.67
11	Farming, labourer, animal husbandry	0	0	0	0	4	4	4	1.33
12	Government job	0	0	2	2	1	1	3	1
13	carpenter	0	0	3	3	0	0	3	1

14	driver	0	0	1	1	1	1	2	0.6
15	Driving and Animal husbandry	0	0	1	1	1	1	2	0.6
16	Government and animal husbandry	0	0	2	2	0	0	2	0.6
17	animal husbandry	0	0	2	2	0	0	2	0.6
18	Animal husbandry and carpentry	0	0	1	1	0	0	1	0.33
19	Business and Animal husbandry	0	0	1	1	0	0	1	0.33
	Total	100	100	100	100	100	100	300	100

here self employment refers to black smithy, milling of grains, painting houses, quarrying, log cutting etc.

The Table had further highlighted that 1.67 per cent of the spouse have business while 1.33 per cent were committed to farming, labour and animal husbandry. 1 per cent each took up government job and carpentry respectively. While 0.6 per cent each worked as driver; driver and animal husbandry; government job and animal husbandry; and animal husbandry, the remaining 0.33 per cent each have taken the occupation of animal husbandry and carpentry; and business and animal husbandry.

The Table had shown that farming is the most common occupation for all the spouses. It was mostly carried out in combination with other occupation such as business, carpentry, labour, government service, driving etc. Men are more engaged in the jhums and farms since farming needs hard effort and some tasks are easier accomplished by males. Spouses engaged in business are very few in number because most shops are run by women in Mizoram.

4.1.2.2 Income source of the respondent

Income source of the respondent include all the sources of income in a single year. This includes wages, remittance and different types of aid they receive from the government.

Table 4.1.2.2.1: Distribution of respondents based on their income source

N=300

Sl. No	Income source of respondents	Lunglei		Aizawl		Serchhip		Pooled	
		F	P	F	P	F	P	F	P
1.	Farming	97	97	88	88	96	96	281	93.67
2.	Forest based	99	99	84	84	94	94	277	92.33
3.	Animal husbandry	57	57	60	60	43	43	160	53.33

4.	Business	27	27	26	26	17	17	70	23.33
5.	PM KISAN	21	21	15	15	20	20	56	18.67
6.	Fishery	16	16	7	7	27	27	50	16.67
7.	Wages	10	10	8	8	12	12	30	10
8.	MGNREGA	12	12	9	9	9	9	30	10
9.	Remittance	5	5	9	9	5	5	19	6.33
10.	Handloom	12	12	3	3	4	4	19	6.33
11.	Tailoring	6	6	5	5	5	5	16	5.33
12.	Old age/disability pension	6	6	4	4	6	6	16	5.33
13.	Property	3	3	5	5	5	5	13	4.33
14.	Sericulture	11	11	0	0	0	0	11	3.67
15.	Pension	0	0	0	0	1	1	1	0.3

Table 4.1.2.2.1 highlighted the different income sources of the respondents where 93.67 percent of respondents had sustenance from farming whereas, 92.33 per cent had earning from selling non-timber forest products. Animal husbandry is the source of revenue for 53.33 per cent of the respondents and for 23.33 per cent earned their proceeds from business. 18.67 and 16.67 per cent receive their proceeds from PM KISAN scheme and fishery respectively. 10 per cent each received emolument from wages and MGNREGA respectively. It can also be seen from the Table that 6.33 per cent each receive their remuneration from remittance and handloom. While for 5.33 per cent each tailoring and old age/ disability pension is their means of earning and 4.33 per cent also received revenue from renting out their property. 3.67and 0.3 per cent of the respondent used sericulture and pension from government as their source of income.

The respondents who were head of the household receive government aid in their name so for this reason, MGNREGA, Old age/disability pension and PM KISAN were added as their source of funds. Since the respondents are

undertaking different occupation their income sources vary too. Women with skills are capable of having sources of income; they can sew clothing, create puan (Mizos' traditional clothing), and make pickles, cakes and other food items. The respondents also articulated that collecting NTFP including bamboo shoots, seasonal vegetables, and fruits was an excellent source of revenue.

4.1.2.2.2 Income source of the entire household of respondent

Income source of the entire household include proceeds earned by the respondents, spouse, children and all other working member of the family in a single year.

Table 4.1.2.2.2 Distribution of respondents based on income source of the entire household N=300

Sl. No.	Income source of entire household	Lunglei		Aizawl		Serchhip		Pooled	
		F	P	F	P	F	P	F	P
1.	MGNREGA	100	100	100	100	100	100	300	100
2.	Farming	97	97	88	88	96	96	281	93.67
3.	Forest based	99	99	84	84	94	94	277	92.33
4.	Wages	86	86	85	85	92	92	263	87.67
5.	PM KISAN	73	73	72	72	63	63	208	69.33
6.	Animal husbandry	58	58	60	60	43	43	161	53.67
7.	Business	51	51	42	42	31	31	124	41.33
8.	Fishery	16	16	7	7	27	27	50	16.67
9.	Old age/disability pension	27	27	9	9	14	14	50	16.67
10.	Remittance	6	6	10	10	5	5	21	7
11.	Pension	9	9	5	5	5	5	19	6.33

12.	Handloom	12	12	3	3	4	4	19	6.33
13.	Tailoring	6	6	5	5	5	5	16	5.33
14.	Property	6	6	5	5	5	5	16	5.33
15.	Sericulture	11	11	0	0	0	0	11	3.67
16.	Apiary	0	0	0	0	3	3	3	1

Table 4.1.2.2.2 showed the distribution of respondents based on the income source of the entire household. It can be clearly seen from the table that all the households are beneficiaries of MGNREGA where they are provided work for 100 days per year earning Rs 23300. All the households have collected NTFP from the forest but 99, 84 and 94 per cent of the respondents from Lunglei, Aizawl and Serchhip district respectively have earned money from it, which shows that some of the respondents use them only for household consumption. 87.67 per cent have received wages which includes both from regular and irregular sources. 69.33 per cent receive PM KISAN from the central government where farmers received Rs. 6000 per annum. Animal husbandry is another important source of revenue for 53.67 per cent whereas, for 41.33 per cent it is business. It has also been displayed in the Table that for 16.67 per cent each of the respondent, fishery and Old age/disability pension is another vocation respectively. It is also clear from the Table that 7 per cent received remittance from their relatives that are away from home. For 6.33 per cent each, pension and handloom are an important source of revenue. Another 5.33 per cent each had profited from tailoring and property. The Table has also highlighted that 3.67 have gained their income through sericulture whereas only 1 per cent accrued from apiary.

All adult members in the family work to contribute to the revenue of the entire household. For some work such as farming, animal husbandry, business and fishery all the members of the house work together to aid in times when extra labour is required. The daily wage of a labourer is ₹ 400 and majority of the husbands and sons worked as labourer when there is an opportunity; this

provides an extra source of income for the entire household. While some are regularly working as labourers some are only working as part time. Some of the respondents make money by renting out their property.

4.1.2.3 Annual income

Information regarding the total annual earnings from all the sources was collected to compute the annual income of the respondent. The respondents were categorized into the following category based on their annual income.

Table 4.1.2.3.1 Distribution of respondents based on their annual income (in ₹) N=300

Sl. No	Respondent	Annual income of the respondents	F	P	Mean	S.D
1.	Lunglei	Low (<70459)	12	12	255940	185481
		Medium (70459-441421)	70	70		
		High (>441241)	18	18		
2	Aizawl	Low (<36938.9)	1	1	253507.9	36938.9
		Medium (36938.9-470076.9)	86	86		
		High (>470076.9)	13	13		
3	Serchhip	Low (<36922.8)	0	0	227051	190128.2
		Medium (36922.8-417179)	89	89		
		High (>417179.2)	11	11		
4	Pooled	Low (<47619.29)	1	0.33	222825.7	196446.2
		Medium (47619.29-443670)	261	87		
		High (>443670)	38	12.67		

Table 4.1.2.3.1 showed the annual income of respondent where 87 percent of the respondents are in the medium income category followed by 12.67 per cent with high income and 0.33 percent in the low income category. The mean income for all the respondents was Rs. 222825.7 with standard deviation of Rs 196446.2. This is in line with the findings of Yadav and Revanna (2017).

It can be inferred from the Table that 70, 86 and 89 per cent of the respondent from Lunglei, Aizawl and Serchhip district respectively belong to the medium income category. Whereas, 18, 13 and 11 per cent of the respondent from Lunglei, Aizawl and Serchhip district respectively belong to the high income category. Further 3 and 1 per cent of the respondents from Lunglei and Serchhip district respectively belonged to the low income category and there are no respondents from Aizawl in the low income category.

The incomes of certain respondents, notably those who work in agriculture and small companies, were lower than in prior years since data was gathered during the pandemic (Covid-19).

Table 4.1.2.3.2 Distribution of respondents based on their family's annual income (in ₹) N=300

Sl. No	**Respondent**	**Annual income of entire family**	**F**	**P**	**Mean**	**S.D**
1.	Lunglei	Low (<258534.9)	19	19	672244	413709.1
		Medium(258534.9-1085953.1)	68	68		
		High (>1085953.1)	13	13		
2	Aizawl	Low (<168044.88)	12	12	649395.05	413709.1
		Medium (1688044.88-	76	76		

		1130745.22)				
		High (>1130745.22)	12	12		
3	Serchhip	Low (<211469.07)	4	4		
		Medium (211469.07-958854.93)	83	83	585162	373692.93
		High (>958854.93)	13	13		
4	Pooled	Low (<210291.33)	22	7.33		
		Medium (210291.33-1062543.1)	243	81	636417.33	426125.73
		High (>1062543.1)	35	11.67		

Table 4.1.2.3.2 highlighted the annual income of respondent's entire family, which include the income of the spouse, children and other working family members. The Table emphasized that 81 percent of the respondents are in the medium income category followed by 11.67 per cent with high income and 7.33 percent in the low income category. The mean income for all the respondents was ₹ 636417.33 with standard deviation of ₹ 426125.73

It can be depicted from the Table that 68, 78 and 83 per cent of the respondent from Lunglei, Aizawl and Serchhip district respectively belong to the medium income category. Whereas, 13, 12 and 13 per cent of the respondent from Lunglei, Aizawl and Serchhip district respectively belong to the high income category. Further 19, 12 and 4 per cent of the respondents from Lunglei, Aizawl and Serchhip district respectively belong to the low income category.

Depending on the type of livelihood strategies adopted, the income of the respondents and their families varies substantially, with those who work for the government or run their own businesses earning more money. Moreover, responders with plantations make more money than other farmers.

4.1.2.4 Monthly expenditure

Table 4.1.2.4.1. Distribution of respondents based on their monthly expenditure (in ₹) N=300

Sl. No	Respondents	Monthly expenditure	F	P	Mean	S.D
1.	Lunglei	Low (<13058.92)	18	18	22942.5	9883.58
		Medium(13058.92-32826.08)	64	64		
		High (>32826.08)	18	18		
2	Aizawl	Low (<10739.48)	5	5	24055.5	13316.02
		Medium(10739.48-37371.52)	81	81		
		High (>37371.52)	14	14		
3	Serchhip	Low (>12897.9	8	8	22345	9447.1
		Medium (12897.9-31792.1)	82	82		
		High (>31792.1)	10	10		
4	Pooled	Low (<12109.59)	27	9	23114.5	11004.91
		Medium(12109.59-34119.41)	234	78		
		High (>34119.41)	39	14		

Table 4.1.2.4.1 and Figure 4.1.2.4.1 presented the respondent's entire family monthly expenditure which includes expenditure on food, rent, health care, education, transport, water and electricity bills etc. The Table displayed that 78 percent of the respondents are in the medium monthly expenditure category followed by 14 per cent with high monthly expenditure and 7 percent in the low monthly expenditure category. The mean monthly expenditure for all the respondents was ₹ 23114.5 with standard deviation of ₹ 11004.91

The Table further indicated that 61, 81 and 82 per cent of the respondent from Lunglei, Aizawl and Serchhip district respectively belong to the medium monthly expenditure category. Whereas, 18, 14 and 10 per cent of the respondent from Lunglei, Aizawl and Serchhip district respectively belong to

the high monthly expenditure category. Further 18, 5and 8 per cent of the respondents from Lunglei, Aizawl and Serchhip district respectively belong to the low monthly expenditure category.

It has been found that majority of the respondents were in the medium expenditure category. The majority of respondents' shared status as having a medium income is one potential explanation. The majority of families base their purchasing decisions on their income; also, in the villages, individuals spend less on food because they are growing their own crops and they can easily forage from the forest too. Food items like cooking oil, pulses, egg, potato etc. are bought from the shops.

Table 4.1.2.4.2 Distribution of respondents based on their contribution on family's monthly expenditure N=300

Sl. No.	Contribution	Lunglei		Aizawl		Serchhip		Pooled	
		F	P	F	P	F	P	F	P
1.	None	0	0	0	0	0	0	0	0
2.	Very less	26	26	14	14	17	17	57	19
3	Less	33	33	41	41	51	51	125	41.67
4.	Moderate	31	31	36	36	22	22	89	29.67
5.	Most of the contribution	6	6	6	6	5	5	17	5.66
6.	All the contribution	4	4	3	3	5	5	12	4
	Total	100	100	100	100	100	100	300	100

Table 4.1.2.4.2 denoted the contribution of respondents on monthly expenditure where majority (41.67%) of the respondents have less contribution towards their monthly family expenditure, which is followed by 29.67 percent of the respondents with moderate contribution while, 19 per cent have very less

contribution. It can also be seen from the Table that 5.66 percent have most of the contribution and the remaining 4 per cent have all the contribution. There is no respondent that does not contribute to the family expenditure.

The reason why the majority of respondents have less to contribute in this case is that the respondents who work on their own farms do not sell their produce. Due to the fact that their produce is mainly used for home consumption, their contributions are less significant in terms of contribution. Also, it is challenging to estimate the respondents' contributions in those occupations where other family members are also engaged *viz.*, farming, business, etc.

4.1.2.5 Credit acquisition

Table 4.1.2.5 Distribution of respondents according to credit acquisition

N=300

Sl. No.	Credit source	Lunglei		Aizawl		Serchhip		Total respondents	
		F	P	F	P	F	P	F	P
1.	Institutional Bank	30	30	16	16	10	10	56	18.66
2.	SHG	69	69	92	92	92	92	253	84.33
3.	Non-institutional Relatives	23	23	25	25	29	29	77	25.67
4.	Friends	29	29	35	35	27	27	91	30.33

Table 4.1.2.5 outlined the sources of credit for the respondents. Majority (84.33 %) of the respondents have availed credit form SHG whereas 18.66% of the respondents have availed loans from Banks such as SBI, MRB, Mudra etc. Further, 25.67 per cent have also borrowed money from their relatives and 30.33 per cent have borrowed money from their friends.

The majority of respondents who availed loans from institutional sources like banks used them for home construction, automobile purchases, and business expansion. In the Serchhip district, fewer people are applying for loans, which can be due to the construction of National Highway No. 54 because many of the respondents from the villages of Keitum and Bungtlang were given compensation for rebuilding their homes, which reduced their need to borrow money to construct homes or purchase vehicles.

There are more respondents who borrowed money from SHG mainly due to the ease in the process of borrowing and relatively lesser interest rate. Different SHGs have varied interest rates for loans, but they are not permitted to raise them above 10%. The majority of respondents stated that the interest rate is maintained between 1 and 5 percent. In comparison to banks and other institutional sources, they are also given a lengthier repayment period.

4.1.2.6 Access to input

Access to input is a crucial component because it shows the proper flow of materials that the respondents need for the efficient operation of their livelihood activity.

Table 4.1.2.6 Distribution of respondents based on their access to input

N= 300

Sl. No	Respondent	Access to input	F	P	Mean	S.D
1.	Lunglei	Low (<9.49)	19	19	13.73	4.24
		Medium (9.49-17.97)	67	67		
		High (>17.97)	14	14		
2	Aizawl	Low (<7.68)	16	16	11.83	4.15
		Medium (7.68-15.98)	67	67		
		High (>15.98)	17	17		

3	Serchhip	Low (<9.25)	13	13	14.29	5.04
		Medium (9.25-19.33)	70	70		
		High(>19.33)	17	17		
4	Pooled	Low (<8.67)	39	13	13.28	4.61
		Medium (8.67-17.89)	220	73.33		
		High (>17.89)	41	13.67		

Table 4.1.2.6 displayed the respondent's access to input where 73.33 percent of them had medium access to input followed by 13.67 per cent with high access and 13 percent with low access to input. The mean accessibility for all the respondents was 13.28with standard deviation of 4.61.

It can be inferred from the Table that 67, 67 and 70 per cent of the respondents from Lunglei, Aizawl and Serchhip district respectively belong to the medium access to input category. Whereas, 14, 17 and 17 per cent of the respondent from Lunglei, Aizawl and Serchhip district respectively belong to the high access category. Further 19, 16and 13 per cent of the respondents from Lunglei, Aizawl and Serchhip district respectively belong to the low access category.

Most of the respondents received input such as seeds, planting material, fertilizers, pesticide, insecticide etc. either from agriculture department or other organisations such as FOCUS, NEIDA, NABARD etc.

4.1.2.7 Experience

Experience is another key aspect because it increases knowledge and provides important insights for the management and continuance of a livelihood activity.

Table 4.1.2.7.1 Distribution of respondent based on farming experience

N=300

Sl. No	Respondent	Farming experience	F	P	Mean	S.D
1.	Lunglei	Low (<6)	17	17	18	12
		Medium (6-30)	72	72		
		High (>30)	11	11		
2	Aizawl	Low (<10)	17	17	23	13
		Medium (10-36)	65	65		
		High (>36)	18	18		
3	Serchhip	Low (<9)	11	11	20	11
		Medium (9-31)	77	77		
		High (>31)	12	12		
4	Pooled	Low (<7.72)	47	15.67	20.1	12.38
		Medium (7.72-32.48)	211	70.33		
		High (>32.48)	42	14		

Table 4.1.2.7.1 depicted the farming experience of the respondents in years in which 70.33 percent of the respondents are in the medium farming experience category followed by 12 per cent with high farming experience and 7 percent in the low farming experience category. The mean farming experience for all the respondents was 20.1 years with standard deviation of 12.38. This is in line with the findings of Chunera and Amardeep (2018) where majority of the respondents were also in medium farming experience category.

The Table further denoted that 72, 65 and 77 per cent of the respondent from Lunglei, Aizawl and Serchhip district respectively belong to the medium farming experience category. Whereas, 17, 17 and 11 per cent of the respondent from Lunglei, Aizawl and Serchhip district respectively belong to the low farming experience category. Further 11, 18and 12 per cent of the

respondents from Lunglei, Aizawl and Serchhip district respectively belong to the high farming experience category.

Majority of the respondents that are working in the farms started working after their marriage or after they have attained the age of 16-18 years and this is taken as a point of reference. The respondents sometimes do not have jhums for a particular year and may continue to do so again when they are able to devote time for farming. Some of the respondents have also reported that they started jhum cultivation again after the pandemic because they are not able to secure jobs they were available before.

4.1.2.7.2 Distribution of respondents based on their experience in SHG

N=300

Sl. No	Respondent	Experience in SHG	F	P	Mean	S.D
1.	Lunglei	Low (<2)	24	24	4	2
		Medium (2-6)	74	74		
		High (>6)	2	2		
2	Aizawl	Low (<3)	9	9	6	3
		Medium (3-9)	78	78		
		High (>9)	13	13		
3	Serchhip	Low (<2)	8	8	4	2
		Medium (2-6)	68	68		
		High (>6)	24	24		
4	Pooled	Low (<2)	39	13	5	3
		Medium (2-8)	246	82		
		High (>8)	15	5		

Table 4.1.2.7.2 and Figure 4.1.2.7.2 presented the experience of the respondents in SHG in years and 82 per cent of the respondents are in the medium SHG experience category followed by 13 per cent with low SHG

experience and 5 percent in the high SHG experience category. The mean farming experience for all the respondents was 5 years with standard deviation of 3.

The Table further reflected that 72, 65 and 77 per cent of the respondent from Lunglei, Aizawl and Serchhip district respectively belong to the medium SHG experience category. Whereas, 24, 9 and 8 per cent of the respondent from Lunglei, Aizawl and Serchhip district respectively belong to the low SHG experience category. Further 2, 13 and 24 per cent of the respondents from Lunglei, Aizawl and Serchhip district respectively belong to the high SHG experience category.

The SHG membership in the Lunglei district is lower than in Aizawl and Serchhip. This disparity might be explained by the defective operation of the previous groups. They are not aware of the regulations that must be adhered to for the SHGs to operate properly. The seed money given to the groups is not being used effectively, and they are not aware that they must pay it back. The North East Rural Livelihood Project (NERLP) in the state organised and evaluated SHGs. The responders claimed that NERLP did not provide them with enough training. They claim that since MZSRLM took on the responsibility for organising and managing the SHGs, things have improved. According to survey participants from the Serchhip and Aizawl districts, SHGs have greatly increased their income and boosted their confidence.

Table 4.1.2.7.3 Distribution of respondents based on their experience in livelihood activity N=300

Sl. No	Respondent	Experience in livelihood activities	F	P	Mean	S.D
1.	Lunglei	Low (<7.88)	16	16		

		Medium (7.88-31.38)	81	81	19.63	11.75
		High (>31.38)	13	13		
2	Aizawl	Low (<13.68)	17	17		
		Medium (13.68-35.72)	66	66	24.7	11.02
		High (>35.72)	17	17		
3	Serchhip	Low (<11.03)	18	18		
		Medium (11.03-31.19)	70	70	21.11	10.08
		High (>31.19)	12	12		
4	Pooled	Low (<10.67)	63	21		
		Medium (10.67-32.95)	194	64.67	21.81	11.14
		High (>32.95)	43	14.33		

Table 4.1.2.7.3 revealed the distribution of respondents based on their total experience in their livelihood activities. It can be seen from the Table that majority (64.67%) of the respondents have medium experience in their livelihood activity with a period of 10.67-32.95 years which is followed by 21 and 14.33 per cent who are under low and high category respectively. The overall average of experience was 21.81 years while the standard deviation was 11.14

The Table also suggested that 81, 76 and 66 percent of the respondents from Lunglei, Aizawl and Serchhip districts respectively fall under medium category. Whereas, 16, 17 and 18 per cent of the respondent from Lunglei, Aizawl and Serchhip district respectively belong to the low experience category. Further 13, 17 and 12 per cent of the respondents from Lunglei, Aizawl and Serchhip district respectively belong to the high experience category.

Several of the respondents use a varied approach to their means of subsistence, engaging in a variety of livelihood activities. They might only pursue business for five years whereas they have been farming for twenty

years. As a result, among all the activities engaged in, the one that has been practised for the longest period of time was used to calculate their experience in all livelihood activities; this may be the reason why the majority of respondents fell into the medium category.

4.1.2.8 Livelihood

The respondents participate in a variety of livelihood activities to ensure their survival. They are further broken down into three categories: primary, secondary, and tertiary, depending on their importance as the family's principal source of revenue.

Table 4.1.2.8.1 Distribution of respondents based on their primary livelihood N=300

Sl. No	Category	Lunglei		Aizawl		Serchhip		Pooled	
		F	P	F	P	F	P	F	P
1	Farming	50	50	42	42	72	72	164	54.67
2	Business	22	22	19	19	15	15	56	18.66
3	Animal husbandry	5	5	25	25	3	3	33	11
4	Handloom	11	11	3	3	3	3	17	5.67
5	Tailoring	6	6	5	5	4	4	15	5
6	Regular job	6	6	4	4	3	3	13	4.33
7	Others	0	0	2	2	0	0	2	0.67

The livelihood activities present in the Table account for the largest portion of the respondents' overall income, therefore they are classified as primary livelihood activity.

Table 4.1.2.8.1 showed the distribution of respondents based on their primary livelihood where majority *i.e.* 54.67 per cent used farming as their primary livelihood activity. Here, farming includes growing crops, silviculture,

sericulture and fishery. This is followed by 18.66 percent of the respondents who are involved in business. Animal husbandry is the primary occupation for 11 per cent of the respondents. Further, 5.67 and 5 per cent of the respondents used handloom and tailoring respectively as their primary livelihood activity. Also, 4.33 per cent have a regular job where they are employed under either government or private sector. The remaining 0.67 per cent worked as labourer and as a carpenter's apprentice.

Table 4.1.2.8.2 Distribution of respondents based on their secondary livelihood activity N=300

Sl. No	Category	Lunglei		Aizawl		Serchhip		Pooled	
		F	P	F	P	F	P	F	P
1	Farming	39	39	36	36	21	21	96	32
2	Animal husbandry	31	31	30	30	29	29	90	30
3	Business	4	4	7	7	2	2	13	4.33
4	Regular job	4	4	2	2	3	3	9	3
5	Others	0	0	0	0	7	7	7	2.33
6	Handloom	1	1	0	0	1	1	2	0.6
7	Tailoring	1	1	0	0	1	1	2	0.6

Due to their smaller contribution to the respondents' overall income compared to the primary livelihood activities, the livelihood activities listed in the Table are referred to as secondary.

Table 4.1.2.8.2 revealed the distribution of respondents based on their secondary livelihood activity in which 32 per cent of the respondents took up farming as their secondary livelihood activity. This is followed by 30 per cent of the respondents who are occupied with animal husbandry. Further, 4.33 percent traded in different types of business whereas 3 percent have regular job either in the government sector or private organizations. Also, 2.33 percent of

people are engaged in other livelihood activities, such as farm labour, whereby respondents transplant rice in paddy fields. Women can earn the same amount as males in the rice transplanting and if they are faster, they may even be able to earn more. In orchards, women can work picking fruits like oranges, lemons, and other citrus fruits. Lastly, 0.6 per cent chose tailoring and handloom as their secondary occupation.

Table 4.1.2.8.3 Distribution of respondents based on their tertiary livelihood activity N=300

Sl. No	Category	Lunglei		Aizawl		Serchhip		Pooled	
		F	P	F	P	F	P	F	P
1	Animal husbandry	21	21	5	5	10	10	36	12
2	Farming	7	7	9	9	4	4	20	6.67

Table 4.1.2.8.3 presented the distribution of respondents based on their tertiary livelihood activity where it is reflected that 12 per cent of the respondents took animal husbandry as their tertiary livelihood activity. The animals are mainly reared for family consumption and they add little amount to the respondents' overall and entire family income. It is also clear that 6.67 are engaged in farming. The earning from farming for these respondents is also quite less and it is mostly their relatives who took up farming as their main occupations. As a result, the respondents in this situation only provide assistance when it is most needed. They do not necessarily engage in agricultural pursuits themselves for earning income.

Only a small percentage of respondents, at 18.67%, have a tertiary source of income. These endeavours are referred to as tertiary since they make up a much smaller portion of total revenue than both primary and secondary livelihood activities.

4.1.3 COMMUNICATION CHARACTERISTICS OF WOMEN4.1.3.1 Source of information

Women in the rural areas rely on several information sources based on their applicability and usability. These informational resources aid in knowledge acquisition and timely decision-making.

Table 4.1.3.1 displayed the sources of information for the respondents. The sources of information are classified into three categories personal localite, personal cosmopolite and interpersonal cosmopolite sources. It can be seen from the Table that for 100 percent of the respondents, personal localite source are relatives, friends, neighbours, local leaders and panchayat members. And also 97, 88 and 96 percent of the respondents from Lunglei, Aizawl and Serchhip district respectively have received information from progressive farmers.

The Table also inferred that 76, 75 and 89 percent of the respondents from Lunglei, Aizawl and Serchhip district respectively have received information from VLW/VFA. While 71, 60 and 40 of respondents have received information from Veterinary official. This can be attributed to the spread of ASF that compelled the respondents to contact veterinary workers and doctors. It can also be seen from the Table that 77, 93 and 92 per cent of the respondents from Lunglei, Aizawl and Serchhip districts have contact with MZSrlm who is the main agency working with formation and proper functioning of SHGs so this means that all the SHGs members have regular contact with them. It can also be seen from the Table that the respondents do not have much contact with AO, HO, KVK and ATMA as the percentage is less than 50 in each case. The possible reason could be due to less involvement of women when training, demonstration etc. are conducted by these agencies.

Table 4.1.3.1 Distribution of respondents based on their sources of information

N=300

Sl. No.	Sources of information	Lunglei		Aizawl		Serchhip		Pooled	
		F	P	F	P	F	P	F	P
Personal localite									
1.	Relatives	100	100	100	100	100	100	300	100
2.	Friends	100	100	100	100	100	100	300	100
3	Neighbors	100	100	100	100	100	100	300	100
4.	Progressive farmers	97	97	88	88	96	96	281	93.67
5.	Local leaders	100	100	100	100	100	100	300	100
6.	Panchayat member	100	100	100	100	100	100	300	100
Personal cosmopolite									
7	AO	33	33	31	31	32	32	96	32
8	HO	34	34	22	22	22	22	78	26
9	VLW/VFA	76	76	75	75	89	89	240	80
10	KVK	28	28	34	34	30	30	92	30.67
11	Vety.	71	71	60	60	44	44	175	58.33
12	ATMA	38	38	41	41	52	52	131	43.67

13	MZSRLM	77	77	93	93	92	92	262	87.33
14	Others	91	91	87	87	96	96	274	91.33
Impersonal cosmopolite									
15	Radio	29	29	15	15	9	9	53	17.67
16	T.V.	100	100	100	100	100	100	300	100
17	Smart phone	100	100	100	100	100	100	300	100
18	Mobile apps	100	100	100	100	100	100	300	100
19	Internet	100	100	100	100	100	100	300	100
20	Newspaper	73	73	77	77	71	71	221	73.67
21	Printed media	58	58	65	65	62	62	185	61.67
22	Exhibition	29	29	23	23	23	23	75	25
23	Mass meeting	79	79	91	91	71	71	241	80.33
	Total	100	100	100	100	100	100	300	100

The Table has also denoted that T.V., smart phone, mobile app and internet are used by 100 per cent of the respondents. Also, 80.33 per cent attend mass meeting and 73.67 read newspaper and get information related to their livelihood. There are more respondents attending mass meetings because when men or head of household are busy it is the wife or other female family members attend them to represent their family, this is very common during Gram Sabha meetings. Printed media like pamphlet, leaflet, folder etc are used by the 61.67 per cent of the respondents. Exhibition is attended by only 25 per cent of the respondents, this may be due to transportation problem as exhibition are organised in district capitals and they cannot be attended by all the villagers. Just 17.67 per cent of respondents said they utilised radio, which may be a result of the rise in popularity of other mass media outlets including television, the internet, and smart phones.

This is in line with the findings of Mosharraf *et al.* (2016) where information sources such as neighbor, television, experienced farmers, local extension agent were major sources of information for majority of the farmers.

4.1.3.2. Information source utilization

Making decisions, avoiding mistakes, conveying a positive message, generating revenue, providing for one's livelihood, etc. are all made easier with the proper use of information sources.

Table 4.1.3.2.1 presented the distribution of respondents according to the utilization of information sources. According to the Table, interpersonal cosmopolite sources was placed first , followed by personal localite sources and interpersonal cosmopolite sources in terms of the mean score of various sources of information use. Smart phones are the most often used source of information (89%) followed by the internet (65.34%) and 17.67% of people say they occasionally listen to radio.

Table 4.1.3.2.1 Distribution of respondents based on information source utilization

N=300

Sl. No.	Information source utilization	Most often		Often		Sometimes		Never		Mean	Rank
		F	P	F	P	F	P	F	P		
Personal localite											
1.	Relatives	76	25.33	128	42.67	96	32	0	0	13	II
2.	Friends	52	17.33	171	57	77	25.67	0	0		
3	Neighbours	79	26.33	138	46	83	27.67	0	0		
3.	Progressive farmers	142	47.34	84	28	55	18.33	19	6.33		
4.	Local leaders	139	46.33	154	51.34	7	2.33	0	0		
5.	Panchayat member	**170**	**56.67**	129	43	1	0.33	0	0		
Personal cosmopolite											
1	AO	5	1.67	28	9.33	63	21	204	68	8.64	III
2	HO	0	0	5	1.67	73	24.33	222	74		
3	VLW/VFA	97	32.34	85	28.33	58	19.33	60	20		

4	KVK	10	3.33	13	4.33	69	23	208	69.34		
5	Vety.	77	25.67	80	26.67	17	5.66	126	42		
6	ATMA	11	3.67	19	6.33	77	25.67	107	35.67		
7	MZSRLM	99	33	148	49.33	14	4.67	38	12.67		
8	Others	90	30	115	38.33	69	23	26	8.67		
Impersonal cosmopolite											
1	Radio	0	0	0	0	53	17.67	247	82.33	14.22	I
2	T.V.	153	51	104	34.67	43	14.33	0	0		
3	Smart phone	267	89	20	6.67	13	4.33	0	0		
4	Mobile apps	151	50.33	131	43.67	18	6	0	0		
5	Internet	196	65.34	91	30.33	13	4.33	0	0		
6	Newspaper	34	11.33	72	24	115	38.33	79	26.34		
7	Printed media	27	9	81	27	77	25.67	115	38.33		
8	Exhibition	0	0	0	0	75	25	225	75		
9	Mass meeting	24	8	88	29.33	129	43	59	19.67		
	Total	100	100	100	100	100	100	300	100		

The Table also reveals that among personal cosmopolitan sources, Mzsrlm is the most often used source of information for 33% of the respondents. This is primarily because Mzsrlm was involved in the establishment and effective operation of SHGs on the state level. 25.67% of the respondents reported that VFAs/VLWs were also contacted frequently.

They are the villagers' main point of contact with the authorities; hence the majority of issues relating to agricultural and animal care are brought to their attention initially. The prevalence of ASF has also boosted VFA's significance in the villages. Information is also available from FOCUS, NEIDA, IFAD, MOM, and NABARD. Although FOCUS is not yet operating in the Lunglei district, they have played a significant role in the Aizawl and Serchhip districts by providing farmers with input such as insecticides and fertilizers.

In terms of personal cosmopolitan sources, 56.67% of the respondents contacted Panchayat members most frequently for information, followed by 47.34% of the respondents who used progressive farmers as the source of information. People in the Mizo community are eager to share information and are a close-knit group so; friends, family, and neighbours play a significant role in information dissemination in the villages.

Table 4.1.3.2.2 Distribution of respondents based on level of utilization of personal localite sources N=300

Sl. No	Respondent	Level of utilization of personal localite sources	F	P	Mean	S.D
1.	Lunglei	Low (<11)	6	6	13	2
		Medium (11-15)	50	50		
		High (>15)	44	44		
2	Aizawl	Low (<10)	4	4	12	2
		Medium (10-14)	82	82		

		High (>14)	14	14		
3	Serchhip	Low (<11.65)	12	12	13.65	2
		Medium (11.65-15.65)	69	69		
		High (>15.65)	19	19		
4	Pooled	Low (<11)	22	7.33	13	2
		Medium (11-15)	201	67		
		High (>15)	77	25.67		

Table 4.1.3.2.2 indicated that majority *i.e.* 67 per cent of the respondents have medium level utilization of personal localite sources, which is followed by 25.67 per cent belonging to the high level utilization category. Further 7.33 per cent are under low level utilization category. The mean utilization level is 13 with a standard deviation of 2.

It can also be seen from the Table that 50, 82 and 69 per cent of the respondents from Lunglei, Aizawl and Serchhip district respectively are under medium level utilization category. This is followed by 44, 14 and 19 per cent of the respondents from Lunglei, Aizawl and Serchhip district respectively under high level utilization category. Further, 6, 4 and 12 per cent of the respondents from Lunglei, Aizawl and Serchhip district respectively under low level utilization category.

Personal localite sources of information such as neighbours, friends, family etc are an important source of information for the respondents. These sources of information are easily accessible; information is passed along through words of mouth in the villages that is why it is the most of the respondents fall in the medium utilization category.

Table 4.1.3.2.3 Distribution of respondents based on level of utilization of personal cosmopolite sources N=300

Sl. No	Respondent	Level of utilization of personal cosmopolite sources	F	P	Mean	S.D
1.	Lunglei	Low (<4.64)	16	16	8.59	3.95
		Medium (4.64-12.54)	68	68		
		High (>12.54)	16	16		
2	Aizawl	Low (<5.19)	19	19	8.42	3.23
		Medium (5.19-11.65)	62	62		
		High (>11.65)	19	19		
3	Serchhip	Low (<5.54)	14	14	8.93	3.39
		Medium (5.54-12.32)	72	72		
		High (>12.32)	14	14		
4	Pooled	Low (<5.12)	57	19	8.65	3.53
		Medium (5.12-12.18)	202	67.33		
		High (>12.18)	41	13.67		

Table 4.1.3.2.3 emphasized that majority *i.e.* 67.33 per cent of the respondents have medium level utilization of personal cosmopolite sources, which is followed by 19 per cent belonging to the low level utilization category. Further 13.67 per cent are under high level utilization category. The mean utilization level is 13 with a standard deviation of 2.

The Table further reflected that 68, 62 and 72 per cent of the respondents from Lunglei, Aizawl and Serchhip district respectively are under medium level utilization category. This is followed by 16, 19 and 14 per cent of the respondents from Lunglei, Aizawl and Serchhip district respectively under low and high level utilization category.

Majority of the respondents are not hesitant to contact with personal cosmopolite sources when they are in need of information related to their farms or livestock. They had sought help during the outbreak of ASF, Fall Army Worm (FAW) and other crop related problems.

Table 4.1.3.2.4 Distribution of respondents based on level of utilization of impersonal cosmopolite sources N=300

Sl. No	Respondent	Level of utilization of impersonal cosmopolite sources	F	P	Mean	S.D
1.	Lunglei	Low (<10.71)	17	17	13.96	3.25
		Medium (10.71-17.21)	70	70		
		High (>17.21)	13	13		
2	Aizawl	Low(<11.77)	14	14	14.53	2.76
		Medium (11.77-17.29)	72	72		
		High (>17.29)	14	14		
3	Serchhip	Low (<11.91)	11	11	14.17	2.26
		Medium (11.91-16.43)	73	73		
		High (>16.43)	16	16		
4	Pooled	Low (<11.43)	42	14	14.22	2.79
		Medium (11.43-17.01)	193	64.33		
		High (>17.01)	65	21.67		

Table 4.1.3.2.4 highlighted that majority *i.e.* 64.33 per cent of the respondents have medium level utilization of impersonal cosmopolite sources, which is followed by 21.67 per cent belonging to the high level utilization category. Further 14 per cent are under low level utilization category. The mean utilization level is 13 with a standard deviation of 2. The Table further indicated that 70, 72 and 73 per cent of the respondents from Lunglei, Aizawl

and Serchhip district respectively are under medium level utilization category. This is followed by 13, 14 and 16 per cent of the respondents from Lunglei, Aizawl and Serchhip district respectively under high level utilization category. Further, 17, 14 and 11 per cent of the respondents from Lunglei, Aizawl and Serchhip district respectively under low level utilization category.

The respondents mainly use impersonal cosmopolite sources such as smart phones, T.V., radio etc for faster dissemination of information. Even among the villagers, their use is growing in popularity. At the Panchayat level, Whatsapp group is one of the most widely utilised applications for information sharing.

Table 4.1.3.2.5 Distribution of respondents based on their overall utilization of information sources N=300

Sl. No	**Respondent**	**Overall utilization level of information sources**	**F**	**P**	**Mean**	**S.D**
1.	Lunglei	Low (<30.2)	15	15	35.65	5.45
		Medium (30.2-41.1)	69	69		
		High (>41.1)	16	16		
2	Aizawl	Low (<30.26)	19	19	35.21	4.95
		Medium (30.26-38.13)	50	50		
		High (>38.13)	31	31		
3	Serchhip	Low (<29.68)	4	4	36.75	7.07
		Medium (29.68-43.82)	86	86		
		High (>43.82)	10	10		
4	Pooled	Low (<30.76)	43	14.33	35.87	5.11
		Medium (30.76-40.98)	207	69		
		High (>40.98)	50	16.67		

Table 4.1.3.2.5 revealed that majority *i.e.* 69 per cent of the respondents have medium level utilization of all information sources, which is followed by 16.67 per cent belonging to the high level utilization category. Further 14.33 per cent are under low level utilization category. The mean utilization level is 13 with a standard deviation of 2.

It can also be seen from the Table that 69, 50 and 86 per cent of the respondents from Lunglei, Aizawl and Serchhip district respectively are under medium level utilization category. This is followed by 16, 31 and 10 per cent of the respondents from Lunglei, Aizawl and Serchhip district respectively under high level utilization category. Further, 15, 19 and 4 per cent of the respondents from Lunglei, Aizawl and Serchhip district respectively under low level utilization category.

Reliable source of information provides timely information to the rural population. Internet is accessible now in most of the villages of Mizoram, this increased the use of various mass media sources. Along with the advancement in technology traditional sources of information are also still in use. Information is also passed along verbally from one person to another. The people in the villages are using the resources available in the most efficient way possible.

4.1.3.3 Mass media exposure

The use of mass media to provide information is growing in popularity. They aid in the quick spread of information and have a huge audience reach. Rural areas now have faster access to information because to the internet.

Table 4.1.3.3 Distribution of respondents based on mass media exposure

N=300

Sl. No.	Category	Young <35		Medium		Old		Pooled data	
		F (58)	P	F (221)	P	F (21)	P	F (300)	P
1	Radio	0	0	32	14.47	20	95.23	53	17.67
2	T.V.	58	100	221	100	21	100	300	100
3	Smart phone	58	100	221	100	21	100	300	100
4	Mobile apps	58	100	221	100	21	100	300	100
5	Internet	58	100	221	100	21	100	300	100
6	Newspaper	49	84.48	162	73.30	10	47.61	221	73.67
7	Printed media	43	74.13	169	76.47	9	42.85	185	61.67
8	Exhibition	9	15.51	63	28.50	3	14.28	75	25
9	Mass meeting	25	43.10	196	88.68	20	95.23	241	80.33

Table 4.1.3.3 showed the distribution of respondents to mass media exposure. The Table suggests that all respondents, regardless of their age group, have used television, smartphones, mobile apps, and the internet. This might be brought on by the popularity of these gadgets and how user-friendly they are. The majority of information is now shared in WhatsApp group chats, which hastens the distribution of knowledge. The Table has further revealed that newspapers are used by 73.67 per cent of the respondents.

Religious organisations and non-profit organisations (NGO's) like Y.M.A often publish newspapers in their local communities to aid in the dissemination of information. In the middle, young, and old age groups, respectively, 76.47, 74.13, and 42.85 percent of respondents consume printed media in various formats including folders, pamphlets, leaflets, and so on. The Table also reveals that less young and old persons visited the exhibition; this finding may be related to the middle-aged group's greater capacity to participate in family activities that support their attendance at such events.

The elderly make up 95.23 percent of those who attend mass meetings. This is due to the fact that they are more opinionated in society than members of the younger generation. The Table also showed that 14.47 percent of respondents in the medium age group and 95.23 percent of respondents in the older age group listen to radio. The Table also reveals that the younger age group does not listen to radio. The decline in popularity of radio as an information medium in the modern era may be the cause.

4.1.3.4.1Training exposure

Training exposure is vital for the development of human resources as well as for the development of leadership and entrepreneurship skills. The following Table provides information regarding the training that the respondents received.

Table 4.1.3.4.1 Distribution of respondents based on training exposure

N=300

Sl. No	Respondent	Training exposure	F	P	Mean	S.D
1.	Lunglei	Low (<1)	23	23	3	2
		Medium (1-5)	76	76		
		High (>5)	1	1		
2	Aizawl	Low (<3)	4	4	4	1
		Medium (3-5)	95	95		
		High (>5)	1	1		
3	Serchhip	Low (<2)	12	12	3	1
		Medium (2-4)	71	71		
		High (>4)	17	17		
4	Pooled	Low (<2)	39	13	3	1
		Medium (2-4)	242	80.67		
		High (>4)	19	6.33		

Table 4.1.3.4.1 outlined the distribution of respondents according to their training exposure. It is found from the Table that 80.67 per cent of the respondents are in medium category who attended training 2-4 times in the past 5 years, which is followed by 13 percent who attended less than 2 times and 6.33 percent who attended more than 4 times. The Table has further revealed that majority *i.e.* 76, percent of the respondents from Lunglei, have attended training 1-5 times, 95 per cent from Aizawl district have attended training 3-5 times and 71 per cent from Serchhip district attended 2-4 times. The respondents from Aizawl district have attended more trainings than other district this could be due to more number of SHG members among the respondents from Aizawl district. MZSRLM provide training on a regular basis for SHG members but due to the pandemic they are not able to conduct training during the past 2 years i.e. 2020-2021.

4.1.3.4.2 Training need assessment

A training needs assessment's goal is to pinpoint an individual's knowledge, skills, and abilities that are required to advance their current situation. Resources will be better allocated to areas with the highest demand if training needs are effectively assessed.

Table 4.1.3.4.2 showed the distribution of respondents according to training needs. Ranking of the areas in which training is needed most is done based on weighted score. According to weighted score general agriculture ranked first which is followed by vegetable production. General agriculture includes soil preparation, soil treatment, etc. Most of the respondents who are engaged in farming grow vegetables in their jhum without any type of training so they have expressed an interest in attending training that will help them enhance their production. This is followed by general horticulture which includes improved production technologies of different horticultural crops. With the locust and Fall Army Worm (FAW) infestation in their jhums,

Table 4.1.3.4.2 Distribution of respondents based on training need assessment

N=300

Sl. No.	Category	Most Needed		Needed		Not needed		Weighted score	Rank
		F	P	F	P	F	P		
1.	General agriculture	254	84.67	24	8	22	7.33	1.77	1
2	Vegetable Production	254	84.67	21	7	25	8.33	1.76	2
3	General horticulture	252	84	16	5.33	32	10.67	1.73	3
4	Pest management	209	69.67	58	19.33	33	11	1.58	4
5	Vermi-compost	193	64.33	83	27.67	24	8	1.56	5
6	Seed treatment	170	56.67	94	31.33	36	12	1.44	6
7	Pickle	130	43.33	161	53.67	9	3	1.40	7
8	Plant disease management	167	55.67	85	28.33	48	16	1.39	8
9	Jam/Jelly	127	42.33	155	51.67	18	6	1.36	9
10	Paddy	185	61.67	26	8.67	89	29.66	1.32	10
11	Grain storage	139	46.33	99	33	62	20.67	1.25	11
12	Other skill training	98	32.67	175	58.33	27	9	1.23	12
13	Livestock management	128	42.67	106	35.33	66	22	1.20	13

14	Maize	164	54.67	15	5	121	40.33	1.14	14
15	Piggery	90	30	116	38.67	94	31.33	0.98	15
16	Entrepreneur- ship	67	22.33	141	47	92	30.67	0.91	16
17	Poultry	68	22.67	134	44.66	98	32.67	0.9	17
18	Water management	69	23	125	41.67	106	35.33	0.87	18
19	Embroidery	61	20.33	82	27.34	157	52.33	0.68	19
20	General tailoring	51	17	79	26.33	170	56.67	0.60	20
21	Fruit production	84	28	12	4	204	68	0.6	21
22	Ginger	78	26	0	0	222	74	0.52	22
23	Orange	60	20	1	0.33	239	79.67	0.40	23
24	Banana	56	18.67	5	16.66	239	79.67	0.39	24
25	Computer	33	11	28	9.33	239	79.67	0.31	25
26	Tree bean	29	9.67	2	0.66	269	89.67	0.2	26
27	Betel nut	26	8.67	0	0	274	91.33	0.17	27
28	Cattle	14	4.67	2	0.66	284	94.66	0.1	28

pest management is now a top-four concern. Vermicompost training needs were also mentioned by respondents, ranking fifth, with seed treatment coming in at number six. Preparation of pickles and jam/jelly came in at 7 and 9, respectively.

The lack of knowledge about plant diseases and their effects on overall production may be the reason why disease management came in at number eight on the list. The various plant diseases that are common in the respondents' region are unknown to them. Storage of grain and paddy cultivation came in at 10 and 11, respectively. Other skills that ranked 12 include hair cutting, beautician, massage etc. Livestock production, maize cultivation, piggery and entrepreneurship ranked 13, 14, 15 and 16 respectively. Poultry, water management, embroidery, general tailoring and fruit production ranked 17,18,19,20 ansd21 respectively. Ginger, orange, banana, tree bean and betel nut are at the end of the list due to less respondents cultivating these crops. Cattle management ranked last *i.e.* 28th among all the components. The possible reason is due to less number of respondents engaged in rearing cattle.

Table 4.1.3.4.3 Distribution of respondents based on training place preference N=300

Category	Extent of preference								TPPS	Rank
	Very high		High		Moderate		Low			
	F	P	F	P	F	P	F	P		
Village community hall	209	69.67	74	24.66	17	5.67	0	0	3.64	I
NGO premises	63	21	187	62.33	50	16.67	0	0	3.04	II
Any place	18	6	25	8.33	167	55.67	90	30	1.90	III
KVK	8	2.67	14	4.67	67	22.33	211	70.33	1.39	IV

Table 4.1.3.4.3 shows the distribution of respondents based on their training place preference. According to Training place preference score ranking was done where Village community hall ranked the highest followed by Ngo premises within the village. Any place whether inside or outside of their village ranked third whereas KVK ranked 4. The respondents prefer to have their training in their own village instead of going out unless they are paid TA/DA.

This is in line with the findings of Kandeeban and Velusamy (2016) where most of the respondents prefer to have training within the village premises.

4.1.4 Comparison of variables between districts

Table 4.1.4 highlighted the comparison between the three districts using one-way ANOVA. It has been emphasized that the difference between the pairwise treatment among the three districts for age and occupation are all higher than the critical difference which showed that there is a significant difference between them. Looking at the educational level, the value for comparison of mean between Lunglei and Aizawl district is 0.28 and that between Lunglei and Serchhip district is 0.31 which is higher than the critical difference showing a significant difference between them but the same cannot be said for Serchhip and Aizawl District as the value is only 0.03. Pairwise comparison for family type between Serchhip and Aizawl district have a value of 0.11 and which is higher than CD value (0.07)showing significant difference, but the same cannot be said for the other two comparisons as their value is both less than the CD. Comparison of Lunglei and Serchhip district for their total household income (₹ 85742) has a significant difference but there is no significant difference between Lunglei and Aizawl (₹ 21708) and Serchhip and Aizawl (₹ 64034) district. There is a significant difference between Lunglei and Aizawl district in credit acquisition (0.17). It can be further

Table 4.1.4 Comparison of variables between districts

Variables	Lunglei	Aizawl	Serchhip	Pairwise comparision between districts			CD at 5 %	F value	p-value
				Lunglei and Aizawl	Lunglei and Serchhip	Serchhip and Aizawl			
Age	44.78	47.08	42.03	**2.3**	**2.75**	**5.05**	1.71	5.64	0.003
Education	4.58	4.3	4.27	**0.28**	**0.31**	0.03	0.15	3.12	0.04
Marital status	2.09	2.13	2.15	0.04	0.06	0.02	0.10	0.27	0.77
Family type	1.68	1.78	1.67	0.1	0.01	**0.11**	0.07	1.80	0.167
Family size	5.25	5.15	5.33	0.1	0.08	0.18	0.29	0.24	0.78
Occupation	3.13	2.75	2.21	**0.38**	**0.92**	**0.54**	0.35	4.458	0.01
Respondents income	255940	253943	227051	1997	28889	26892	31855.75	0.66	0.51
Total household income	673904	652196	588162	21708	**85742**	64034	68916.72	1.08	0.34
Monthly expenditure	22942.5	24055.5	22345.5	1113	597	1710	1770.58	0.62	0.54
Credit acquisition	1.51	1.68	1.57	**0.17**	0.06	0.11	0.14	0.93	0.39
Access to input	13.73	11.83	14.29	**1.9**	0.56	**2.46**	0.72	8.20	0.001
Experience	19.66	24.7	21.11	**5.04**	1.45	**3.59**	1.76	5.61	0.004
No. of livelihood activities	2.08	1.9	1.78	**0.18**	0.3	**0.12**	0.11	5.22	0.005
Source of information	17.12	16.78	16.89	**0.34**	0.23	0.11	0.32	0.74	0.47

Information source utilization	34.11	33.63	34.97	0.48	**0.86**	**1.34**	0.73	2.23	0.10
Mass media exposure	13.96	14.53	14.17	**0.57**	0.21	0.36	0.45	1.06	0.34
Training	2.49	3.66	3.19	**1.17**	0.7	**0.47**	0.22	19.32	0.001

emphasized that there is a significant difference between lunglei and Aizawl district and between Serchhip and Aizawl in access to input, experience in livelihood activity, no. of livelihood activities engaged and training as the difference between the pairwise comparison is equal to or more than CD.

The Table also showed that there is significant difference between Lunglei and Aizawl District in source of information and mass media exposure. There is also a significant difference in information source utilization between Lunglei and Serchhip district and also between Serchhip and Aizawl district. Pairwise comparison for marital status, family size, respondent's income and monthly expenditure between all the districts have values lesser than CD so we can conclude that there is no significant difference between the three districts for these variables.

4.2 Livelihood strategies adopted by the respondents

4.2.1 Crops grown

Table 4.2.1 has outlined the distribution of respondents based on the crops grown. Out of 300 respondents 284 are engaged in cultivation of different types of crops. Among all the crops grown, the most common is rice upland rice, which is cultivated by 57.67 per cent whereas WRC is practised by 13.33 percent. It can also be seen from the Table that 85 per cent are involved in the cultivation of different types of vegetables such as mustard, brinjal, colocasia, winged bean, bitter brinjal, *Spilanthes acmella* , *Canavalia ensiformis* (L), *Senna occidentalis*, *Clerodendrum glandulosam*, *Alocasia fornicate*, garlic, pumpkin, cucumber, etc.

We can also see from the Table that 50 percent of the respondents are growing corn which is an important cash crop for many of the respondents. But, the number of respondent growing corn has reduced due to the incidence of fall army worm. Ginger which is grown by 25.67 per cent is another

Table 4.2.1 Distribution of respondents based on Crops grown N=300

Sl.no	Crops	Lunglei		Aizawl		Serchhip		Pooled	
		F	P	F	P	F	P	F	P
1	Vegetable	84	84	86	86	85	85	255	85
2	Upland rice	59	59	50	50	64	64	173	57.67
3	Corn	49	49	55	55	46	46	150	50
4	Ginger	29	29	5	5	43	43	77	25.67
5	Chilli	17	17	7	7	36	36	60	20
6	Orange	20	20	3	3	30	30	53	17.67
7	Banana	29	29	2	2	21	21	52	17.33
8	WRC	9	9	8	8	23	23	40	13.33
9	Tree bean	11	11	1	1	20	20	32	10.67
10	Betel nut	28	28	0	0	0	0	28	9.33
11	Lemon	13	13	1	1	11	11	25	8.33
12	Climbing wattle	5	5	7	7	3	3	15	5
13	Tobacco	0	0	1	1	13	13	14	4.67

14	Pineapple	10	10	1	1	3	3	14	4.67
15	Mango	6	6	0	0	4	4	10	3.33
16	Soybean	5	5	1	1	2	2	8	2.67
17	Oil palm	6	6	1	1	1	1	8	2.67
18	Teak	7	7	0	0	0	0	7	2.33
19	Papaya	3	3	2	2	1	1	6	2
20	Tea	6	6	0	0	0	0	6	2
21	Sugarcane	2	2	0	0	3	3	5	1.67
22	Sesame	2	2	1	1	1	1	4	1.33
23	Others (Avocado, thingrai, rubber, coconut, star fruit, amla, Hatkora chungit, betel leaf, Thingthupui, chengkek)	8	8	1	1	3	3	12	4

important cash crop. But the number of farmers growing ginger has also reduced due to the fluctuation of price in the market. Chilli is grown on a large scale by 20 per cent of the respondents. 1 kg of dried chilli is sold at a price of Rs 400-600 depending on the quality and market. Banana, orange and lemon are important fruits grown by the respondents that help them earn a good price. Banana and oranges are sold without processing and lemons are mostly sold as juice during off season too which helps the farmers earn extra income. Betel nut is grown by 9.33 per cent of the respondents. It is a good source of income too as the farmers do not have to hire extra labour for harvesting. Traders from neighbouring state of Assam help the farmers in harvesting the produce and they buy them all. But due to the incidence of illegal Betel nut import from Myanmar the respondents are faced with problems related to buyers and price. Climbing wattle is a delicacy that is consumed by the tribal population of Mizoram. This crop is grown by 5 percent of the respondents, which is also an important source of income. Further, 2.67, 2.33 and 2 per cent of the respondents are engaged in the plantation of Oil palm, teak and tea. Teak plantation fetches a good price for the respondents but tea is grown mainly for household consumption. Also, 4 per cent of the respondents are growing different crops like Avocado, Sandal wood, Rubber, Coconut, Star fruit, Amla, Hatkora, *Zanthoxylum rhetsa*, Betel leaf, *Dysoxylum Malabaricum* and *Garcinia indica*

Table 4.2.2 Distribution of respondents based on livestock reared

N=300

Sl.no	**Livestock**	**Lunglei**		**Aizawl**		**Serchhip**		**Pooled**	
		F	P	F	P	F	P	F	P
1	Poultry	30	30	20	20	20	20	70	23.33
2	Pig	39	39	39	39	29	29	107	35.67
3	Cattle	1	1	12	12	0	0	30	10

4	Duck	2	2	0	0	0	0	2	0.6

Table 4.2.2 displayed the distribution of respondents based on livestock reared. Out of 300 respondents 161 are earning income from livestock. As seen from the Table 35.67 per cent of the respondent reared pig. The number is reduced due to the spread on ASF (African swine fever) that led to the death of pigs. Some of the respondents have reported that they lost more than 30 pigs. There is also a respondent from Serchhip district who has reported borrowing 1 lakh rupee for rearing pigs but have lost all due to the virus. It can be also seen that 23.33 per cent reared chicken/ boiler. While some respondents rear just a few of them there are some that rear more than 1000 chicken in one batch. It can also be inferred from the Table that 10 per cent are rearing cow. Milk is sold in the village or to nearby town. They are also much affected by covid 19 as many of their regular customer are not willing to take milk from them. Further, only 0.6 reared duck. Duck meat is not very common among Mizo people so this may be the possible reason why it is not reared by the respondents.

Table 4.2.3 Distribution of respondents based on agri-allied livelihood activity

Sl.no	**Agri-allied activity**	**Lunglei**		**Aizawl**		**Serchhip**		**Pooled**	
		F	P	F	P	F	P	F	P
1	Aquaculture	16	16	7	7	27	27	50	16.67
2	Sericulture	11	11	0	0	0	0	11	3.67

Table 4.2.3 have shown that 16.67 per cent of the respondents are engaged in aquaculture. Since Mizoram is a mountainous state there is less plain area that supports the construction of fishery ponds. Some of the respondents also rear them in their rice fields without construction of a separate pond. It is also seen from the Table that 3.66 per cent are engaged in sericulture. Most of the respondents do not rear them for the production of silk but for selling cocoon that are considered a delicacy among the tribal population.

Table 4.2.4 Distribution of respondents based on Forest based livelihood activity N=300

Sl.no	NTFP	Lunglei		Aizawl		Serchhip		Pooled	
		F	P	F	P	F	P	F	P
1	Vegetables	100	100	100	100	100	100	300	100
2	Broom grass	100	100	100	100	100	100	300	100
3	Fuel wood	63	63	63	63	78	78	204	68
4	Fruits	78	78	78	78	81	81	237	79
5	Medicinal plants	59	59	63	63	54	54	167	55.67
6	Bamboo pole	100	100	100	100	100	100	300	100
7	Fodder	39	39	49	49	29	29	117	39

Table 4.2.4 has revealed that all the respondents have collected vegetables and broom grass from the forest. The vegetables most commonly collected are bamboo shoot, *Alocasia fornicata*, *Gnetum gnemon*, *Dregea volubilis* (Ankhapui), *Dysoxylum Malabaricum*, *Amomum dealbatum*, *Aralia racemosa var. Foliosa*, *Arisaema speciosum*, *Diplazium esculentum*, *Eurya cerasifolia*, *Homalomena aromatic*, *Lycianthes subtruncata*, *Clerodendrum*

colebrookianum Walp., *Mollugo oppositifolia, Mollugo oppositifolia* etc. Also, 79 per cent have collected wild fruits from the forest *Bursera serrata Wall.ex* (bil), *Bruinsmia polysperma* , *Haematocarpus validus Embelia vestita Roxburgh*, *Willughbeia edulis* Roxb. etc. Further, 68 per cent have collected fuel to be used as firewood for cooking food. Some of the respondents have also reported that they collected firewood for cooking pig feed and not for cooking food for their consumption. It can be also seen from the Table that 100 per cent of the respondents have reported that they collect bamboo pole for various purposes both in the field and at home. Lastly, 39 per cent have reported that they collected fodder from the forest. This is given to cows and pigs.

Table 4.2.5 Distribution of respondents based on other source of livelihood

N=300

Sl.no	Livelihood	Lunglei		Aizawl		Serchhip		Pooled	
		F	P	F	P	F	P	F	P
I. Wage employed worker									
1	Regular	10	10	4	4	6	6	20	6.67
2	Non-regular	0	0	4	4	7	7	11	3.67
II. Self -employed worker									
3	Business owner	28	28	26	26	16	16	70	23.33
4	Handloom	13	13	3	3	3	3	19	6.33
5	Tailoring	7	7	5	5	5	5	17	5.67
6	Retailer	0	0	1	1	1	1	2	0.6

Table 4.2.5 have outlined that 6.67 per cent of the respondents have a regular job. The regular job includes teaching both in government sector and private sector. Some of the respondents are working as Anganwadi staff, health worker, nurse, VLA, SHG CF, SHG BF etc. Also, 3.67 per cent are engaged in

non-regular job such as labourer, helper etc. We can also see from the Table that 22.33 per cent are business owner. The respondent may or may not be the sole owner of the business but they take care of the business as family and they play an important role in the proper functioning of the business. The type of business in which the respondent are mainly involved are grocery, vegetable vendor, butcher. Further, 6.33 and 5.67 percent are engaged in handloom and tailoring respectively. Also, 2 per cent are retailers who are involved in the distribution of ration in the villages.

4.2.6 Migration pattern

Table 4.2.6 Distribution of respondents based on migration of family members for work N=300

Sl. No.	Category	Lunglei		Aizawl		Serchhip		Pooled data	
		F	P	F	P	F	P	F	P
1.	Seasonal	2	2	1	1	1	1	4	1.33
2.	Permanent	5	5	10	10	4	4	19	6.33
	Total	100	100	100	100	100	100	300	100

Table 4.2.6 depicted that 6.33 percent of respondent's family member migrate permanently to other places to earn their livelihood, while 1.33 per cent migrate seasonally. The place migrations are within and outside of Mizoram. The place of migration within the state include Aizawl, Phullen, Lawngtlai etc., and that of outside include Mumbai, Lucknow, Nagaland, Surat etc., and that of outside the country include Japan, Singapore, Macau. USA etc.

Seasonal migrators are those that are involved in river sand mining. River sand mining is the extraction of sand (or gravel) from the drainage network of a river. The sand is collected during the month of October- May.

4.2.7 Principle Component Analysis of Livelihood Strategies

Table 4.2.7 Extracted principle component factors from Principle Component Analysis (PCA) with Varimax rotation with Eigen values greater than 1

Income Variables	Component			
	Factor 1	**Factor 2**	**Factor 3**	**Factor 4**
Self employment	.780	-.136	-.091	-.193
Others	.693	.107	-.051	.098
NTFP	-.344	.796	-.265	-.161
Government grant	.322	.790	.281	.117
Agri- allied	-.139	.012	.952	-.066
Regular emloyment	-.048	-.025	-.060	.974

This study identified a limited set of livelihood strategies (LSs) through Principal Component Analysis (PCA). The PCA extracted four principle component factors with Eigen values greater than 1, explaining 74.84 per cent of the variance. The first factor has high positive loading on self employment and other source of income and negative loading on NTFP, agri-allied income thus, signifying self employment vs. NTFP, agri-allied and regular employment. This shows that respondents who are self employment *i.e.* those engaged business, handloom, tailoring are not usually involved in agri-allied works and selling of NTFP. The second factor has high positive loadings of NTFP and Govt grant and negative loading on self employment and regular employment. This shows that the respondents who mostly depend on government grants and selling of NTFP do not have a regular employment and are also not engaged in self employment activities. The third factor has high positive loading of agri-allied and positive loading of govt grant while having high negative loading of NTFP, self employment, others and regular employment. The fourth factor has positive loading of regular employment, govt grant and others while having negative loading of self employment ,NTFP and agri-allied.

4.2.8 Dependence on agriculture

In order to categorise sample households into four groups based on their dependence on agriculture and thus their share of net income from the sector, the following livelihood strategies (LS) were used: LS 1, 20, means less dependence; LS 2, 20–40, means moderate dependence; LS 3, 40–60, means highly dependence; and LS 4, 60%, means extremely dependence.

Table 4.2.8 showed the number of sample households in each of the four livelihood strategy classes, the share of total respondent's net income from each of the different sources, and the net value of total respondent's income. The great majority of respondents (59%) were extremely dependent on agriculture (income share > 60%); 12 percent were highly dependent on agriculture (income share 40-60%). 10.67 per cent were moderately dependent on agriculture (income share 20-40%) and the remaining 18.33 per cent were less dependent on agriculture (income share <20 %).

On average, agri and allied net income comprised 54% of total income; this suggests that farmers in the region are mostly dependent on agriculture. The share of the self employment net income to total income was 29% indicating that many of the women in the rural areas have taken up self employment and are less dependent on agriculture. In LS1, approximately 67 per cent of the share of an average respondent's total income came from self-employment, and dependence on agriculture was very low. In LS2, the share of NTFP net income 54 per cent and that of self employment was 43 per cent. There were only 36 respondents in LS3, who were more dependent on agricultural income (49% share of net income) and the share of net income from self employment was 26 per cent. Farmers in LS4 were almost wholly dependent on agriculture, with all other sources of income accounting for only 15% of the net total. The average total household net income was strongly

Table 4.2.8 Distribution of respondents based on dependence on agriculture

LS Class	Agriculture Income Share	Dependence on Agricultural Income	No of respondents	Average income share						Net income of respondents from all sources	
				Agri-allied	NTFP	Govt.grant	Self employment	Regulaar employment	Others	Mean (SD)	Range
LS 1	<20	Less dependent	55	0.10 (0.06)	0.03 (0.04)	0.12 (0.03)	0.67 (0.33)	0.12 (0.30)	0.05 (0.16)	362089 (257330)	64000-1523300
LS 2	>20-40	Moderately dependent	32	0.30 (0.05)	0.05 (0.04)	0.02 (0.04)	0.43 (0.29)	0.06 (0.19)	0.12 (0.24)	278734 (235282)	85000-1205000
LS 3	>40-60	Highly dependent	36	0.49 (0.05)	0.10 (0.13)	0.03 (0.06)	0.26 (0.23)	0.05 (0.15)	0.03 (0.10)	240256 (144521)	41000-583000
LS 4	>60	Extremely dependent	177	0.85 (0.10)	0.09 (0.08)	0.01 (0.03)	0.01 (0.06)	0.03 (0.5)	0.007 (0.3)	203151 (161361)	30000-899300
		Total	**300**	**0.54**	**0.05**	**0.015**	**0.29**	**0.062**	**0.043**	**244805 (197918)**	**30000-1523300**

associated with the level of dependence on agriculture, with low dependence households having an average net income higher than those of extremely dependent respondents with a difference of ₹ 158938

Table 4.2.9 Distribution of respondents in three districts by livelihood strategy clusters N=300

District	LS1		LS2		LS3		LS4		Total
	F	P	F	P	F	P	F	P	
Lunglei	19	19	12	12	15	15	54	54	100
Aizawl	23	23	10	10	10	10	57	57	100
Serchhip	13	13	10	10	11	11	66	66	100
Total	55	18.33	32	10.67	36	12	177	59	300

Table 4.2.9 displayed the distribution of respondents in three districts by livelihood strategy clusters where majority *i.e.* 59 percent belongs to Livelihood strategy 4 which is extreme dependence on agriculture. 54, 57 and 66 per cent are from Lunglei, Aizawl and Serchhip district respectively. This is followed by 18.33 per cent of the respondents belonging to Livelihood strategy 1 which is less dependent on agriculture. 19 per cent are from Lunglei district while 23 and 13 percent are from Aizawl and Serchhip district respectively. Further, the Table presented that 12 per cent belonged Livelihood Strategy 3 which is highly dependent on agriculture, where 15, 10 and 11 percent are from Lunglei, Aizawl and Serchhip district respectively. Lastly, 10.67 per cent belong to Livelihood strategy 2 which is moderately dependent on agriculture. 12 per cent are from Lunglei district and 10 per cent each are from Aizawl and Serchhip district.

It can be clearly seen from the Table that Aizawl district has the maximum number of respondents that are least dependent on agriculture, while Lunglei district has the highest number of respondents that are moderately and highly dependent on agriculture. Serchhip district has the highest number of respondents that are extremely dependent on agriculture. This shows that is difference in the extent of dependence on agriculture among the respondents from different districts. The total number of respondents that are dependent

only on farming are 35 per cent in Serchhip district while it is 18 and 19 in Lunglei and Aizawl district respectively (Table 4.1.2.1.1). This could be the reason why there are more respondents extremely dependent on agriculture at Serchhip district.

4.2.10 Determinants of agriculture dependent livelihood strategy

To find the determinants of livelihood strategies Multinomial logistic regression (MNL) was applied with less dependence on agriculture strategy (LS1) as a reference category in order to assess the effects of each predictor variables on the likelihood of a specific livelihood strategy choice relative to less dependence.

The results showed a positive and significant impact of marital status (β = 0.16, p = <0.01), experience in farming (β = 0.12, p = <0.05), experience in SHG (β = 0.31, p = <0.05), and source of information (β = 0.45, p = <0.10), in choosing a moderately dependent on agriculture strategy against less dependent on agriculture strategy. On the contrary, there were significant negative influences of total personal income (β =-5E-06, p = <0.10), credit acquisition (β = -.88, p = <0.05) and experience in livelihood activities (β = -.13, p = <0.10). However, no significant influence of age, education, family size, total household income, monthly expenditure, access to input, experience in farming, experience in livelihood activities, number of livelihood activities, source of information and training on high dependence strategy was found.

Similarly, the result showed a positive and significant impact of marital status (β = 1.84, p = <0.01), experience in SHG (β = 10.28, p = <0.05) and information source utilization (β = 0.36, p = <0.01) in adopting high dependence strategy than less dependent strategy. There were negative but significant influences of occupation (β = -0.33, p = <0.10), total personal income (β = -8E-06, p = <0.05) and mass media exposure (β = -0.32, p = <0.05) on the high dependence strategy against less dependent strategy. However, no significant influence of age, education, family size, total

household income, monthly expenditure, credit acquisition, access to input, number of livelihood activities, information utilization, mass media exposure and training on moderate dependence strategy was found.

Finally, married women ($\beta = 1.52$, $p = <0.05$),having higher access to input ($\beta = 0.30$, $p = <0.10$), having more experience in SHG ($\beta = 0.33$, $p =< 0.05$) and more source of information ($\beta = 0.59$, $p =< 0.05$) engaged occupation associated to farming only ($\beta = -1.15$, $p = <0.01$) with less livelihood activities ($\beta = -1.76$, $p =< 0.05$) and who attended less training were more likely to choose extreme dependency on agriculture strategy. There was so significant relationship between of age, education, family size, total household income, monthly expenditure, credit acquisition, experience in farming, experience in livelihood activities, information source utilization, mass media exposure and training with extreme dependence strategy.

Table 4.2.10 Determinants of agriculture dependent livelihood strategy

N=300

Livelihood Capital	Moderately dependent		Highly dependent		Extremely dependent	
	B	**Std Error**	**B**	**Std Error**	**B**	**Std Error**
Age	-.03	.05	-.05	.05	-.04	.05
Education	-.27	.38	-.09	.38	-.02	.39
Marital status	1.6***	.60	1.84***	.61	1.52**	.64
Family size	-.24	.26	-.010	.26	-.02	.26
Occupation	-.30	.20	-.33*	.20	-1.15***	.21
Total personal income	-5E-06*	2.7E-06	-8E-06**	3.03E-06	-2E-06	.00
Total household income	-3E-07	1.64E-06	2.1E-06	1.72E-06	-2E-06	2.76E-06
Monthly expenditure	7.6E-05	6.1E-05	-2E-05	7.08E-05	-2E-05	1.67E-06
Credit acquisition	-.88**	.43	-.57	.40	-.09	.39
Access to input	.01	.11	.05	.12	.30*	.12
Experience in farming	.12**	.06	.06	.05	.14	.08

Experience in SHG	.31**	.14	.28**	.14	.33**	.14
Experience in livelihood activities	-.13*	.08	-.010	.08	-.15	.09
Number of livelihood activities	-.09	.74	-.36	.78	-1.76**	.77
Source of information	.45*	.24	.16	.22	.59**	.24
Information source utilization	.01	.14	.36***	.13	.11	.14
Mass media exposure	-.06	.15	-.32**	.15	-.22	.15
Training	-.27	.23	-.34	.23	-.69***	.25

Log Likelihood = 349.73; LR Chi square = 317.2; Probability > chi2 = <0.01; Goodness of fit: Pearson Chi square = 1301.76; p-value = <0.01; Deviance chi-square = 349.73; p-value = >0.05; Pseudo R-square: Cox and Snell = 0.65; Nagelkerke = 0.73, McFadden = 0.47; Significant at *** 99%, ** 95%, and * 90%;

4.2.11 Livelihood diversity index

Table 4.2.11 Distribution of respondents based on livelihood diversity index N=300

Sl.No	Respondent	Livelihood diversity index	F	P	Mean	S.D
1.	Lunglei	Low (<0.01)	22	22	0.02	0.01
		Medium (0.01-0.03)	57	57		
		High (>0.03)	21	21		
2	Aizawl	Low (<0.01)	23	23	0.02	0.01
		Medium (0.01-0.03)	57	57		
		High (>0.03)	20	20		
3	Serchhip	Low (<0.01)	21	21	0.02	0.01
		Medium (0.01-0.03)	67	67		
		High (>0.03)	12	12		
4	Pooled	Low (<0.01)	66	22	0.02	0.01
		Medium (0.01-0.03)	181	60.33		
		High (>0.03)	53	17.67		

Table 4.2.11 revealed the livelihood diversity of the respondents. It can be seen from the Table that majority 60.33 per cent of the respondent are in medium livelihood diversity level which is followed by 22 per cent with low livelihood diversity and 17.67 per cent with high livelihood diversity. The mean livelihood diversity index is 0.02 with a standard deviation of 0.01. Looking at district wise data we can see that majority 57 percent of the respondent from Lunglei district are under medium livelihood diversity category followed by 22 and 21 percent are low and high category respectively. At Aizawl district too, we have majority *i.e.* 57 percent under medium livelihood diversity category and 23 and 21 percent at low and high category respectively. Lastly, at Serchhip district we have 67 percent belonging

at the medium category followed by 21 and 16 percent belonging to the low and high category respectively.

In the villages, majority of the households are engaged indifferent livelihood activities to in order to reduce livelihood vulnerability and to increase their food security. Even those who have regular job in the government sector have farms or jhums to grow their own crops. The same could be said for those respondents that are running their own business.

4.2.12 Livelihood vulnerability

Table 4.2.12 Distribution of respondents based on livelihood vulnerability index N=300

Sl.No	Respondent	Livelihood vulnerability index	F	P	Mean	S.D
1.	Lunglei	Low (<0.67)	23	23	0.71	0.04
		Medium (0.67-0.75)	64	64		
		High (>0.75)	13	13		
2	Aizawl	Low (<0.59)	12	12	0.64	0.05
		Medium (0.59-0.68)	72	72		
		High (>0.68)	16	16		
3	Serchhip	Low (<0.67)	18	18	0.71	0.04
		Medium (0.67-0.75)	65	65		
		High (>0.75)	17	17		
4	Pooled	Low (<0.63)	42	14	0.69	0.05
		Medium (0.63-0.74)	209	69.67		
		High (>0.74)	49	16.33		

Table 4.2.12 revealed the livelihood vulnerability of the respondents. It can be seen from the Table that majority 69.67 per cent of the respondent are in medium livelihood vulnerability level which is followed by 16.33 per cent with high livelihood vulnerability and 14 per cent with low livelihood vulnerability.

The mean livelihood vulnerability index is 0.69 with a standard deviation of 0.05.

Looking at district wise data we can see that majority *i.e.* 64 percent of the respondent from Lunglei district are under medium livelihood vulnerability category followed by 23 and 13 percent are low and high category respectively. At Aizawl district too, we have majority *i.e.* 72 percent under medium livelihood vulnerability category and 12 and 16 percent at low and high category respectively. Lastly, at Serchhip district we have 65 percent belonging at the medium category followed by 18 and 17 percent belonging to the low and high category respectively.

A key issue that is making farmers' livelihoods vulnerable is climate change. Respondents who cultivate wet rice said that they were unable to grow paddy on schedule in 2021 because rain did not fall when it should have. Farmers have suffered significant losses as a result of the fall army worm. The epidemic in the Lunglei district of 2021 affects 22 villages and covers 287 hectares of land. 15 villages in Aizawl district are impacted, and the outbreak has an area of 38.4 hectares, 420 farmers in the Serchhip district also experienced problems (Garg, 2022). Over 44,300 pigs and piglets were killed by African Swine Fever (ASF) in Mizoram swine farms between March 2021 and September 2022 (Rochanhlu, 2022). Also, 24 per cent of the respondents have reported that they are suffering from chronic diseases such as diabetes, high blood pressure, cancer etc.

4.3 Sustainability of livelihood strategies

4.3.1 Human Capital

The economic value of a person's experience and skills is referred to as human capital. Assets like education, training, intelligence, skills, and health are all considered to be part of human capital. It is an intangible asset or quality that is perceived to increase productivity and thus profitability. (Kenton, 2022. a)

Table 4.3.1 Distribution of respondents based on their human capital N=300

Sl. No	Respondent	Human capital Index	F	P	Mean	S.D
1.	Lunglei	Low (<0.58)	13	13	0.68	0.10
		Medium (0.58-0.78)	73	73		
		High (>0.78)	14	14		
2	Aizawl	Low (<0.55)	9	9	0.63	0.08
		Medium (0.55-0.71)	78	78		
		High (>0.71)	13	13		
3	Serchhip	Low (<0.53)	14	14	0.60	0.07
		Medium (0.53-0.67)	75	75		
		High (>0.67)	11	11		
4	Pooled	Low (<0.55)	28	9.33	0.64	0.09
		Medium (0.55-0.73)	221	73.67		
		High (>0.73)	51	17		

Table 4.3.1 outlined the distribution of respondents based on their human capital. The Table denotes that 73.67 per cent of the respondents have medium human capital followed by 17 per cent with high human capital and the remaining 9.33 per cent with low human capital. The mean livelihood capital is 0.64 and the standard deviation is 0.09.

Majority (73%) of the respondents from Lunglei district fall under medium human capital category followed by 14 and 13 per cent under high and low category respectively. In Aizawl district too, majority *i.e.* 78 per cent are under medium human capital category followed by 13 and 9 percent under high and low category respectively. Serchhip district also has majority *i.e.* 75 per cent under medium category followed by 14 percent in low human capital category and 11 per cent under high human capital category.

Majority of the respondents are in the medium human capital category this may be due to low educational qualification, absence of proper health care facilities and lack of proper skill training in the villages. Human capital can be improved by investing in training, education and better overall health of the villagers.

4.3.2 Physical capital

Physical capital refers to assets, such as building, machinery, vehicles and household items which are owned by the respondents or available for them in the village such as road, electricity and clean water supply (Sweta, 2023).

Table 4.3.2 Distribution of respondents based on their Physical capital

N=300

Sl. No	Respondent	Physical capital	F	P	Mean	S.D
1.	Lunglei	Low (<0.60)	19	19	0.71	0.11
		Medium (0.60-0.82)	61	61		
		High (>0.82)	20	20		
2	Aizawl	Low (<0.56)	0	0	0.66	.010
		Medium (0.56-0.76)	84	84		
		High (>0.76)	16	16		
3	Serchhip	Low (<0.56)	0	0	0.65	0.09
		Medium (0.56-0.74)	85	85		
		High (>0.74)	15	15		
4	Pooled	Low (<0.57)	17	5.67	0.67	0.10
		Medium (0.57-0.77)	226	75.33		
		High (>0.77)	57	19		

Table 4.3.2 emphasized that 75.33 per cent of the respondents have medium physical capital which is followed by 19 per cent with high physical

capital and 5.67 with low physical capital. It can also be seen from the Table that the mean score for physical capital is 0.67 and standard deviation is 0.10.

Majority (61 %) of the respondents from Lunglei district fall under medium physical capital category followed by 20 and 19 per cent under high and low category respectively. In Aizawl district too, majority *i.e.*84 per cent are under medium physical capital category followed by 16 under high category. No respondents fall under the low physical capital category. Serchhip district has majority *i.e.* 85 per cent of the respondents under medium category followed by 15 percent in high physical capital category and no respondents under low category.

The fact that most respondents only owned two-wheelers, that only a small number of farmers owned certain farm equipment like tractors and power tillers, and that some respondents still did not have access to the Public Health Department's clean water supply could all be contributing factors to the majority of respondents falling into the medium physical category.

4.3.3 Environmental/ Natural Capital

The land, air, water, living things, and natural resources of the world that provide value to people are referred to as environmental/ natural capital. (Warren and Gillaspy, 2022)

Table 4.3.3 Distribution of respondents based on their Environmental/ Natural Capital N=300

Sl. No	Respondent	Natural capital	F	P	Mean	S.D
1.	Lunglei	Low (<0.56)	15	15	0.63	0.07
		Medium (0.56-0.70)	67	67		
		High (>0.70)	18	18		
2	Aizawl	Low (<0.55)	6	6		

		Medium (0.55-0.67)	85	85	0.61	0.06
		High (>0.67)	9	6		
3	Serchhip	Low (<0.58)	13	13		
		Medium (0.58-0.72)	65	65	0.65	0.07
		High (>0.72)	22	22		
4	Pooled	Low (<0.56)	50	16.67		
		Medium (0.56-0.70)	202	67.33	0.63	0.07
		High (>0.70)	48	16		

Table 4.3.3 has revealed that majority *i.e.* 67.33 per of the respondent have medium natural capital which is followed by 16.67 per cent of the respondent with low natural capital and the remaining 16 per cent with high natural capital. The mean score for environmental/natural capital was 0.63 and the standard deviation was 0.07.

It can be inferred from the Table that majority (67 %) of the respondents from Lunglei district fall under medium natural capital category, followed by 18 and 15 per cent under high and low category respectively. But in Aizawl district, majority *i.e.*85 per cent are under medium natural capital category followed by 9 and 6 per cent under high and low category respectively. Serchhip district has majority *i.e.* 65 per cent of the respondents under medium category followed by 22 and 13 percent in high and low natural capital category respectively.

The bulk of respondents are found to fall under the medium environmental/natural group. This might be as a result of the nearly universal lack of land ownership in the respondents' names, which is typical of Mizo society. Land for agricultural purposes and housing are in the name of the male head of household and passed down to the youngest son. Only a handful of respondents used water resources for fishery purpose thus, reducing their overall score.

4.3.4 Economic/ financial capital

Economic/ financial capital is money, credit, and other forms of funding that build wealth (Amadeo, 2021)

Table 4.3.4 Distribution of respondents based on their Economic/ Financial capital N=300

Sl. No	Respondent	Financial capital	F	P	Mean	S.D
1.	Lunglei	Low (<0.24)	9	9	0.42	0.18
		Medium (0.24-0.50)	72	72		
		High (>0.50)	19	19		
2	Aizawl	Low (<0.26)	25	25	0.41	0.15
		Medium (0.26-0.56)	65	65		
		High (>0.56)	10	10		
3	Serchhip	Low (<0.23)	3	3	0.40	0.17
		Medium (0.23-0.57)	84	84		
		High (>0.57)	13	13		
4	Pooled	Low (<0.24)	15	5	0.41	0.17
		Medium (0.24-0.54)	243	81		
		High (>0.54)	42	14		

Table 4.3.4 displayed that majority *i.e.* 81 per cent of the respondent have medium financial capital which is followed by 14 per cent with high financial capital and the remaining 5 percent with low financial capital. It can also be seen from the Table that the mean score for financial capital was 0.41 and the standard deviation is 0.17.

Looking at district wise data we can see that majority *i.e.* 72 per cent of the respondents from Lunglei fall under the medium financial capital category followed by 19 and 9 percent of the respondents under high and low financial capital category respectively. Majority, *i.e.* 65 per cent of the respondent from

Aizawl district fall under medium category, followed by 25 percent under low category and the remaining 10 percent under the high financial capital category. Also, in Serchhip district 84 percent are under medium financial capital category, followed by 13 and 3 percent under high and low category respectively.

Majority of the respondents were in medium economic/ financial capital as seen from the Table. The possible reason could be due to the overall income disparity among the respondents. Only a handful of respondents receive remittance and regular salary/wages. Few respondents saved money in banks. Out of the total of twelve villages chosen, banks are only open in three. The majority of respondents do not have bank accounts in their own names, and most frequently, bank accounts are opened in the name of the household head.

4.3.5 Social capital

Social capital is a collection of shared values or resources that enables people to collaborate in a group to successfully accomplish a goal. The capacity to receive money, favours, or information via one's personal ties can also be considered social capital. The concept is typically used to explain how members of society can work together to live in harmony. (Kenton, 2022. b)

Table 4.3.5 have denoted that majority *i.e.* 75 per cent medium social capital followed by 20.67 per cent with low social capital and 4.33 per cent high social capital. It can be seen from the Table that the mean score of social capital is 0.94 and the standard deviation is 0.04

Table 4.3.5 Distribution of respondents based on their social capital

N=300

Sl. No	Respondent	Social capital	F	P	Mean	S.D
1.	Lunglei	Low (<0.88)	18	18		

		Medium (0.88-0.98)	74	74	0.93	0.05
		High (>0.98)	8	8		
2	Aizawl	Low (<0.90)	17	17	0.94	0.04
		Medium (0.90-0.98)	80	80		
		High (>0.98)	3	3		
3	Serchhip	Low (<0.91)	12	12	0.94	0.03
		Medium (0.91-0.97)	86	86		
		High (>0.97)	2	2		
4	Pooled	Low (<0.90)	62	20.67	0.94	0.04
		Medium (0.90-0.98)	225	75		
		High (>0.98)	13	4.33		

The Table has further revealed that majority (74 %) of the respondents from Lunglei district fall under medium natural capital category, followed by 18 and 8 per cent under low and high category respectively. In Aizawl district, majority *i.e.*80 per cent are under medium social capital category followed by 17 and 3 per cent under low and high category respectively. Serchhip district has majority *i.e.* 86 per cent of the respondents under medium category followed by 12 and 2 percent in low and high social capital category respectively.

Majority of the respondents are in medium social capital category, the possible reason could be due to the fact that due to the pandemic the respondents were not able to get or provide help in times of need.

4.3.6 Livelihood sustainability index

Table 4.3.6 Distribution of respondents based on livelihood sustainability index N=300

Sl. No	**Respondent**	**sustainability**	**F**	**P**	**Mean**	**S.D**

1.	Lunglei	Low (<0.47)	17	17	0.57	0.09
		Medium (0.47-0.67)	64	64		
		High (>0.67)	19	19		
2	Aizawl	Low (<0.46)	15	15	0.54	0.08
		Medium (0.46-0.63)	71	71		
		High (>0.63)	14	14		
3	Serchhip	Low (<0.44)	6	6	0.53	0.09
		Medium (0.44-0.63)	80	80		
		High (>0.63)	14	14		
4	Pooled	Low (<0.46)	54	18	0.55	0.09
		Medium (0.46-0.64)	199	66.33		
		High (>0.64)	47	15.67		

It can be inferred from Table 4.3.6 majority *i.e.* 66.33 per cent of the respondents belong to medium livelihood sustainability category which is followed by 18belonging to low category and lastly 15.67 per cent at the high livelihood sustainability category. The mean was 0.55 while standard deviation was 0.09.

The Table has further shown that majority 64 percent of the respondents from Lunglei district are under medium livelihood sustainability category followed by 19 and 14 percent are high and low livelihood sustainability category respectively. In Aizawl district, majority *i.e.* 71 percent of the respondents are under medium livelihood sustainability category with 15 and 14 percent each at low and high category. Lastly, at Serchhip district we have 80 percent belonging at the medium category followed by 6 and 14 percent belonging to the low and high category respectively.

From the Table we can conclude that the livelihood strategies currently adopted by the respondents are sustainable as majority of them are in the medium and high sustainable category. Higher sustainability at the household

and village levels can be attained by assisting the respondents in achieving the Sustainable Development Goals (SDGs) *viz*., no poverty; zero hunger; good health and well-being; quality education; gender equality; clean water and sanitation; affordable and clean energy; decent work and economic growth; industry, innovation and infrastructure; sustainable equality; sustainable cities and communities; responsible production and consumption; climate action; life below water; life on land; peace and justice strong institution; partnerships to achieve the goal in their own capacities.

4.3.7 Sustainability of livelihood strategies

Table 4.3.7 showed the multiple linear regression of livelihood strategies and sustainability. It was observed from the Table that the regression coefficients of agri-allied (b=0.613**), self employment (b=0. .85 **), regular employment (b=0. 410**), were found to have a positive significant relationship at 1% level of significance. Government grant has a negative

Table 4.3.7 Multiple linear regression of livelihood strategies and sustainability

Livelihood strategies	**Standardized coefficients**	**t-value**	**Sig.**
	Beta		
(Constant)		53.728	<0.01
NTFP	.058	1.497	>0.05
Agri-allied	.613**	16.921	<0.01
Government grant	-.088*	-2.340	<0.05
Self employment	.585**	15.439	<0.01
Regular employment	.410**	11.570	<0.01
Others	.016	.454	>0.05

R^2	.650		
Adjusted R^2	**.643**		
F value	**90.66****		

*Significant at 0.05 level probability
**Significant at 0.05 level probability

significant relationship at 5% level of significance. Therefore these variables can be termed as good predictors of sustainability of livelihood. It was found that other livelihood strategy and NTFP was non- significant.

The value of coefficient of multiple determination (R^2) value being 0.650 indicated that the independent variables jointly contributed 65 percent towards variation in sustainability of livelihood strategies. The F value (F=90.66) was also found to be significant at 1% level of significance. This indicates the significant effectiveness of these independent variables in predicting the extent of sustainability of the livelihood strategies adopted when all of them were functioning jointly.

RELATIONSHIP BETWEEN THE LIVELIHOOD SUSTAINABILITY AND SOCIO ECONOMIC CHARACTERISTICS OF THE RESPONDENTS

Table 4.3.8 Correlation of independent variables with livelihood sustainability of respondents.

Sl. No.	Socio-economic factors	Correlation coefficient (r)	p value
1	Age	-0.001 NS	>0.05
2	Educational qualification	0.31**	<0.01

3	Marital Status	0.09 NS	>0.05
4	Family type	-0.07 NS	>0.05
5	Family size	0.02 NS	>0.05
6	Occupation	0.46**	<0.01
7	Total personal income	0.75**	<0.01
8	Total household income	0.66**	<0.01
9	Monthly expenditure	0.56**	<0.01
10	Credit acquisition	-0.36**	<0.01
11	Access to input	0.18**	<0.01
12	Experience in farming (yrs)	-0.01NS	>0.05
13	Experience in SHG (yrs)	0.20**	<0.01
14	Experience in livelihood activities (yrs)	-0.02 NS	>0.05
15	No. of livelihood activities	0.44**	<0.01
16	Source of information	0.21**	<0.01
17	Information source utilization	0.24**	<0.01
18	Mass media exposure	0.17**	<0.01
19	Training	0.07 NS	>0.05

*Significant at 5% level, ** Significant at 1% level, NS- Non significant

The findings presented in Table 4.3.8 reveals the relationship analysis between the various socio-economic factors and livelihood sustainability of the respondents.

The correlation value between **age** of the respondents and the sustainability of livelihood is -0.001, which is statistically not significant. Thus, it can be concluded that increase in age of the respondents had no relationship with the livelihood sustainability of the respondents.

The correlation value between **educational qualification** of the respondents and the sustainability of livelihood is 0.31, which is statistically significant at 1% level of significance. Thus, it can be concluded that educational qualification of the respondents had positive relationship with the livelihood sustainability of the respondents.

Findings from the table had revealed that the correlation value between **marital status** of the respondents and the sustainability of livelihood is 0.09, which is statistically not significant. Thus, it can be concluded that marital status of the respondents had no relationship on the livelihood sustainability of the respondents.

The correlation value between **family type** of the respondents and the sustainability of livelihood is -0.07, which is statistically not significant. Thus, it can be concluded that family type of the respondents had no relationship on the livelihood sustainability of the respondents.

Findings from the Table had revealed that the correlation value between **family size** of the respondents and the sustainability of livelihood is -0.02, which is statistically not significant. Thus, it can be concluded that family size of the respondents had no relationship on the livelihood sustainability of the respondents.

Findings from the Table had revealed that the correlation value between **occupation** of the respondents and the sustainability of livelihood is 0.46, which is statistically significant at 1% level of significance. It can thus be concluded that occupation of the respondent had a positive impact on the livelihood sustainability of the respondents.

The correlation value between **total personal annual income** of the respondents and the sustainability of livelihood is 0.75, which is found to be statistically significant at 1% level of significance. Thus, it can be concluded

that annual income of the respondent had a positive relationship with the livelihood sustainability of the respondents.

The correlation value between **total household annual income** of the respondents and the sustainability of livelihood is 0.66, which is found to be statistically significant at 1% level of significance. Thus, it can be concluded that total annual household income of the respondent had a positive relationship with the livelihood sustainability of the respondents.

Findings from the Table had revealed that the correlation value between **monthly expenditure** and the sustainability of livelihood is 0.56, which is found to be statistically significant at 1% level of significance. Thus, it can be concluded that monthly expenditure of the respondent had a positive relationship with the livelihood sustainability of the respondents.

The correlation value between **credit acquisition** of the respondents and the sustainability of livelihood is -0.36, which is found to be statistically significant at 1% level of significance. Thus, it can be concluded that monthly expenditure of the respondent had a negative relationship with the livelihood sustainability of the respondents.

Findings from the Table had revealed that the correlation value between **access to input** of respondents and the sustainability of livelihood is 0.18, which is statistically significant at 1% level of significance. It can thus be concluded that access to input of the respondents had a negative relationship with the livelihood sustainability of the respondents.

The correlation value between **experience in farming** of respondents and the sustainability of livelihood is -0.011, which is found to be statistically not significant. Thus, it can be concluded that experience in farming of respondents had no impact with the livelihood sustainability of the respondents.

The correlation value between **experience in SHG** of respondents and the sustainability of livelihood is 0.20, which is found to be statistically significant at 1% level of significance. Thus, it can be concluded that experience in SHG of respondents had a positive impact with the livelihood sustainability of the respondents.

The correlation value between **experience in livelihood activities** of respondents and the sustainability of livelihood is -0.02, which is found to be statistically not significant. Thus, it can be concluded that experience in livelihood activities of respondents had no impact with the livelihood sustainability of the respondents.

The correlation value between **no. of livelihood activities** of respondents and the sustainability of livelihood is 0.44, which is found to be statistically significant at 1% level of significance. Thus, it can be concluded that no. of livelihood activities of respondents had a positive impact with the livelihood sustainability of the respondents.

The correlation value between **source of information** of respondents and the sustainability of livelihood is 0.21, which is found to be statistically significant at 1% level of significance. Thus, it can be concluded that source of information of respondents had a positive impact with the livelihood sustainability of the respondents.

The correlation value between **information source utilization** of respondents and the sustainability of livelihood is 0.24, which is found to be statistically significant at 1% level of significance. Thus, it can be concluded that information source utilization of respondents had a positive impact with the livelihood sustainability of the respondents.

The correlation value between **mass media exposure** of respondents and the sustainability of livelihood is 0.17, which is found to be statistically significant at 1% level of significance. Thus, it can be concluded that mass

media exposure of respondents had a positive impact with the livelihood sustainability of the respondents.

The correlation value between **training** of respondents and the sustainability of livelihood is 0.08, which is found to be statistically not significant. Thus, it can be concluded that training of respondents had no impact with the livelihood sustainability of the respondents.

Table 4.3.7 revealed that the independent variable *viz.,* educational qualification, occupation, total personal annual income, total household income, monthly expenditure, access to input, experience in SHG, no. of livelihood activities, source of information, information source utilization and mass media exposure had a positive significant association with the level of empowerment of the respondents at 1% level of significance.

Independent variables such as age, marital status, family size, experience in farming, experience in livelihood activities and training had no significant relationship with the livelihood sustainability of the respondents.

Therefore, the null hypothesis ($H_0$2) that states that there is no significant relationship between the independent variables and the livelihood sustainability is rejected.

4.4. Empowerment of women through livelihood strategies

4.4.1. Economic empowerment

The ability of women to participate in, contribute to, and benefit from growth processes in ways that respect their dignity, acknowledge the value of their contributions, and enable negotiations for a more equitable distribution of the benefits of growth is known as economic empowerment. Women's access to economic resources and opportunities, such as employment, financial services, real estate and other productive assets, skill development, and market intelligence, rises with economic empowerment. (Anonymous, 2011)

4.4.1.1 Economic motivation

Economic motivation is the human propensity to weigh the costs and rewards of pursuing a certain goal and to select the course of action that will yield the highest returns relative to the investment (Handman, 1939).

Table 4.4.1.1 Distribution of respondents based their economic motivation

N=300

Sl. No	Respondent	Economic motivation	F	P	Mean	S.D
1.	Lunglei	Low (<25.66)	13	13	25.76	2.10
		Medium (25.66-29.86)	64	64		
		High (>29.86)	23`	23		
2	Aizawl	Low (<24.42)	17	17	26.44	2.02
		Medium (24.42-28.46)	62	62		
		High(>28.46)	21	21		
3	Serchhip	Low (<23.49)	10	10	25.64	2.15
		Medium (23.49-27.79)	66	66		
		High (>27.79)	24	24		
4	Pooled	Low (<23.83)	27	9	25.94	2.11
		Medium (23.83-28.05)	223	74.33		
		High (>28.05)	50	16.67		

Table 4.4.1.1 highlight the distribution of respondents based on their economic motivation. It can be seen from the Table that majority *i.e.* 74.33 per cent have medium economic motivation followed by 16.67 per cent with high economic motivation and 9 per cent with low economic motivation. It can be inferred from the Table that the mean economic motivation is 25.94 and the standard deviation is 2.11. This is in line with the findings of Vivek and Sahana (2021)

The contribution of women to the household's total income was significant. They may also serve as the primary provider for their family in some situations, which heightens their motivation and awareness to raise their income. Livelihood activities like opening groceries shops, selling fish and chicken, vegetable etc are considered to be a women's job so there are more women in this sector.

4.4.1.2. Risk preference

Risk preference is the tendency to choose an action with a higher variance in potential monetary outcomes over another option with a lower variance of outcomes (but equal expected value) (Hertwig *et al.,* 2019).

Table 4.4.1.2 showed that majority 61.33 per cent have medium risk preference followed by 21 per cent with low risk preference and 17.67 per cent with high risk preference. The mean risk preference value is 24.09 and the standard deviation is 1.68.

Table 4.4.1.2 Distribution of respondents based their risk preference

N=300

Sl. No	Respondent	Risk preference	F	P	Mean	S.D
1.	Lunglei	Low (<23.96)	8	8	25.58	1.62
		Medium (23.96-27.2)	82	82		
		High (>27.2)	10	10		
2	Aizawl	Low (<24.35)	18	18	26.02	1.67
		Medium (24.35-27.69)	57	57		
		High (>27.69)	25	25		
3	Serchhip	Low (<23.98)	6	6	25.71	1.73
		Medium (23.98-27.44)	74	74		
		High (>27.44)	18	18		
4	Pooled	Low (<22.41)	63	21		

		Medium (22.41-25.77)	184	61.33	24.09	1.68
		High (>25.77)	53	17.67		

The respondents are afraid to take risk in areas that are new to them, and they also do not have any type of assistance of insurance if their new venture fails. So this could be the possible reason for majority of the respondents falling in the medium risk preference category. This is in line with the findings of Vivek and Sahana (2021)

4.4.1.3. Market orientation

Market orientation is a business strategy that prioritises identifying consumer needs and desires and developing products and services to meet them. (Kopp, 2021)

Table 4.4.1.3 Distribution of respondents based their marketing orientation N=300

Sl. No	Respondent	Marketing orientation	F	P	Mean	S.D
1.	Lunglei	Low (<20.91)	13	13	22.63	1.72
		Medium (20.91-24.35)	73	73		
		High (>24.35)	14	14		
2	Aizawl	Low (<20.82)	17	17	22.75	1.93
		Medium (20.82-24.68)	68	68		
		High (>24.68)	15	15		
3	Serchhip	Low (>20.66)	18	18	22.51	1.85
		Medium (20.66-24.36)	77	77		
		High (>24.36)	15	15		
4	Pooled	Low (<20.8)	48	16	22.63	1.83
		Medium(20.8-24.46)	208	69.33		
		High (>24.46)	44	14.67		

Table 4.4.1.3 outlined that majority 61.33 per cent have medium market orientation followed by 16 per cent with low market orientation and 14.67 per cent with high market orientation. The mean marketing orientation is 22.63 and the standard deviation is 1.83. This is in line with the findings of Vivek and Sahana (2021)

Most of the women in the villages carry out their livelihood activities that are available to them, while some are ready to embrace change there are many who are content with the way things are going for them are present. So this may be the reason why majority of the respondents fall under medium market orientation category.

4.4.1.4. Management orientation

The process that aids in finding and choosing the best tactics for managing client connections can be referred to as the management orientation. (John, 2021)

Table 4.4.1.4 Distribution of respondents based their management orientation N=300

Sl. No	Respondent	Management orientation	F	P	Mean	S.D
1.	Lunglei	Low (<27.15)	0	0	30.52	3.37
		Medium (27.15-33.89)	64	64		
		High (>33.89)	36	36		
2	Aizawl	Low (<27.59)	0	0	31.08	3.49
		Medium (27.59-34.57)	66	66		
		High (>34.57)	44	44		
3	Serchhip	Low (<25.77)	0	0	28.89	3.12
		Medium (25.77-32.01)	73	73		
		High (>32.01)	27	27		

4	Pooled	Low (<27.14)	0	0	30.49	3.35
		Medium (27.14-33.84)	193	64.33		
		High(>33.84)	107	35.67		

Table 4.4.1.4 depicted that majority 41.33 per cent have medium management orientation followed by 35.67 per cent with high management orientation and no respondent with low manage orientation. The mean management orientation is 30.49 while the standard deviation is 3.35. Women are seen as superior home administrators, and because of this innate ability, they are also better at managing their enterprises.

The majority of vegetable vendors in Mizoram are women, demonstrating their capacity to run successful businesses. The majority of small enterprises in villages, including grocers, eateries, hotels, etc., are managed by women who demonstrate their marketing expertise.

4.4.1.5. Achievement motivation

The term achievement orientation describes how a person interprets and responds to tasks, leading to various patterns of cognition, affect, and behaviour. It has been demonstrated that an individual's achievement, adaptability, and well-being are all correlated with their achievement orientations. (Prashant, 2018)

Table 4.4.1.5 Distribution of respondents based their achievement motivation N=300

Sl. No	**Respondent**	**Achievement motivation**	**F**	**P**	**Mean**	**S.D**
1.	Lunglei	Low (<15.28)	26	26	19.56	4.28
		Medium (15.28-23.84)	39	39		

		High (>23.84)	35	35		
2	Aizawl	Low (<14.82)	35	35	19.36	4.54
		Medium (14.82-23.9)	23	23		
		High (>23.9)	42	42		
3	Serchhip	Low (<14)	41	41	18.6	4.6
		Medium (14-23.2)	31	31		
		High (>23.2)	28	28		
4	Pooled	Low (<14.72)	107	35.67	19.17	4.45
		Medium (14.72-23.62)	88	29.33		
		High (>23.62)	105	35		

Table 4.4.1.5 suggested that majority 35.67 per cent have low achievement motivation followed by 35 per cent with high achievement motivation and 29.33 per cent with medium achievement motivation. The mean achievement motivation was 19.17 while the standard deviation was 4.45. The majority of respondents are happy with their current circumstances and are unsure of how to expand their businesses outside local villages or export to other states or countries. As a result the majority of responders fall into the poor achievement orientation category.

4.4.1.6. Decision making ability

Table 4.4.1.6 Distribution of respondents based their decision making ability N=300

Sl. No	**Respondent**	**Decision making ability**	**F**	**P**	**Mean**	**S.D**

1.	Lunglei	Low (<25.75)	11	11	28.18	2.43
		Medium (25.75-30.61)	76	76		
		High (>30.61)	13	13		
2	Aizawl	Low (<25.96)	10	10	28.21	2.25
		Medium (25.96-30.46)	80	80		
		High (>30.46)	10	10		
3	Serchhip	Low (<25.91)	7	7	28.06	2.15
		Medium (25.91-30.21)	86	86		
		High (>30.21)	7	7		
4	Pooled	Low (<25.88)	28	9.33	28.15	2.27
		Medium (25.88-30.42)	242	80.67		
		High (>30.42)	30	10		

Table 4.4.1.6 showed that majority 80.67 per cent have medium decision making ability followed by 10 per cent with high decision making ability and 9.33 per cent with low decision making ability. The mean decision making ability was 28.15 while the standard deviation was 2.27. This is in line with the findings of Vivek and Sahana (2021)

Women are able to make decisions by themselves for most of the things that are related to their business or their livelihood. Yet, because their entire family is engaged and they must contact one another before making decisions, respondents whose only source of income is agriculture are unable to decide upon the selling of their produce on their own.

4.4.1.7 Economic empowerment

Table 4.4.1.7 Distribution of respondents based their economic empowerment N=300

Sl. No	**Respondent**	**Economic empowerment**	**F**	**P**	**Mean**	**S.D**
1.	Lunglei	Low (<0.67)	20	20		

		Medium (0.67-0.83)	57	57	0.75	0.08
		High (>0.83)	23	23		
2	Aizawl	Low (<0.67)	21	21	0.76	0.09
		Medium (0.67-0.85)	61	61		
		High (>0.85)	18	18		
3	Serchhip	Low (0.66)	17	17	0.75	0.09
		Medium (0.66-0.84)	63	63		
		High (>0.84)	20	20		
4	Pooled	Low (<0.67)	60	20	0.75	0.08
		Medium (0.67-0.83)	156	52		
		High (>0.83)	84	28		

Table 4.4.1.7 denoted that majority 52 per cent have medium economic empowerment followed by 28 per cent with high economic empowerment and 20 per cent with low economic empowerment. The mean economic empowerment was 0.75 while the standard deviation was 0.08. The Table indicates that the respondents have more economic clout than before. When it comes to how people make money, Mizo society is less differentiated. The annual family income is boosted by both the men and the women. Even those women who are regarded as housewives make an effort to make a tiny income by selling various clothing, cosmetic, and food items when they are unable to operate a shop.

4.4.2 Social empowerment

The process through which disadvantaged groups in society can rise beyond their inferior status and achieve self-sufficiency is known as social empowerment. They are given chances to enhance their living circumstances, their access to education, and other developmental services through this procedure (Balaji, 2023).

4.4.2.1. Social participation

Social participation is a planned process in which people are distinguished by particular, group, conscious, and voluntary behaviours, which in the end promote self-actualization and goal achievement. (Morandi *et al*., 2013)

Table 4.4.2.1 Distribution of respondents based their social participation

N=300

Sl. No	Respondent	Social participation	F	P	Mean	S.D
1.	Lunglei	Low (<8.3)	19	19	11.22	2.98
		Medium (8.3-14.14)	69	69		
		High (>14.14)	12	12		
2	Aizawl	Low (<9.73)	6	6	11.4	1.67
		Medium (9.73-13.07)	84	84		
		High (>13.07)	10	10		
3	Serchhip	Low (<9.33)	11	11	11	1.67
		Medium (9.33-12.67)	78	78		
		High (>12.67)	22	22		
4	Pooled	Low (<9.01)	50	16.67	11.20	2.19
		Medium (9.01-13.39)	218	72.66		
		High (>13.39)	32	10.67		

Table 4.4.2.1 showed that majority *i.e.* 72.66 per cent of the respondents have medium social participation while 16.67 have low social participation and the remaining 10.67 have high social participation.

Mizo women participate in a variety of organisations. There is a separate organization called MHIP where every woman is a member by paying a minimal membership fee. The most popular NGO in the state is YMA (Young Mizo Association) which includes both male and female youth below the age of 35. Even though all the respondents are members of at least 3 organizations their the overall social participation is less because their

involvement as the office bearer is limited. This is in line with the findings of Chunera and Amardeep (2018) where only 6.67 per cent farm women were the office bearer of one or more society/ organization.

4.4.2.2 Cosmopoliteness

An individual that is more cosmopolite is *one that seeks and receives higher levels of exposure and exchange with individuals from different places outside of their home/ village. (wiktionary.org)*

Table 4.4.2.2 Distribution of respondents based their cosmopoliteness

N=300

Sl. No	Respondent	Cosmopoliteness	F	P	Mean	S.D
1.	Lunglei	Low (<0.56)	11	11	1.47	0.91
		Medium (0.56-2.38)	71	71		
		High (>2.38)	18	18		
2	Aizawl	Low (<0.19)	21	21	1.1	0.91
		Medium (0.19-2.01)	55	55		
		High (>2.01)	24	24		
3	Serchhip	Low (<0.25)	24	24	1.14	0.89
		Medium (0.25-2.03)	33	33		
		High (>2.03)	9	9		
4	Pooled	Low (<0.35)	56	18.67	1.23	0.88
		Medium (0.35-2.11)	210	70		
		High (>2.11)	34	11.33		

Table 4.4.2.2 signified the cosmopoliteness of the respondents where majority *i.e.* 70 per cent have medium cosmopoliteness, followed by 18.67 and 11.33 per cent with low and high cosmopoliteness respectively.

Some of the respondents are members of organization outside of their respective villages which includes NGOs such as MHIP, YMA and other religious groups. The women also travel to nearby town and cities either to sell their produce or to collect raw materials for expanding their businesses. The fact that fewer respondents are involved in FPOs or FPCs, however, may be the cause of the lower number of respondents belonging to high cosmopoliteness group.

4.4.2.3. Social empowerment

Table 4.4.2.3 Distribution of respondents based their social empowerment

N=300

Sl. No	Respondent	Social empowerment	F	P	Mean	S.D
1.	Lunglei	Low (<0.38)	19	19	0.52	0.14
		Medium (0.38-0.66)	57	57		
		High (>0.66)	24	24		
2	Aizawl	Low (<0.43)	12	12	0.52	0.09
		Medium (0.43-0.61)	72	72		
		High (>0.61)	16	16		
3	Serchhip	Low (<0.41)	8	8	0.50	0.09
		Medium (0.41-0.59)	83	83		
		High (>0.59)	9	9		
4	Pooled	Low (<0.41)	31	10.33	0.52	0.11
		Medium (0.41-0.63)	223	74.33		
		High (>0.63)	46	15.34		

Table 4.4.2.3 revealed the social empowerment of the respondents in which majority *i.e.* 74.33 per cent of the respondents have medium social empowerment which is followed by 15.34 and 10.33 percent with high and low social empowerment respectively.

The participation of women in political parties, NGOs, and religious organisations may be the cause of majority of the respondents falling under medium social empowerment category. About majority of the respondents frequently attend church and participate in NGOs like MHIP (Mizo Hmeichhe Insuihkhawm Pawl), an organisation that works to advance women's rights and safeguard their wellbeing. All of the respondents are participants in this organisation, and some of them are office bearer in their respective villages

4.4.3 Political empowerment

Political empowerment is the process of giving those who lack power (resources, abilities, and positions) access to various aspects of authority. Participation in democratic decision-making is a requirement for political empowerment. (Budryte, 2014)

4.4.3.1 Political awareness

Political awareness, in Zaller's definition, is "the degree to which a person pays attention to politics and understands what he or she has encountered." (Zaller 1992)

Table 4.4.3.1 Distribution of respondents based their political awareness

N=300

Sl. No	Respondent	Political awareness	F	P	Mean	S.D
1.	Lunglei	Low (<19.06)	25	25	21.14	2.08
		Medium (19.06-23.22)	52	52		
		High (>23.22)	23	23		
2	Aizawl	Low (<19.82)	16	16	21.55	1.73
		Medium (19.82-23.28)	69	69		
		High (>23.28)	15	15		
3	Serchhip	Low (<18.62)	20	20		

		Medium (18.62-22.72)	57	57	20.67	2.05
		High (>22.72)	23	23		
4	Pooled	Low (<19.13)	78	26		
		Medium (19.13-23.11)	176	58.67	21.12	1.99
		High (>23.11)	46	15.33		

Table 4.4.3.1 revealed the political awareness of the respondents. It can be seen from the Table that majority *i.e.*58.67 per cent of the respondents have medium political awareness which is followed by 26 and 15.33 percent with low and high political awareness respectively.

The respondents are aware of their voting rights, the voting age, the villagers who hold political office, the political system, and the function of the panchayat. The majority of respondents thought that political support for women may help achieve gender equality.

4.4.3.2 Political participation

A wide range of actions that people engage in as part of political involvement allow them to form and express their ideas about the world and its governance as well as attempt to influence the decisions that have an impact on their life. These activities range from developing one's perspective on disability or other social issues at the individual or family level, joining groups or organisations that support disabled people or other groups, and participating in local, regional, or national campaigns to more formal political activities like voting, joining a political party, or running for office. (Khasnabis *et al.,* 2010)

Table 4.4.3.2 Distribution of respondents based their political participation N=300

Sl. No	**Respondent**	**Political participation**	**F**	**P**	**Mean**	**S.D**

1.	Lunglei	Low (<22.07)	16	16	29.31	7.24
		Medium (22.07-36.55)	59	59		
		High (>36.55)	25	25		
2	Aizawl	Low (<22.15)	13	13	27.52	5.37
		Medium (22.15-32.89)	72	72		
		High (>32.89)	15	15		
3	Serchhip	Low (<23.51)	8	8	28.51	4.97
		Medium (23.51-33.48)	77	77		
		High (>33.48)	15	15		
4	Pooled	Low (<22.48)	34	11.33	28.44	5.96
		Medium (22.48-34.4)	215	71.67		
		High (>34.4)	51	17		

Table 4.4.3.2 emphasized the political participation of the respondents where majority *i.e.*71.67 per cent of the respondents have medium political participation which is followed by 17 and 11.33 percent with high and low political participation respectively.

The involvement of respondents in politics may be in the form of casting votes, being a member of a political party, having leadership role in the party or attending gram sabha meetings. Women are taking full use of the 33% reserve for them in politics, and over time, their involvement in this field has grown at the Panchayat level. Women participation at the state level is still low. As compared to other northeastern states, Mizoram has one of the lowest representations of women in politics, with only 15 of the 200 candidates running in the Mizoram Assembly elections in 2018. (Purkayastha, 2018)

4.4.3.3. Political empowerment

Table 4.4.3.3 Distribution of respondents based their political empowerment N=300

Sl. No	Respondent	Political empowerment	F	P	Mean	S.D
1.	Lunglei	Low (<0.61)	12	12	0.74	0.13
		Medium (0.614-0.87)	54	54		
		High(>0.87)	34	34		
2	Aizawl	Low (<0.63)	10	10	0.72	0.09
		Medium (0.63-0.81)	77	77		
		High (>0.81)	13	13		
3	Serchhip	Low (<0.63)	7	7	0.72	0.09
		Medium (0.63-0.81)	82	82		
		High (>0.81)	11	11		
4	Pooled	Low (<0.63)	34	11.33	0.73	0.10
		Medium (0.63-0.83)	213	71		
		High(>0.83)	53	17.67		

Table 4.4.3.3 displayed the political empowerment of the respondents in which majority *i.e.*71 per cent of the respondents have medium political empowerment which is followed by 17.67 and 11.33 percent with high and low political empowerment respectively.

The Table demonstrates that the majority of responders have political clout. The probable cause may be related to women's active participation in politics, such as voting, belonging to political parties, holding office in those parties, attending Gram Sabha meetings, participating in political campaigns, etc. Some of the respondents are also Panchayat members as a result of the reservation of seats in the Gram Sabha election. Women are becoming more inclined to join and take part in political arenas.

There are very few women participating in the General Assembly. Since the state's inception in 1987, there have only been two female ministers. Despite the fact that there were more female voters than male during the 2018 General Assembly, women still struggle to succeed. Political experts blamed

the Mizo society's rigid patriarchy and the major political party's refusal to nominate female candidates for the failure of women to win the assembly election (Anonymous, 2022 a). So, it is important to raise awareness among both women and men so that more women can participate in politics and gain political empowerment.

4.4.4 Educational empowerment

Education increases one's knowledge, self-assurance, and understanding of gender parity, all of which are signs that one is being empowered. Women who have received an education are aware of their rights, and when women are aware of their rights, discrimination is not an issue (Muniraju and Attri, 2022)

Table 4.4.4 presented the educational empowerment of the respondents where it can be seen that majority *i.e.*49 per cent of the respondents have medium educational empowerment which is followed by 37 and 14 percent with high and low educational empowerment respectively.

Table 4.4.4 Distribution of respondents based their educational empowerment N=300

Sl. No	Respondent	Educational empowerment	F	P	Mean	S.D
1.	Lunglei	Low (<0.86)	20	20	0.89	0.03
		Medium (0.86-0.92)	64	64		
		High (>0.92)	16	16		
2	Aizawl	Low (<0.86)	11	11	0.88	0.02
		Medium (0.86-0.9)	62	62		
		High (>0.9)	27	27		
3	Serchhip	Low (<0.86)	11	11	0.88	0.02
		Medium (0.86-0.9)	58	58		
		High (>0.9)	31	31		

4	Pooled	Low (<0.86)	42	14	0.88	0.02
		Medium (0.86-0.9)	147	49		
		High (>0.9)	111	37		

It can be inferred from the Table that more respondents fall into the group of high educational empowerment than in the low educational empowerment category while majority are in medium category. This demonstrates that women are aware of the value of education in boosting their livelihood stability and the status of women in society.

4.4.5. Psychological empowerment

Psychological empowerment is defined as "intrinsic task motivation reflecting a sense of self-control in relation to one's work and an active involvement with one's work role" (Seibert *et al*., 2011)

Table 4.4.5 revealed the psychological empowerment of the respondents. It can be seen from the Table that majority *i.e.* 65.33 per cent of the respondents have medium psychological empowerment which is followed by 20.33 and 14.34 percent with low and high psychological empowerment respectively.

Table 4.4.5 Distribution of respondents based their psychological empowerment N=300

Sl. No	**Respondent**	**Psychological empowerment**	**F**	**P**	**Mean**	**S.D**
1.	Lunglei	Low (<0.78)	19	19	0.85	0.07
		Medium (0.78-0.92)	58	58		
		High (>0.92)	23	23		
2	Aizawl	Low (<0.79)	15	15	0.86	0.07
		Medium (0.79-0.93)	79	79		

		High (>0.93)	16	16		
3	Serchhip	Low (<0.82)	10	10		
		Medium (0.82-0.94)	73	73	0.88	0.06
		High (>0.94)	17	17		
4	Pooled	Low (<0.81)	61	20.33		
		Medium (0.81-0.93)	196	65.33	0.87	0.06
		High (>0.93)	43	14.34		

According to the Table, there are more respondents who fall into the category of low psychological empowerment than high psychological empowerment. The respondents' poor self-esteem and the societal stigma that inhibits women from participating in some activities may be the probable cause.

4.4.6. Familial empowerment

In this patriarchal society, recognising and allowing women to participate in home decision-making is the essence of familial empowerment. In this process, women gain control over their own lives, society, and communities (Thangaraj, 2019)

Table 4.4.6 Distribution of respondents based their familial empowerment

N=300

Sl. No	**Respondent**	**Familial empowerment**	**F**	**P**	**Mean**	**S.D**
1.	Lunglei	Low (<0.57)	17	17		
		Medium (0.57-0.93)	70	70	0.75	0.18
		High (>0.93)	13	13		
2	Aizawl	Low (<0.71)	8	8		
		Medium (0.71-0.95)	82	82	0.83	0.12
		High (>0.95)	10	10		
3	Serchhip	Low (<0.72)	6	6		

		Medium (0.72-0.92)	87	87	0.82	0.10
		High (>0.92)	7	7		
4	Pooled	Low (<0.66)	33	11	0.80	0.14
		Medium (0.66-0.94)	242	80.67		
		High (>0.94)	25	8.33		

Table 4.4.6 revealed the familial empowerment of the respondents where majority *i.e.* 80.67 per cent of the respondents have medium psychological empowerment which is followed by 11and 8.33 percent with low and high familial empowerment respectively.

The Table indicates that there are more respondents in the low familial empowerment category than in the high familial empowerment category. Because Mizos are a patriarchal society, men still exert some control over women when it comes to making decisions regarding specific events and circumstances in the home. The majority of women still need their husbands' approval before travelling, sending their kids to school, etc. Even if they don't need to ask for permission, the husband nonetheless has the last say in a number of home decisions.

4.4.7. Overall empowerment

Table 4.4.7 Distribution of respondents based their overall empowerment

N=300

Sl. No	**Respondent**	**Overall empowerment**	**F**	**P**	**Mean**	**S.D**
1.	Lunglei	Low (<0.62)	16	16	0.70	0.08
		Medium (0.62-0.78)	63	63		
		High (>0.78)	21	21		
2	Aizawl	Low (<0.67)	19	19	0.72	0.05
		Medium (0.67-0.77)	65	65		
		High (>0.77)	16	16		

3	Serchhip	Low (<0.65)	11	11	0.71	0.06
		Medium (0.65-0.77)	77	77		
		High (>0.77)	12	12		
4	Pooled	Low (<0.64)	41	13.67	0.71	0.07
		Medium (0.64-0.78)	213	71		
		High (>0.78)	46	15.33		

Table 4.4.7 revealed the overall empowerment index of the respondents. It can be seen from the Table that majority *i.e.* 71 per cent of the respondents have medium overall empowerment which is followed by 15.33 and 13.67 percent with high and low overall empowerment respectively. The findings revealed that majority of the respondents had medium overall empowerment.

According to studies, Mizoram has the largest proportion of female employees to male employees among lawmakers, senior officials, and managers at 70.9%. According to the most recent supplemental data from the Periodic Labour Force Survey (PLFS) for July 2020-June 2021, Mizoram also has the highest percentage of women working in managerial positions, at 40.8% (Anonymous, 2022 b). This demonstrates that Mizo women may improve their circumstances and lead better lives if they have a will. So, when women are educated and able to fight for their rights they will be able to achieve higher level of empowerment.

RELATIONSHIP BETWEEN THE WOMEN EMPOWERMENT AND SOCIO ECONOMIC CHARACTERISTICS OF THE RESPONDENTS

Table 4.4.8 Correlation of independent variables with level of empowerment of respondents.

Sl. No.	Socio-economic factors	Correlation coefficient (r)	p value
1	Age	0.11 NS	>.05
2	Educational qualification	0.16**	<0.1

3	Marital Status	0.40**	<0.1
4	Family type	0.12*	>0.1
5	Family size	-0.22**	<0.1
6	Occupation	0.23**	<0.1
7	Total personal income	0.43**	<0.1
8	Total household income	0.07 NS	>.05
9	Monthly expenditure	0.04 NS	>.05
10	Credit acquisition	-0.01 NS	>.05
11	Access to input	-0.14 *	>0.1
12	Experience in farming (yrs)	0.006 NS	>.05
13	Experience in SHG (yrs)	0.23**	<0.1
14	Experience in livelihood activities (yrs)	0.011 NS	>.05
15	No. of livelihood activities	0.14*	<0.1
16	Source of information	0.27**	<0.1
17	Information source utilization	0.21**	<0.1
18	Mass media exposure	0.21**	<0.1
19	Training	0.23**	<0.1

*Significant at 5% level, ** Significant at 1% level, NS- Non significant

The findings presented in Table 4.4.8 reveals the relationship analysis between the various socio-economic factors and level of empowerment of the respondents.

The correlation value between **age** of the respondents and the level of empowerment is 0.11, which is statistically not significant. Thus, it can be concluded that increase in age of the respondents had no relationship with the level of empowerment of the respondents.

The correlation value between **educational qualification** of the respondents and the level of empowerment is 0.16, which is statistically significant at 1% level of significance. Thus, it can be concluded that educational qualification of the respondents had positive relationship with the level of empowerment of the respondents.

Findings from the Table had revealed that the correlation value between **marital status** of the respondents and the level of empowerment is 0.40, which is statistically significant at 1% level of significance. It can thus be concluded that higher educational status of the respondents had a positive impact on the level of empowerment of the respondents.

The correlation value between **family type** of the respondents and the level of empowerment is 0.12, which is statistically significant at 5% level of significance. Thus, it can be concluded that marital status of the respondents had a positive impact on the level of empowerment of the respondents.

Findings from the Table had revealed that the correlation value between **family size** of the respondents and the level of empowerment is -0.22, which is statistically significant at 1% level of significance. It can thus be concluded that increase in family size of the respondents had negative relationship with the level of empowerment of the respondents.

Findings from the Table had revealed that the correlation value between **occupation** of the respondents and the level of empowerment is 0.23, which is statistically significant at 1% level of significance. It can thus be concluded that occupation of the respondent had a positive impact on the level of empowerment of the respondents.

The correlation value between **total personal annual income** of the respondents and the level of empowerment is 0.43, which is found to be statistically significant at 1% level of significance. Thus, it can be concluded

that annual income of the respondent had a positive relationship with the level of empowerment of the respondents.

The correlation value between **total household annual income** of the respondents and the level of empowerment is 0.07, which statistically not significant. Thus, it can be concluded that total household annual income of the respondents had no relationship with the level of empowerment of the respondents.

Findings from the Table had revealed that the correlation value between **monthly expenditure** and the level of empowerment is 0.04, which statistically not significant. Thus, it can be concluded that monthly expenditure of the respondents had no relationship with the level of empowerment of the respondents.

The correlation value between **credit acquisition** of the respondents and the level of empowerment is -0.01, which is found to be statistically not significant. Thus, it can be concluded that credit acquisition of the respondents had a no impact with the level of empowerment of the respondents.

Findings from the Table had revealed that the correlation value between **access to input** of respondents and the level of empowerment is -0.14, which is statistically significant at 5% level of significance. It can thus be concluded that access to input of the respondents had a negative relationship with the level of empowerment of the respondents.

The correlation value between **experience in farming** of respondents and the level of empowerment is 0.006, which is found to be statistically not significant. Thus, it can be concluded that experience in farming of respondents had no impact with the level of empowerment of the respondents.

The correlation value between **experience in SHG** of respondents and the level of empowerment is 0.23, which is found to be statistically significant at 1% level of significance. Thus, it can be concluded that experience in SHG

of respondents had a positive impact with the level of empowerment of the respondents.

The correlation value between **experience in livelihood activities** of respondents and the level of empowerment is 0.11, which is found to be statistically not significant. Thus, it can be concluded that experience in livelihood activities of respondents had no impact with the level of empowerment of the respondents.

The correlation value between **no. of livelihood activities** of respondents and the level of empowerment is 0.14, which is found to be statistically significant at 1% level of significance. Thus, it can be concluded that no. of livelihood activities of respondents had a positive impact with the level of empowerment of the respondents.

The correlation value between **source of information** of respondents and the level of empowerment is 0.27, which is found to be statistically significant at 1% level of significance. Thus, it can be concluded that source of information of respondents had a positive impact with the level of empowerment of the respondents.

The correlation value between **information source utilization** of respondents and the level of empowerment is 0.21, which is found to be statistically significant at 1% level of significance. Thus, it can be concluded that information source utilization of respondents had a positive impact with the level of empowerment of the respondents.

The correlation value between **mass media exposure** of respondents and the level of empowerment is 0.21, which is found to be statistically significant at 1% level of significance. Thus, it can be concluded that mass media exposure of respondents had a positive impact with the level of empowerment of the respondents.

The correlation value between **training** of respondents and the level of empowerment is 0.23, which is found to be statistically significant at 1% level of significance. Thus, it can be concluded that training of respondents had a positive impact with the level of empowerment of the respondents.

Table 4.4.8 revealed that the independent variable viz., educational qualification, marital status, family size, occupation, total personal annual income, experience in SHG, source of information, information source utilization, mass media exposure and training had a positive significant association with the level of empowerment of the respondents at 1% level of significance while family type and no. of livelihood activities had 5% level of significance. Access to input has a negative significant association with the level of empowerment of the respondents at 5% level of significance.

Independent variables such as age, total household annual income, monthly expenditure, credit acquisition, experience in farming and experience in livelihood activities had no significant relationship with the level of empowerment of the respondents.

Therefore, the null hypothesis ($H_0$2) that states that there is no significant relationship between the independent variables and the empowerment level is rejected.

LEVEL OF EMPOWERMENT THROUGH LIVELIHOOD STRATEGIES

Table 4.4.9 Multiple linear regression of livelihood strategies and women empowerment

Livelihood strategies	**Standardized coefficients**	**t-value**	**Sig.**
	Beta		

(Constant)		93.454	<0.01
NTFP	0.19*	3.485	<0.01
Agri-allied	0.30**	5.926	<0.01
Government grant	0.24*	4.625	<0.01
Self employment	0.32**	6.184	<0.01
Regular employment	0.29**	6.083	<0.01
Others	0.05	1.039	>0.01
R^2	.335		
Adjusted R^2	**.322**		
F value	**24.61****		

*Significant at 0.05 level probability
**Significant at 0.05 level probability

Table 4.4.9 included the multiple linear regression of livelihood strategies and women empowerment of tribal women in Mizoram. It was observed from the Table that the regression coefficients of NTFP (b=0.19*), agri-allied (b=0.30**), govt. Grant (b=0.24*), Self employment (b=0.32**), Regular employment (b=0.29**), were found to be significant. Therefore these variables can be termed as good predictors of empowerment of women. It was found that others livelihood strategies was non- significant.

The value of coefficient of multiple determination (R^2) value being 0.322 indicated that the independent variables jointly contributed 32 percent towards variation in empowerment of women through livelihood strategies. The F value (F=24.61) was also found to be significant. This indicates the significant effectiveness of these independent variables in predicting the extent

of empowerment of women through the livelihood strategies when all of them were functioning jointly.

4.5 Constraints faced by women related to livelihood strategies adopted

Different problems faced by the respondents of were categorized into eleven different sections of problems such as socio-personal constraints, economic constraints, scientific constraint, psychological constraint, political constraint, credit, financial and savings constraints, extension related constraint, production and marketing constraints, situational constraint and SHG related constraints. The distribution of respondents according to the challenges they faced in their various livelihood activities was shown in Table 4.5.1.

Table 4.5 Constraints faced by women related to livelihood strategies adopted

Constraints	Major constraint	Moderate constraint	No constraint	Weighted mean score	Rank	Overall mean score	Overall rank
	F (%)	F(%)	F(%)				
1. Socio-personal constraints							
i. Lack of land holding power/land rights	0 (0)	289 (96.33)	11 (3.67)	0.96	IV	9.19	II
ii. Lack of decision making power	41 (13.67)	212 (70.66)	47 (15.67)	0.98	III		
iii. Male dominance	25 (8.33)	228 (76)	47 (15.67)	0.92	V		
iv. Multi-dimensional role of women	136 (45.33)	164 (54.66)	0 (0)	1.45	I		
v. Lack of improved tools specific for women	125 (41.67)	156 (52)	19 (6.33)	1.35	II		
vi. Insufficient education	39 (13)	153 (51)	108 (36)	0.77	VIII		
vii. Health problems	90 (30)	64 (21.33)	146 (48.67)	0.81	VI		
viii. Difficulty in performing certain agricultural operations	84 (28)	71 (23.67)	145 (48.33)	0.79	VII		
ix. Gender bias in recognition of work performance	50 (16.67)	59 (16.66)	191 (63.67)	0.53	X		
x. Less opportunity to lead the community organization	36 (12)	108 (36)	156 (52)	0.6	IX		

2.Economic constraints							
i. No equal wage for equal work	50 (16.67)	59 (19.66)	191 (63.67)	0.53	V	6.43	V
ii. Un-remunerative price for produce	125 (41.67)	156 (52)	19 (6.33)	1.35	IV		
iii. Lack of access to resources	150 (50)	119 (39.67)	31 (10.33)	1.39	III		
iv. Lack of support for self-employment venture	180 (60)	105 (35)	15 (5)	1.55	II		
v. No insurance for loss in an economic activity	180 (60)	120 (40)	0 (0)	1.6	I		
3.Scientific constraints							
i. Lack of location specific cropping system in contingent periods	123 (41)	158 (52.67)	19 (6.33)	1.34	II	4.30	VI
ii. Non-availability of drudgery reducing technologies	207 (69)	74 (24.67)	19 (6.33)	1.62	I		
iii. Limited infrastructure for animal husbandry	120 (40)	40 (13.33)	140 (46.67)	0.93	III		
iv. Lack of access to feed for animal	23 (7.67)	72 (24)	205 (68.33)	0.4	IV		
4.Psychological constraints							
i. minimal support from family / society to participate in developmental activities	32 (10.67)	165 (55)	103 (34.33)	0.76	I		X
ii. No due considerations in decision making on financial issues	19 (6.33)	13 (4.33)	268 (89.34)	0.17	III		
iii. Inadequate orientation towards leadership	14 (4.67)	66 (22)	220 (73.33)	0.31	II		

iv. Not adequately involving in the decision making by family / society	12 (4)	20 (6.67)	260 (86.67)	0.14	IV	1.39	
5. Political constraints							
i. Allocation of insufficient fund for the villager's needs	149 (49.67)	151 (50.33)	0 (0)	1.49	I	3.50	VIII
ii. Lack of training to assume political leadership	25 (8.33)	97 (32.33)	178 (59.34)	0.49	III		
iii. Gender inequality in political participation	100 (33.33)	111 (37)	89 (29.67)	1.03	II		
iv. Inhibitions of women to involve in political activities	15 (5)	115 (38.33)	170 (56.67)	0.48	IV		
6.Credit & Financial constraints							
i. In-sufficient credit	65 (21.67)	83 (27.67)	152 (50.66)	0.71	I	3.66	VII
ii. Complicated procedure in sanctioning loans	41 (13.67)	51 (17)	208 (69.33)	0.44	III		
iii. Loans not received on time	9 (3)	37 (12.33)	254 (84.67)	0.18	V		
iv. High rates of interest	40 (13.33)	16 (5.33)	244 (81.34)	0.32	IV		
v. Inadequate guidance on credit availability	30 (1)	107 (35.67)	163 (54.33)	0.55	II		
vi. Inadequate subsidy for inputs	136 (45.33)	162 (54)	2 (0.7)	1.44	III		
7. Extension related constraints							

i. Lack of technical help/ less contact with technical expert	69 (23)	174 (58)	57 (19)	1.04	IV	6.96	IV
ii. Inadequate guidance and expertise	131 (43.67)	120 (40)	49 (16.33)	1.27	II		
iii. Insufficient training to develop competency	60 (20)	138 (46)	102 (34)	0.86	V		
iv. No motivational incentive to attend training	83 (27.67)	142 (47.33)	75 (25)	1.03	VI		
v. Inadequate exposure visit to develop confidence	172 (57.33)	115 (38.33)	13 (4.34)	1.53	I		
vi. Less women extension trainers	68 (22.67)	232 (77.33)	0 (0)	1.22	III		
8. **Production & Marketing constraints**							
i. Complications in procurement of inputs and materials	148 (49.33)	121 (40.33)	31 (10.34)	1.39	VI	9.82	I
ii. Unavailability of quality inputs and materials.	107 (35.67)	168 (56)	25 (8.33)	1.27	VII		
iii. Inadequate infrastructure	150 (50)	150 (50)	0 (0)	1.5	III		
iv. Exploitation by businessmen/dealer	115 (38.33)	114 (38)	71 (23.67)	1.14	V		
v. Lack of knowledge about market	153 (51)	147 (49)	0 (0)	1.51	II		
vi. Fluctuation in prices	148 (49.33)	133 (44.33)	19 (6.34)	1.43	IV		
vii. Low price at the time bulk production.	190 (63.33)	91 (44.33)	19 (6.34)	1.57	I		
9. Situational constraints							

i. Distant location of market	138 (46)	143 (47.67)	19 (6.33)	1.39	III	9.03	III
ii. Distant location of land	165 (55)	120 (40)	18 (5)	1.5	II		
iii. Poor transport facility	151 (50.33)	149 (49.67)	0 (0)	1.5	II		
iv. Lack of storage facility	131 (43.67)	150 (50)	19 (6.33)	1.37	IV		
v. Post-harvest loss due to rodents	102 (34)	131 (43.67)	67 (22.33)	0.11	VI		
vi. Lack of labour	0 (0)	88 (29.33)	212 (70.67)	0.29	V		
Vii. High cost of labour	256 (85.33)	44 (14.67)	0 (0)	1.85	I		
10. SHG related constraints							
i. Difficulty in enrolling potential members	70 (23.33)	105 (35)	125 (41.67)	0.81	I	2.86	IX
ii. Low level of participation of members	31 (10.33)	63 (21)	206 (68.67)	0.41	IV		
iii. Lack of suitable leader	22 (7.33)	55 (18.33)	223 (74.33)	0.33	VI		
iv. Lack of coordination among members	19 (6.33)	81 (27)	200 (66.67)	0.39	V		
v. Irregularity of meeting arrangement	36 (12)	67 (22.33)	197 (65.67)	0.46	II		
vi. Lack of proper infrastructure for SHG activities	36 (12)	60 (20)	204 (68)	0.44	III		

According to the overall mean score, it was found that production and marketing constraint has the highest score where the problem of low price at the time of bulk production, inadequate infrastructure and fluctuation of prices are common.

Socio-personal constraints, which include issues like lack of decision-making authority, male dominance, the multi-dimensional role of women, a lack of better tools designed specifically for women, inadequate education, health issues, etc., came in second. None of the respondents cited a lack of land holding power or land rights as a significant constraint. This may be because women do not view land ownership as a birthright and are not particularly bothered by it in Mizo society, where property is traditionally passed down to the youngest son in the family.

Situational constraint comes third where problems like distant location of market, distant location of land, poor transport facilities, lack of storage facilities, high cost of labour etc. prevalent. None of the respondents have mentioned a labour shortage, but their main issue is the cost of employing workers because some of them are unable to hire them.

Extension related constraint ranked fourth where lack of technical help/ less contact with technical expert, inadequate guidance and expertise, insufficient training, to develop competency, inadequate exposure visit, and less women extension trainers were included.

Economic constraint ranked fifth where problems of such as lack of access to resources, lack of support for self-employment venture, no insurance for loss in an economic activity and un-remunerative price for produce are faced by the respondents.

Scientific constraint ranked sixth where problems such as lack of location specific cropping system in contingent period, non-availability of drudgery reducing technologies, limited infrastructure for animal husbandry and lack of access to feed for animals are faced by the respondents.

Credit, financial and savings constraint ranked seventh where respondents faced problems of insufficient credit, complicated procedure in sanctioning loans, loans not received on time, high rates of interest, inadequate guidance on credit availability and inadequate subsidy for inputs.

Political constraints ranked eight where the respondents faced problems such as allocation of insufficient funds for villager's needs, lack of training to assume political leadership, gender inequality in political participation and inhibition of women to involve in politics.

SHG related constraints ranked ninth where problems such as difficulty in enrolling potential members, low level of participation of members, internal group conflict, external group conflict, lack of suitable leader, lack of coordination among members, irregularity of meeting arrangement and lack of proper infrastructure for SHG activities are faced by the respondents.

Psychological constraint ranked tenth where respondents faced problems related to decision making in the family, support from family or society to participate in developmental activities and have less orientation towards leadership.

4.5.2 MEASURES SUGGESTED BY RESPONDENTS TO OVERCOME CONSTRAINTS

The respondents have suggested measures to overcome constraints faced them. They are presented in Table 4.5.2

Table 4.5.2 Measures suggested by respondents to overcome constraints

Sl.No	Constraints	Measures suggested by the respondents
1.	**Socio-personal constraints**	
i	Lack of land holding power/land rights	• Women should be given the opportunity to own lands under their name • Improve the condition of women • Change the functioning of society
ii	Lack of decision making power	• Men should give opportunity to women to make decisions • Men and women should learn to respect each other
iii	Male dominance	• Men should also listen to women • If men are weaker they should listen to their wives.
iv	Multi-dimensional role of women	• Uplift the condition of women • More help from spouse • Men should support women in their various endeavors • Divide work in the house
v	Lack of improved tools specific for women	• Improving tools to make them easier to handle for women
vi	Insufficient education	• Emphasis on importance of education • Reduce the work load of women in the house so that they can pursue education
vii	Health problems	• Conducting awareness programmes

		• Conducting health camp/mela
viii	Difficulty in performing certain agricultural operations	• Conducting more trainings • Working together as family
ix	Gender bias in recognition of work performance	• Understanding the condition of women in the society • Reducing gender roles • Make women realize that they are able to achieve anything in life with hard work and confidence
x	Less opportunity to lead the community organization	• Learning the potential of women • Giving respect to women
2.	**Economic constraints**	
i	No equal wage for equal work	• Pay should be given on the basis of work performance
ii	Un-remunerative price for produce	• Government should fix the price of agri commodities in the state • Seeking help from experts
iii	Lack of access to resources	• Making resources available at the villages. • Government should take the initiative
iv	Lack of support for self-employment venture	• Government should provide support for this type of venture • SHG and Banks should provide more support.
v	No insurance for loss in an economic activity	• Provision of insurance for women. • Insurance on crops and animals

3.	**Scientific constraints**	
i	Lack of location specific cropping system in contingent periods	• More help from experts • Expert should help in planning proper cropping system for each of the villages
ii	Non-availability of drudgery reducing technologies	• Providing tools and technologies that are suitable in the hilly areas • Providing tools in subsidy • Teaching women to use tools efficiently
iii	Limited infrastructure for animal husbandry	• Improving infrastructure
iv	Lack of access to feed for animal	• Provision of feeds at lower prices. • Training on animal nutrition and disease management
4	**Psychological constraints**	
i	Minimal support from family / society to participate in developmental activities	• Sensitization program must be conducted at the village level. • Improve the condition of women • Importance of family support must be emphasized
ii	No due considerations in decision making on financial issues	• Improve the condition of women
iii	Inadequate orientation towards leadership	• Provision of leadership training
iv	Not adequately involving in the decision making by family / society	• Change must come from the society

5.	**Political constraints**	
i	Allocation of insufficient fund for the villager's needs	• More funds should be allocated for the villages • Funds must be equally distributed
ii	Lack of training to assume political leadership	• Training on leadership must be given to women
iii	Gender inequality in political participation	• Men should know that women are equally able to lead the society • Put more trust in women and their ability to be leaders
iv	Inhibitions of women to involve in political activities	• Changing the mindset of people so that they can accept women as leaders in the society
6.	**Credit & Financial constraints**	
i	In-sufficient credit	• Providing more credit to women earning livelihood
ii	Complicated procedure in sanctioning loans	• Simplification of the procedures
iii	Loans not received on time	• Reducing the time period between each installment
iv	High rates of interest	• Decreasing the interest rate for women entrepreneurs
v	Inadequate guidance on credit availability	• Proper guidance must be available at the bank
vi	Inadequate subsidy for inputs	• Subsidy must be provided to all famers not for selective few
7.	**Extension related constraints**	
i	Lack of technical help/ less contact with technical expert	• Making experts easily available even at the village level

ii	Inadequate guidance and expertise	• Experts for different subject matter is necessary
iii	Insufficient training to develop competency	• Conducting more trainings
iv	No motivational incentive to attend training	• Incentives must be increased to attract more trainees • Incentive must be made equal to daily labour wage
v	Inadequate exposure visit to develop confidence	• More opportunities must be available to women to travel
vi	Less women extension trainers	• More women should be hired to deal with issues related to women problems
8.	**Production & Marketing constraints**	
i	Complications in procurement of inputs and materials	• Government should provide the inputs on time
ii	Unavailability of quality inputs and materials.	• Government should provide the inputs on time • Only good quality inputs must be supplied to the villages
iii	Inadequate infrastructure	• Government and local village council must work to improve infrastructure in the village • People must learn to take care of government property
iv	Exploitation by businessmen/dealer	• Government should fix a price for the produce
v	Lack of knowledge about market	• More information on market should be made available to the villagers • Grow specific crops
vi	Fluctuation in prices	• Government should try their best to reduce the fluctuation of price

vii	Low price at the time bulk production.	• Farmers must work together so that they can get remunerative price for their produce
9.	**Situational constraints**	
i	Distant location of market	• Improving transportation facilities
ii	Distant location of land	• Improving transportation facilities
iii	Poor transport facility	• Improving transportation facilities
iv	Lack of storage facility	• Improving storage facilities • Cold storage is necessary
v	Post-harvest loss due to rodents	• Training on pest and rodent control
vi	High cost of labour	• Improve living condition so that more labours can be hired.
10.	**SHG related constraints**	
i	Difficulty in enrolling potential members	• Conducting more training that emphasizes on the functioning of SHG • Increasing funds
ii	Low level of participation of members	• Motivating both the present and prospect members. • Increasing funds
iii	Lack of suitable leader	• Leaders must be selected based on their capacity and not based on their popularity
iv	Lack of coordination among members	• More activities must be added so that the members will learn to work together and function more effectively.

v	Irregularity of meeting arrangement	• Increasing SHG activities
vi	Lack of proper infrastructure for SHG activities	• Construction of buildings for SHGs where they can perform their activities

PROPOSITION FOR SUITABLE LIVELIHOOD STRATEGIES FOR WOMEN EMPOWERMENT

1. Eco-tourism: Eco- tourism is tourism centered around the natural world, with a focus on sustainability. It has become a global trend as more people are interested in visiting nature destination, learning about local cultural heritage, conservation of natural resources etc. Eco-tourism can help in creating employment opportunities among the local women by acting and guide for the visitors and opening Homestays where food and lodging is provided. Thus, providing women with the prospect of earning income for herself and family while educating people on environmental awareness.
2. Handloom: Mizo women are known for their intricate and beautiful designs of the tradition 'puan' (a piece of cloth wrapped around the waist, worn traditionally by both men and women). Puan are now exported outside of the state and country too. So women can earn money through handloom and support the family. So promoting handloom among women will enhcae
3. Handicraft: The art of making certain objects using Bamboo and rattan has always been a part of the Mizo culture. In the past, it has been considered to be men's job but times have changed and women have also taken part in the making of handicraft more than ever. Teaching handicraft skills to women will help them have an extra source of income.
4. Post harvest technology/ Value addition: Many crops are loss due to spoilage at the time of bulk production. If women are taught post harvest technology/ value addition of agricultural products it will enhance their income. Thos can include making pickle, jam, jelly, ready to serve (RTS) drinks,

5. Mushroom cultivation: Mushroom cultivation is another important source of income that would help in achieving sustainable livelihood among the rural women. It has been found that some of the respondents have attended training related to mushroom cultivation but are not practicing it on a large scale. So there is a need to help these women so that they can have a steady source of income through mushroom cultivation.
6. Floriculture: Floriculture has become a trend lately among Mizo women living in the urban area and those in the rural areas are catching on it. There are many women who are supporting their family through this venture and rural women will also be able to increase their income with the resources that are available to them without much investment.
7. Growing cash crops: Rice and maize are commonly grown in the jhums but they cannot be sold at a price that is beneficial for the farmers. If women grow cash crops such as chilli, tobacco, ginger etc they will be able to have a sustainable livelihood.
8. Growing off season crops: Growing of crops such as tomato, chilli etc that are in demand throughout the year during the off season would help women in earning extra income. They will need to invest in some materials for this purpose but it would be worth it.
9. Bakery: Almost all the villages in which the study was conducted do not have a proper bakery. If women in the rural areas learn the skill of baking they can have a steady source of income. They will be able to supply their products to nearby villages as well.
10. Jewelry making: The art of making jewelry such as earring, necklace, ring etc can be learned by women so that they will be able to have an extra source of income.

It has been found through this study that majority of women in the rural areas are able to attain education up to high school level. This has hampered their growth because they are not able to pursue higher education in their own village. In order to bring all round development that is sustainable that would eventually lead to empowerment there is a need to increase the education level of women in the rural areas. When women are educated they can opt for livelihood strategies that are would fetch them higher income, increase their level of empowerment, boost their confidence and also decrease their dependence on their spouses and other family members. As evident from the training need assessment, the respondents have expressed their desire for improving their skills and capacities through various training. This will help them learn skill that would enhance their income and ultimately bring about empowerment.

CHAPTER-V

SUMMARY AND CONCLUSION

SUMMARY AND CONCLUSION

A livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living (Chambers and Conway, 1992). Smallholder households utilise a livelihood strategy as a means of sustaining their way of life. Having a variety of sources of income is crucial for rural survival because it promotes adaptability, resilience, and stability. In this regard, diversified livelihood systems are more resilient than undiversified ones. They are also more likely to be long-lasting. (Ellis, 2000) A livelihood is sustainable if it can withstand stress and shocks, bounce back quickly, maintain or improve its capabilities and assets, and offer opportunities for future generations to live sustainably. It is also sustainable if it benefits other livelihoods both immediately and over the long term, both locally and globally. (Chambers and Conway, 1991)

The Mizo society is a patriarchal and patrilineal society. It is a close-knit, egalitarian society. Mizo society follow the patrilocal rule of residence after marriage. Inheritance is passed down through the paternal line. Women do not have much say in decision making whether at home or outside. A society must empower women in order to advance since it improves the quality and quantity of the human resources available for growth (Gupta and Yesudian, 2006). For our society to secure the long-term growth of the nation, women's empowerment and gender equality are crucial. Women's empowerment should therefore be a crucial and essential element of the programme for sustainable livelihood in rural India. (Hedge, 2015)

Women's empowerment is the process by which individuals reimagine and elaborate on what they can be, do, and achieve in a situation where they were previously denied (Kabeer 2005, Mosedale, 2005). There are numerous

ways to describe empowerment, but when discussing women's empowerment, it means welcoming and enabling those (women) who are outside the decision-making process to participate in it (Rahman, 2013). The process of empowering people gives them control over their own lives, society, and communities. Raising the status of women through education, awareness, literacy, and training is a part of empowerment (Bayeh, 2016).

Mizoram's rural residents rely on the agricultural and allied industry for a living. These livelihood options' viability and effect on empowering rural women are still unknown. People have previously researched the empowerment of Mizo women from a variety of perspectives, including political, socioeconomic, entrepreneurial, and religious, but no efforts have been made to empower women through various livelihood strategies. Therefore, the present study "**Women empowerment through sustainable livelihood strategies in rural Mizoram**" will be undertaken with the following objectives:

1. To study the personal, socio-economic and communication characteristics of women in the rural areas.
2. To find out livelihood strategies adopted by women in the study area.
3. To determine the sustainability of selected livelihoods in the study area.
4. To analyse the level of empowerment of women through livelihood strategies.
5. To identify the constraints faced by women related to livelihood in the study area and to propose suitable livelihood strategies for empowerment.

5.1 Research methodology

The study employed a descriptive and analytical research design. The state of Mizoram served as the setting for the current investigation. Aizawl, Lunglei, Siaha, Champhai, Lawngtlai, Serchhip, Mamit, Kolasib, Saitual, Khawzawl, and Hnahthial are the 11 districts that make up Mizoram. Aizawl,

Serchhip, and Lunglei Districts were specifically chosen from among these districts. The North of Mizoram is represented by the Aizawl district, the Central Region by the Serchhip district, and the Southern Region by the Lunglei district. There will be two Rural-Development Blocks chosen from each of the districts based on the sex ratio (2011 census), Tlangnuam R.D. Block and Aibawk R.D. Block were specifically chosen from the Aizawl district. Serchhip R.D.Block and East Lungdar R.D.Block were specifically chosen from the Serchhip district. Lungsen R.D.Block and Lunglei R.D.Block were lastly purposefully chosen from the Lunglei district. Six R.D.Blocks were chosen, and two villages from each were chosen, for a total of 12 villages. The villages were specifically chosen based on a number of factors, including the amount of crops they produced (both agricultural and horticultural), the presence of people's organisations like SHGs, FIGs, MHIP, and other NGOs, and market accessibility. Using the proportionate random sampling method, 300 rural women from the chosen villages were chosen as respondents.

The investigator used a specially devised interview schedule to acquire the data through personal interviews. To draw reliable inferences, the acquired data were categorised, tabulated, and carefully examined using the proper statistical methods, including frequency, percentage, mean, standard deviation, and correlation.

5.2 SALIENT FINDINGS

The following are the summary of the findings of the present study, presented according to specific objectives of the study:

5.2.1 Personal characteristics of women.

Age

Majority (73.67%) of respondents were between the ages of 35 and 60, with 19.33 and 18.33 percent of respondents, respectively, belonging to the age groups of people under 35 and over 60. Also, it was discovered that the respondents' average age was 44.63 and their standard deviation was 10.60.

Relationship with head of the family

Majority of the respondents are wives (77.33 %) followed by the respondents who are themselves the head of the household (10%).This is followed by daughters (6.67%), daughter-in-law (5%), sister (0.67%) and sister-in-law (0.33%).

Educational qualification

Majority of respondents (44.66%) had completed high school, followed by 29% who had completed higher secondary school, 11% who had completed middle school, 6.67% who had completed graduate school, and 3.67% who had earned a post-graduate degree. There were no functionally illiterate or illiterate responders**.**

Marital status

Married people made up the bulk of respondents (82.67%), followed by widows (6.33%), singles (5.67%), and those in a relationship but not together (5.33%), all of whom expressed a desire to support their families and give their children a good education.

Type of family

The majority of respondents (71%) came from nuclear families, while the remaining 29% were from joint families. In Mizo society, the youngest son receives the property and is responsible for caring for his parents, while the

older siblings vacate the home after getting married. As a result, Mizoram has fewer joint families.

Family size

The majority (71.33%) of respondents had medium-sized families with 4 to 7 members, while 15.67% had small families with fewer than 4 members and 13% had large families with more than 7 members. The average number of children per family was 5.24, with a range of 2 to 11, and the standard deviation was 1.81. The majority of families in Mizoram have three children, which makes the average family size in the region small. This may be because of the introduction of family planning practises in the state in the late 1970s.

5.2.2 SOCIO- PERSONAL CHARACTERISTICS OF WOMEN

Occupation

Majority (32.33%) of the respondents are engaged in farming and animal husbandry where either one is the primary occupation. 24 per cent are occupied in farming only and 10 percent are involved in farming, business and animal husbandry where either business or animal husbandry is the primary occupation and farming is the tertiary occupation. While 7.33 are engaged in faming and business. 3 per cent are involved in faming and handloom and 2.67 per cent each have taken up farming and govt. Job; farming and tailoring; and business and animal husbandry while 2.33 per cent are immersed in business alone. Further, 1.67 per cent were engaged in farming, handloom and animal husbandry while 1.33 percent each are involved in Farming, tailoring and animal husbandry; Farming and labourers and Farming, laborer and animal husbandry. Also, 0.6 per cent of the respondents were occupied with farming, laborer and animal husbandry, while 0.3 per cent each are engaged in farming, handloom and business; farming, business and govt. job; laborer; tailoring;

tailoring and animal husbandry; tailoring and business; animal husbandry and private job (SHG bank facilitator).

Spouse occupation

22 percent of the spouse has taken up farming and labour work while 17 per cent are engaged in farming only. 11.67 per cent are working in the farms and raising livestock at the same time. Another 11 per cent are having Government job but are also involved in farming. 3.67 per cent each of the spouse were immersed in farming and driving; farming and carpentry work. Another 3 per cent have taken up farming and business. Further, 2 per cent are involved in farming and self employment. 1.67 per cent of the spouse have business while 1.33 per cent were engaged in farming, labour and animal husbandry. 1 per cent each was concerned with government job and carpentry respectively. While 0.6 per cent each was working as driver; driver and animal husbandry; government job and animal husbandry; and animal husbandry. The remaining 0.33 per cent each was engaged in animal husbandry and carpentry; and business and animal husbandry.

Income source of respondent

Majority i.e. 93.67 per cent of respondents have income source from farming whereas 92.33 per cent have income from selling non-timber forest products. 53.33 per cent used animal husbandry as their source of income while for 23.33 per cent business is their income source. 18.67 and 16.67 per cent receive their income from PM KISAN scheme and fishery respectively. 10 per cent each received income from wages and MGNREGA respectively. Also, 6.33 per cent each receive their income from remittance and handloom. While for 5.33 per cent each tailoring and old age/ disability is their source of income other 4.33 per cent received income from renting out their property.Further,

3.67 and 0.3 per cent of the respondent used sericulture and pension from government as their source of income.

Annual income of respondent

The majority of respondents, or 87 percent, fall into the middle income category, followed by the high income category (12.67 percent), and the low income category (0.33 percent). The average annual income for all respondents was ₹ 222825.7, with a standard deviation of ₹ 196446.2.

Annual income of entire family

The majority of respondents, or 81 percent, fall into the middle income category, followed by the high income category (11.67 %), and the low income category (7.33%). All respondents' average annual income was ₹ 636417.33 with a standard deviation of ₹ 426125.73.

Monthly expenditure

The majority of respondent *i.e*. 78 per cent, fall into the category of medium monthly expenses, followed by high monthly expenses, at 14%, and low monthly expenses, at 7%. The respondents' average monthly expenses were in the range of ₹ 23114.5 and ₹ 11004.91.

Contribution of respondents on family's monthly expenditure

Majority (41.67%) of the respondents have less contribution towards their monthly family expenditure, which is followed by 29.67 percent of the respondents with moderate contribution. 19 per cent have very less contribution. It can also be seen from the table that 5.66 percent have most of the contribution and the remaining 4 per cent have all the contribution. There is no respondent that does not contribute to the family expenditure.

Credit acquisition

Majority (84.33 %) of the respondents have availed credit form SHG whereas 18.66% of the respondents have availed loans from Banks such as SBI, MRB, Mudra etc. Further, 25.67 per cent have also borrowed money from their relatives and 30.33 per cent have borrowed money from their friends.

Access to input

Majority i.e. 73.33 percent of the respondents have medium access to input followed by 13.67 per cent with high access and 13 percent with low access to input. The mean accessibility for all the respondents was 13.28 with standard deviation of 4.61.

Farming experience

Majority i.e. 70.33 percent of the respondents are in the medium farming experience category followed by 12 per cent with high farming experience and 7 percent in the low farming experience category. The mean farming experience for all the respondents was 20.1 years with standard deviation of 12.38

Experience in SHG

Majority i.e. 82 percent of the respondents are in the medium SHG experience category followed by 13 per cent with low SHG experience and 5 percent in the high SHG experience category. The mean farming experience for all the respondents was 5 years with standard deviation of 3.

Experience in livelihood activity

Majority (64.67%) of the respondents have medium experience in their livelihood activity with a period of 10.67-32.95 years which is followed by 21

and 14.33 per cent who are under low and high category respectively. The overall average of experience was 21.81 years while the standard deviation was 11.14

Primary livelihood

Majority i.e. 54.67 per cent used farming as their primary livelihood activity. Here, farming includes growing crops, silviculture, sericulture, fishery and the income earned through gather NTFPs. This is followed by 18.66 percent of the respondents who are engaged in business. 11 per cent of the respondents are engaged in animal husbandry as their primary occupation. Further, 5.67 and 5 per cent of the respondents use handloom and tailoring respectively as their primary livelihood activity. Also, 4.33 have job that are either under government or private sector. The remaining 0.67 per cent worked as labourer and carpenter's aid.

Secondary livelihood

Findings have shown that 32 per cent of the respondents take up farming as their secondary livelihood activity. This is followed by 30 per cent of the respondents who are engaged in animal husbandry. Further, 4.33 percent are engaged in business whereas 3 percent have regular job either in the government sector or private organizations. Also, 2.33 percent are engaged in other livelihood activity which includes farm labour where respondents work at rice fields transplanting rice. Rice transplanting allows women to earn as much as men and sometimes they are able to earn more than men if they are faster. Women also find jobs in orchards plucking fruits like orange, lemon etc.

Tertiary livelihood

Findings have revealed that 2 per cent of the respondents took animal husbandry as their tertiary livelihood activity. Also, 6.67 are engaged in

farming. The earning from farming for these respondents is also quite less and it is mostly their relatives who took up farming as their main occupations and the respondents in this case only offer help when it is most needed. They themselves are not always engaged in agricultural activities.

5.2.3 COMMUNICATION CHARACTERISTICS OF WOMEN

Source of information

It is found that for 100 percent of the respondents, personal localite source include relatives, friends, neighbours, local leaders and panchayat members. And also 97, 88 and 96 percent of the respondents from Lunglei, Aizawl and Serchhip district respectively have received information from progressive farmers.

It was also found that 76, 75 and 89 percent of the respondents from Lunglei, Aizawl and Serchhip district respectively have received information from VLW/VFA. While 71, 60 and 40 per cent of respondents have received information from Veterinary official. This can be attributed to the spread of ASF that compelled the respondents to contact veterinary workers and doctors. Also, 77, 93 and 92 per cent of the respondents from Lunglei, Aizawl and Serchhip districts have contact with MZSRLM. It has also been found that the respondents do not have much contact with AO, HO, KVK and ATMA as the percentage is less than 50 in each case.

Findings have further revealed that T.V., smart phone, mobile app and internet are used by 100 per cent of the respondents. Also, 80.33 per cent attend mass meeting and 73.67 read newspaper and get information related to their livelihood. Printed media like pamphlet, leaflet, folder etc are used by the 61.67 per cent of the respondents. Exhibition is attended by only 25 per cent of the respondents, this may be due to transportation problem as exhibition are

organised in district capitals and they cannot be attended by all the villagers. Radio is used by only 17.67 per cent of the respondents.

Information source utilization

Findings have revealed that among the mean score of different sources of information utilization, interpersonal cosmopolite sources ranked first, followed by personal localite and personal cosmopolite sources. In case of interpersonal cosmopolite sources smart phones is the most often used (89%) source of information followed by internet (65.34 %). Radio is used sometimes by 17.67 per cent.

It has been further revealed that for 33 per cent of the respondents MZSRLM is most often used source of information among personal cosmopolite sources. VFA/VLW were also contacted often by 25.67 per cent of the respondents. Other sources of information include FOCUS, NEIDA and NABARD.

Among personal cosmopolite sources, Panchayat member are most often contacted for information source by 56.67 per cent of the respondents, which is followed by 47.34 per cent of the respondents who utilized progressive farmers as the source of information. Friends, relatives and neighbours also play an important role in disseminating information in the villages.

Level of utilization of personal localite sources

Majority *i.e.* 67 per cent of the respondents have medium level utilization of personal localite sources, which is followed by 25.67 per cent belonging to the high level utilization category. Further 7.33 per cent are under low level utilization category. The mean utilization level is 13 with a standard deviation of 2.

Level of utilization of personal cosmopolite sources

Majority *i.e.* 67.33 per cent of the respondents have medium level utilization of personal cosmopolite sources, which is followed by 19 per cent belonging to the low level utilization category. Further 13.67 per cent are under high level utilization category. The mean utilization level is 13 with a standard deviation of 2.

Level of utilization of impersonal cosmopolite sources

Majority *i.e*. 64.33 per cent of the respondents have medium level utilization of impersonal cosmopolite sources, which is followed by 21.67 per cent belonging to the high level utilization category. Further 14 per cent are under low level utilization category. The mean utilization level is 13 with a standard deviation of 2.

Overall utilization of information sources

The majority, or 69 per cent of respondents, use information sources at a medium level; 16.67 percent of respondents use information sources at a high level. 14.33 percent more fall into the group of low level utilisation. The standard deviation is 2, while the mean usage level is 13.

Mass media exposure

The results suggested that all respondents, regardless of their age group, have used television, smart phones, mobile apps, and the internet. Seventy-three.67% of the respondents said they read newspapers. In the middle, young, and old age groups, respectively, 76.47, 74.13, and 42.85 percent of respondents consume printed media in various formats including folders, pamphlets, leaflets, and so on. The elderly make up 95.23 percent of those who attend mass meetings. This is due to the fact that they are more opinionated in society than members of the younger generation. Also, it is discovered that

14.47 percent of respondents who are middle-aged and 95.23 percent of respondents who are older use radio.

Training exposure

The majority of respondents, or 80.6 per cent, fall into the middle category and have attended training between 2-4 times in the past 5 years. This is followed by 13.3% who have attended less than twice and 6.333 per cent who have attended more than four times.

Training need assessment

Ranking of the areas in which training is needed most is done based on weighted score where general agriculture ranked first followed by vegetable production. This is followed by general horticulture which includes improved production technologies of different horticultural crops. With the locust and Fall army worm infestation in their jhums, pest management is now a top-four concern. Vermicompost training needs were also mentioned by respondents, ranking fifth, with seed treatment coming in at number six. Preparation of pickles and jam/jelly came in at 7 and 9 respectively.

Disease management came in at number eight on the list. Storage of grain and paddy cultivation came in at 10 and 11, respectively. Other skills that ranked 12 include hair cutting, beautician, massage etc. Livestock production, maize cultivation, piggery and entrepreneurship ranked 13, 14, 15 and 16 respectively. Poultry, water management, embroidery, general tailoring and fruit production ranked 17,18,19,20 ansd21 respectively. Ginger, orange, banana, tree bean and betel nut are at the end of the list due to less respondents cultivating these crops. Cattle management ranked last i.e. 28^{th} among all the components.

Training place preference

In terms of preferred training locations, it was discovered that the village community hall came in first, followed by NGO facilities in the village. Any location, inside or outside of their village, came in third, while KVK came in fourth. The responders would rather stay in their village for training than travel outside, unless they were paid TA/DA.

Comparison of variables between districts

Comparison between the three districts using one-way ANOVA showed that there is a significant difference between age and occupation in all the districts. There is a crtitical difference between Lunglei and Aizawl district Lunglei and Serchhip district for educational level. There is a significant difference between Serchhip and Aizawl district only for family type but not for the other comparisons. Comparison of Lunglei and Serchhip district for their total household income (85742) have a significant difference but there is no significant difference between Lunglei and Aizawl (21708) and Serchhip and Aizawl (64034) district. There is a significant difference between Lunglei and Aizawl district in credit acquisition (0.17). It can be further emphasized that there is a significant difference between lunglei and Aizawl district and between Serchhip and Aizawl in access to input, experience in livelihood activity, no. of livelihood activities engaged and training as the difference between the pairwise comparison is equal to or more than CD. There is significant difference between Lunglei and Aizawl District in source of information and mass media exposure. There is also a significant difference in information source utilization between Lunglei and Serchhip district and also between Serchhip and Aizawl district.

Pairwise comparison for marital status, family size, respondent's income and monthly expenditure between all the districts have values lesser

than CD so we can conclude that there is no significant difference between the three districts for these variables.

5.3 LIVELIHOOD STRATEGIES ADOPTED BY WOMEN IN THE STUDY AREA

5.3.1 Crops grown

It has been found that out of 300 respondents 284 are engaged in cultivation of different types of crops. Among all the crops grown, the most common is rice upland rice, which is cultivated by 57.67 per cent whereas WRC is practised by 13.33 percent. Further, 85 per cent are involved in the cultivation of different types of vegetables. 50 percent of the respondents are growing corn which is an important cash crop for many of the respondents. But, the number of respondent growing corn has reduced due to the incidence of fall army worm. Ginger which is grown by 25.67 per cent is another important cash crop. Chilli is grown on a large scale by 20 per cent of the respondents. Banana, orange and lemon are important fruits grown by the respondents that help them earn a good price. Betel nut is grown by 9.33 per cent of the respondents. Climbing wattle is grown by 5 percent of the respondents, which is also an important source of income. Further, 2.67, 2.33 and 2 per cent of the respondents are engaged in the plantation of Oil palm, teak and tea. Also, 4 per cent of the respondents are growing different crops like Avocado, Sandal wood, Rubber, Coconut, Star fruit, Amla, Hatkora, *Zanthoxylum rhetsa* , Betel leaf, *Dysoxylum Malabaricum* and *Garcinia indica.*

5.3.2 Livestock reared

Out of 300 respondents 161 are earning income from livestock. Majority i.e. 35.67 per cent of the respondent reared pig. Also, 23.33 per cent reared chicken/ boiler. Further, 10 per cent of the respondents are rearing cow.It has also been found that only 0.6 reared duck. Duck meat is not very

common among Mizo people so this may be the possible reason why it is not reared by the respondents.

5.3.3 Agri-allied livelihood activity

Findings have revealed that 16.67 per cent of the respondents are engaged in aquaculture. Also, 3.66 per cent are engaged in sericulture. Most of the respondents do not rear them for the production of silk but for selling cocoon that are considered a delicacy among the tribal population.

5.3.4 Forest based livelihood activity

Findings have revealed that all the respondents *i.e.* 100 per cent have collected vegetables and broom grass from the forest. Also, 79 per cent have collected wild fruits from the forest. Further, 68 per cent have collected fuel to be used as firewood for cooking food. 100 per cent of the respondents have reported that they collect bamboo pole for various purposes both in the field and at home. Lastly, 39 per cent have reported that they collected fodder from the forest.

5.3.5 Income from other sources

Findings have revealed that 6.67 per cent of the respondents have a regular job. Also, 3.67 per cent are engaged in non-regular job such as labourer, helper etc. It has also been found that 22.33 per cent are business owner. Further, 6.33 and 5.67 percent are engaged in handloom and tailoring respectively. Also, 2 per cent are retailers who are involved in the distribution of ration in the villages.

5.3.6 Migration pattern

It is found that 6.33 percent of respondent's family members migrate permanently to other places to earn their livelihood, while 1.33 per cent migrates seasonally. The place migrations are within and outside of Mizoram.

The place of migration within the state include Aizawl, Phullen, Lawngtlai etc., and that of outside include Mumbai, Lucknow, Nagaland, Surat etc., and that of outside the country include Japan, Singapore, Macau. USA etc.

5.3.7 Principle Component Analysis of Livelihood Strategies

This study identified a limited set of livelihood strategies (LSs) through Principal Component Analysis (PCA). The PCA extracted four principle component factors with Eigen values greater than 1, explaining 74.84 per cent of the variance. The first factor has high positive loading on self employment and negative loading on NTFP, agri-allied income. The second factor has high positive loadings of NTFP and Govt grant and negative loading on self employment and regular employment. The third factor has positive loading of agri-allied and govt grant while having high negative loading of NTFP, self employment, others and regular employment. The fourth factor has positive loading of regular employment, govt grant and others while having negative loading of self employment ,NTFP and agri-allied.

5.3.8 Dependence on agriculture

Respondents are categorized into four groups based on their dependence on agriculture. The great majority of respondents (59%) were extremely dependent on agriculture (income share > 60%); 12 percent were highly dependent on agriculture (income share 40-60%). 10.67 per cent were moderately dependent on agriculture (income share 20-40%) and the remaining 18.33 per cent were less dependent on agriculture (income share <20 %).

On average, agri and allied net income comprised 54% of total income. The share of the self employment net income to total income was 29%. In LS1, approximately 67 per cent of the share of an average respondent's total income came from self- employment, and dependence on agriculture was very low. In LS2, the share of NTFP net income was 54 per cent and that of self employment was 43 per cent. There were only 36 respondents in LS3, who

were more dependent on agricultural income (49% share of net income) and the share of net income from self employment was 26 per cent. Farmers in LS4 were almost wholly dependent on agriculture, with all other sources of income accounted for only 15% of the net total. The average total household net income was strongly associated with the level of dependence on agriculture, with low dependence households having an average net income higher than those of extremely dependent respondents with a difference of Rs. 158938

5.3.9 Respondents in three districts by livelihood strategy clusters

Majority *i.e.* 59 percent belongs to Livelihood strategy 4 which is extreme dependence on agriculture. 54, 57 and 66 per cent are from Lunglei, Aizawl and Serchhip district respectively. This is followed by 18.33 per cent of the respondents belonging to Livelihood strategy 1 which is less dependent on agriculture. 19 per cent are from Lunglei district while 23 and 13 percent are from Aizawl and Serchhip district respectively. Further, the Table presented that 12 per cent belonged Livelihood Strategy 3 which is highly dependent on agriculture, where 15, 10 and 11 percent are from Lunglei, Aizawl and Serchhip district respectively. Lastly, 10.67 per cent belong to Livelihood strategy 2 which is moderately dependent on agriculture. 12 per cent are from Lunglei district and 10 per cent each are from Aizawl and Serchhip district.

5.3.10 Determinants of agriculture dependent livelihood strategy

Findings revealed that married women with more experience in farming and SHG with more source of information are more likely to choose moderately dependent on agriculture strategy against less dependent on agriculture strategy. On the contrary, women with lower total personal income, credit acquisition and experience in livelihood activities are also more likely to choose moderate dependence on agriculture strategy.

Similarly, married women with more experience in SHG and higher information source utilization are more likely to choose high dependence

strategy than less dependent strategy. Women engaged in occupation relatd to agriculture with less personal income and less mass media exposure are more likely to choose high dependence strategy.

Finally, married women having higher access to input having more experience in SHG and more source of information who are immersed in occupation associated to farming only with less livelihood activities and who attended less training were more likely to choose extreme dependency on agriculture strategy.

5.3.11. Livelihood diversity index

Majority *i.e*. 60.33 per cent of the respondent are in medium livelihood diversity level which is followed by 22 per cent with low livelihood diversity and 17.67 per cent with high livelihood diversity. The mean livelihood diversity index is 0.02 with a standard deviation of 0.01.

5.3.12. Livelihood vulnerability index

Majority *i.e.* 69.67 per cent of the respondent are in medium livelihood vulnerability level which is followed by 16.33 per cent with high livelihood vulnerability and 14 per cent with low livelihood vulnerability. The mean livelihood vulnerability index is 0.69 with a standard deviation of 0.05.

5.4 Sustainability of livelihood strategies

5.4.1 Human capital

Majority *i.e.* 73.67 per cent of the respondents have medium human capital followed by 17 per cent with high human capital and the remaining 9.33 per cent with low human capital. The mean livelihood capital is 0.64 and the standard deviation is 0.09.

5.4.2 Physical capital

Majority *i.e.* 75.33 per cent of the respondents have medium physical capital which is followed by 19 per cent with high physical capital and 5.67 with low physical capital. The mean score for physical capital is 0.67 and standard deviation is 0.10.

5.4.3 Natural capital

Majority *i.e.* 67.33 per of the respondent have medium natural capital which is followed by 16.67 per cent of the respondent with low natural capital and the remaining 16 per cent with high natural capital. The mean score for natural capital was 0.63 and the standard deviation was 0.07.

5.4.4 Financial capital

Majority *i.e.* 81 per cent of the respondent have medium financial capital which is followed by 14 per cent with high financial capital and the remaining 5 percent with low financial capital. The mean score for financial capital was 0.41 and the standard deviation is 0.17.

5.4.5 Social capital

Majority *i.e.* 75 per cent medium social capital followed by 20.67 per cent with low social capital and 4.33 per cent high social capital. The mean score of social capital is 0.94 and the standard deviation is 0.04

5.4.5 Livelihood sustainability index

Majority *i.e.* 66.33 per cent of the respondents belong to medium livelihood sustainability category which is followed by 18 belonging to low category and lastly 15.67 per cent at the high livelihood sustainability category. The mean livelihood sustainability index was 0.55 while standard deviation was 0.09.

5.4.6 Sustainability of livelihood strategies

Table 4.3.8 showed the multiple linear regression of livelihood strategies and sustainability. It was observed from the Table that the regression coefficients of agri-allied (b=0.613**), self employment (b=0. .85 **), regular employment (b=0. 410**), were found to have a positive significant relationship at 1% level of significance. Government grant has a negative significant relationship at 5% level of significance. Therefore these variables can be termed as good predictors of sustainability of livelihood. It was found that other livelihood strategy and NTFP was non- significant.

The value of coefficient of multiple determination (R^2) value being 0.650 indicated that the independent variables jointly contributed 65 percent towards variation in sustainability of livelihood strategies. The F value (F=90.66) was also found to be significant at 1% level of significance. This indicates the significant effectiveness of these independent variables in predicting the extent of sustainability of the livelihood strategies adopted when all of them were functioning jointly.

5.4.7 Correlation of independent variables with livelihood sustainability of respondents.

Findings showed that the independent variable *viz.*, educational qualification, occupation, total personal annual income, total household income, monthly expenditure, access to input, experience in SHG, no. of livelihood activities, source of information, information source utilization and mass media exposure had a positive significant association with the level of empowerment of the respondents at 1% level of significance.

Independent variables such as age, marital status, family size, experience in farming, experience in livelihood activities and training had no significant relationship with the livelihood sustainability of the respondents.

Therefore, the null hypothesis ($H_0$2) that states that there is no significant relationship between the independent variables and the livelihood sustainability is rejected.

5.5 Empowerment of women through livelihood strategies

5.5.1 Economic empowerment

5.5.1.1 Economic motivation

Majority *i.e.* 74.33 per cent have medium economic motivation followed by 16.67 per cent with high economic motivation and 9 per cent with low economic motivation. The mean economic motivation is 25.94 and the standard deviation is 2.11.

5.5.1.2 Risk preference

Majority *i.e.* 61.33 per cent have medium risk preference followed by 21 per cent with low risk preference and 17.67 per cent with high risk preference. The mean risk preference value is 24.09 and the standard deviation is 1.68. The respondents are afraid to take risk in areas that are new to them, and they also do not have any type of assistance of insurance if their new venture fails.

5.5.1.3 Marketing orientation

Majority *i.e.* 61.33 per cent have medium market orientation followed by 16 per cent with low market orientation and 14.67 per cent with high market orientation. The mean marketing orientation is 22.63 and the standard deviation is 1.83.

5.5.1.4 Management orientation

Majority *i.e.* 41.33 per cent have medium management orientation followed by 35.67 per cent with high management orientation and no

respondent with low manage orientation. The mean management orientation is 30.49 while the standard deviation is 3.35.

5.5.1.5 Achievement motivation

Majority *i.e.* 35.67 per cent have low achievement motivation followed by 35 per cent with high achievement motivation and 29.33 per cent with medium achievement motivation. The mean achievement motivation was 19.17 while the standard deviation was 4.45.

5.5.1.6 Decision making ability

Majority *i.e.* 80.67 per cent have medium decision making ability followed by 10 per cent with high decision making ability and 9.33 per cent with low decision making ability. The mean decision making ability was 28.15 while the standard deviation was 2.27.

5.5.1.7 Economic empowerment

Majority *i.e.* 52 per cent have medium economic empowerment followed by 28 per cent with high economic empowerment and 20 per cent with low economic empowerment. The mean economic empowerment was 0.75 while the standard deviation was 0.08.

5.5.2 Social empowerment

5.5.2.1 Social participation

Majority *i.e.* 72.66 per cent of the respondents have medium social participation while 16.67 have low social participation and the remaining 10.67 have high social participation. The mean social participation is 11.20 and the standard deviation is 2.19.

5.5.2.2 cosmopoliteness

Majority *i.e*. 70 per cent have medium cosmopolitness, followed by 18.67 and 11.33 per cent with low and high cosmopoliteness respectively. The mean cosmopoliteness is 1.23 and the standard deviation is 0.88.

5.5.2.3 Social empowerment

Majority *i.e.* 74.33 per cent of the respondents have medium social empowerment which is followed by 15.34 and 10.33 percent with high and low social empowerment respectively. The mean social empowerment is 0.52 and the standard deviation is 0.11.

5.5.3 Political empowerment

5.5.3.1 Political awareness

Majority *i.e.*58.67 per cent of the respondents have medium political awareness which is followed by 26 and 15.33 percent with low and high political awareness respectively. The mean political awareness is 21.2 and the standard deviation is 1.99.

5.5.3.2 Political participation

Majority *i.e.*71.67 per cent of the respondents have medium political participation which is followed by 17 and 11.33 percent with high and low political participation respectively. The mean political participation is 28.44 and the standard deviation is 5.96.

5.5.3.3 Political empowerment

Majority *i.e.*71 per cent of the respondents have medium political empowerment which is followed by 17.67 and 11.33 percent with high and low political empowerment respectively. The mean political empowerment is 0.73 and the standard deviation is 0.10.

5.5.4 Educational empowerment

Majority *i.e.* 49 per cent of the respondents have medium educational empowerment which is followed by 37 and 14 percent with high and low educational empowerment respectively. The mean educational empowerment is 0.88 and the standard deviation is 0.02.

5.5.5 Psychological empowerment

Majority *i.e.* 65.33 per cent of the respondents have medium psychological empowerment which is followed by 20.33 and 14.34 percent with low and high psychological empowerment respectively. The mean psychological empowerment is 0.87 and the standard deviation is 0.06.

5.5.6 Familial empowerment

Majority *i.e.* 80.67 per cent of the respondents have medium psychological empowerment which is followed by 11and 8.33 percent with low and high familial empowerment respectively. The mean familial empowerment is 0.80 and the standard deviation is 0.14.

5.5.7 Overall empowerment

Majority *i.e.* 71 per cent of the respondents have medium overall empowerment which is followed by 15.33 and 13.67 percent with high and low overall empowerment respectively. The mean overall empowerment is 0.71 and the standard deviation is 0.07. The findings revealed that majority of the respondents had medium to high overall empowerment.

5.5.8 Correlation of independent variables with level of empowerment of respondents.

Findings have revealed that the independent variable viz., educational qualification, marital status, family size, occupation, total personal annual income, experience in SHG, source of information, information source utilization, mass media exposure and training had a positive significant association with the level of empowerment of the respondents at 1% level of significance while family type and no. of livelihood activities had 5% level of significance. Access to input has a negative significant association with the level of empowerment of the respondents at 5% level of significance.

Independent variables such as age, total household annual income, monthly expenditure, credit acquisition, experience in farming and experience in livelihood activities had no significant relationship with the level of empowerment of the respondents.

Therefore, the null hypothesis ($H_0$2) that states that there is no significant relationship between the independent variables and the empowerment level is rejected.

5.5.9 Level of empowerment through livelihood strategies

The multiple linear regressions revealed that all the livelihood strategies had a significant impact on the empowerment of women. The livelihood strategies explained 32.2 per cent of variance embedded with consequent variable with the dependent variable women empowerment. It may be inferred that livelihood strategies such as agri-allied, NTFP, self employment and regular employment had a substantive impact on the empowerment of tribal women in Mizoram.

5.6 Constraints faced by women related to livelihood strategies adopted

Different problems faced by the respondents of were categorized into eleven different sections of problems such as socio-personal constraints,

economic constraints, scientific constraint, psychological constraint, political constraint, credit, financial and savings constraints, extension related constraint, production and marketing constraints, situational constraint and SHG related constraints. Table 4.5.1 revealed the distribution of respondents based on the constraints faced by them in their various livelihood activities.

According to the overall mean score, it was found that production and marketing constraint has the highest score where the problem of low price at the time of bulk production, inadequate infrastructure and fluctuation of prices are common.

Socio-personal constraint scored second where various problems like lack of decision making power, male dominance, multi-dimensional role of women, lack of improved tools specific for women, insufficient education, health problems etc. Lack of land holding power/ land rights is not considered as a major constraint by any of the respondents, this may be due to tradition of passing down the property to the youngest son in the family in Mizo society and women do not consider it as their birth right to own lands and they are not really bothered by it.

Situational constraint comes third where problems like distant location of market, distant location of land, poor transport facilities, lack of storage facilities, high cost of labour etc. prevalent. None of the respondents have reported lack of labour but their main problem comes with the cost of hiring labour as some of the respondents are not able to hire them.

Extension related constraint ranked fourth where Lack of technical help/ less contact with technical expert, inadequate guidance and expertise, insufficient training, to develop competency, inadequate exposure visit, and less women extension trainers were included.

Economic constraint ranked sixth where problems of such as lack of access to resources, lack of support for self-employment venture, no insurance

for loss in an economic activity and un-remunerative price for produce are faced by the respondents.

Credit, financial and savings constraint ranked seventh where respondents faced problems of insufficient credit, complicated procedure in sanctioning loans, loans not received on time, high rates of interest, inadequate guidance on credit availability and inadequate subsidy for inputs.

Political constraints ranked eight where the respondents faced problems such as allocation of insufficient funds for villager's needs, lack of training to assume political leadership, gender inequality in political participation and inhibition of women to involve in politics.

SHG related constraints ranked ninth where problems such as difficulty in enrolling potential members, low level of participation of members, internal group conflict, external group conflict, lack of suitable leader, lack of coordination among members, irregularity of meeting arrangement and lack of proper infrastructure for SHG activities are faced by the respondents.

Psychological constraint ranked tenth where respondents faced problems related to decision making in the family, support from family or society to participate in developmental activities and have less orientation towards leadership.

SUGGESTED SUITABLE LIVELIHOOD STRATEGIES FOR WOMEN EMPOWERMENT

The suggested suitable livelihood strategies for women empowerment are as follows:

1. Eco-tourism
2. Handloom
3. Handicraft
4. Post harvest technology/ Value addition
5. Mushroom cultivation
6. Floriculture

7. Growing cash crops

8. Growing off season crops

9. Bakery

10**.** Jewelry making

In order to bring all round development that is sustainable which would eventually lead to empowerment there is a need to increase the education level of women in the rural areas. When women are educated they can opt for livelihood strategies that are would fetch them higher income, increase their level of empowerment, boost their confidence and also decrease their dependence on their spouses and other family members. As evident from the training need assessment, the respondents have expressed their desire for improving their skills and capacities through various training. This will help them learn skill that would enhance their income and ultimately bring about empowerment.

5.7 CONCLUSION AND RECOMMENDATION

5.7.1. It was found that production and marketing constraint has the highest score where the problem of low price at the time of bulk production, inadequate infrastructure and fluctuation of prices are common. The price for various agricultural commodities should be fixed by the government so that farmers will suffer fewer losses.

5.7.2. Through the study it was brought to light that majority of the respondents faced socio-personal constraint like lack of decision making power, male dominance, multi-dimensional role of women, lack of improved tools specific for women, insufficient education, health problems etc. An initiative to improve the condition of Mizo women in general must be made in the society by empowering them in various fields so that they will have more decision making power in regards to land ownership, education, health issues etc.

5.7.3. Majority of the respondent faced situational constraint where problems like distant location of market, distant location of land, poor transport facilities, lack of storage facilities, high cost of labour etc. prevalent. Therefore, it is necessary to improve infrastructure like roads, storage facilities and markets within the state.

5.7.4. Majority of the respondents faced extension related constraint where lack of technical help/ less contact with technical expert, inadequate guidance and expertise, insufficient training, to develop competency, inadequate exposure visit, and less women extension trainers were included. Therefore, it is necessary to make experts available to the farmer and also to include more women in the service so that women will be able to share their problems more easily.

5.7.5. It was found that many of the respondents faced economic constraint where problems of such as lack of access to resources, lack of support for self-employment venture, no insurance for loss in an economic activity and un-remunerative price for produce are faced by the respondents. Therefore, in order to mitigate this problem, women must be sensitized about the various schemes that are available at their disposal from the central government. And also, insurance must be given to women in the rural areas.

5.7.6. Scientific constraint ranked sixth where problems such as lack of location specific cropping system in contingent period, non-availability of drudgery reducing technologies, limited infrastructure for animal husbandry and lack of access to feed for animals are faced by the respondents. Therefore, experts must suggest plans for contingency periods to the farmers. Equipments that are lighter and more efficient must be made available for the women. There is a need to improve infrastructure for animal husbandry and to also make feed available at more reasonable prices.

5.7.7 Credit, financial and savings constraint ranked seventh where respondents faced problems of insufficient credit, complicated procedure in

sanctioning loans, loans not received on time, high rates of interest, inadequate guidance on credit availability and inadequate subsidy for inputs. Therefore, the Government must take action to meet the demands of the farmers by inducing regular supply with proper subsidies.

5.7.8. Political constraints ranked eight where the respondents faced problems such as allocation of insufficient funds for villager's needs, lack of training to assume political leadership, gender inequality in political participation and inhibition of women to involve in politics.

5.7.9. SHG related constraints ranked ninth where problems such as difficulty in enrolling potential members, low level of participation of members, internal group conflict, external group conflict, lack of suitable leader, lack of coordination among members, irregularity of meeting arrangement and lack of proper infrastructure for SHG activities are faced by the respondents.

5.7.10. Psychological constraint ranked tenth where respondents faced problems related to decision making in the family, support from family or society to participate in developmental activities and have less orientation towards leadership.

5.4 SUGGESTIONS FOR FUTURE STUDY

In the present study, an attempt was made to study livelihood strategies and women empowerment in three districts only. The study was limited to twelve villages from six R.D. blocks of Lunglei, Aizawl and Serchhip districts of Mizoram. Therefore, future investigations may be taken up in other districts of Mizoram with varying ecological, cultural and socio-economic backgrounds to gain further insights about the livelihood strategies adopted by women. Future investigations with detail study plan will help in predicting the potential of women in different parts of the state. Therefore the following measures are suggested:

5.4.1 An investigation which is strengthened by the inclusion of other variables may be done to find out the association of livelihood strategies and women empowerment.

5.4.2 Similar study may be planned to assess the reasons behind low empowerment and suggest measures that will result in higher empowerment.

5.4.3 Similar study may be planned in other districts of Mizoram to know more about the conditions of women in the entire state. Hence, this field of investigation offers a broad scope for future research.

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APPENDICES

APPENDIX

Interview Schedule for Livelihood Strategies and women empowerment in Mizoram

Respondent No_____ Phone no._____

Date__/__/___

Village_____ R.D Block_____

District_____

PART A

I. General Information:

1. Name of the respondent_____
2. Name of the head of the family_____
3. Relationship with the head of the family_____

II. Socio-personal variables

1. Age_____
2. Educational qualification: Illiterate/ Functional literate/Up to Primary/Middle School/ High School/ Higher Secondary/Graduate/ Post graduate/Diploma/ Certificate course
3. Marital status:_____ (Married /Un-married/widow/separated)
4. Family Type:_____ (Joint /Nuclear)
5. Family Size: ____Adult:_____ Children:_____

III. Socio-economic variables

6. Occupation:

Sl. no	Particulars	Primary Occupation	Secondary Occupation
1	Self		
2	Spouse		
3	Children		
4	Others		

7. Income source:

Sl.No	Source	Amount
1.	Agricultural income	
2.	Wages	
3.	Property income	
4.	Remittances	
5.	Pension	
6.	Central scheme	
7.	State scheme	
8.	Government grant (Old age/disability/child)	
9.	Relief funds	
10.	Others	

8. Annual income

Sl.No	Income source	Household	Personal
1	50,000 -1 lakh		
2	1 - 2 lakh		
3	2-3 lakh		
4	3-4 lakh		
5	4 lakhs and above		

9. Monthly expenditure: How much does your household spent on the following commodities and services in a month? Rate how much you (as the primary woman) contribute to these expenditures. (Where; 0 = nothing; 1 = very little; 3 = moderate contribution; 4 = most of the contribution; 5 = all the contribution).

Sl.no	Commodity/Services	Expenditure (in ₹)	Contribution score
1	Food		
2	Electricity		
3	Rent		
4	Health		
5	Education		
6	Transport		
7	Clothes		
8	Entertainment		
	Others (specify)		

10. Credit acquisition:

Sl.No	Source	Amount (₹)	Purpose
1.	Institutional		
	Co-operative		
	Nationalized banks (Specify)		
	SHG		
2.	Non-Institutional		
	Relatives		
	Friends		
	Moneylenders		
	Landlords		
	Traders and commission agents		

11. Access to input:

Sl.No	Input	Available with subsidy	Easily available	Available with difficulty	Not available
A	**Consumable inputs**				
1	Seeds				
2	Fertilizers				
3	Pesticides				
4	Herbicides				
5	Water				
6	Others				
B	**Capital inputs**				
1	Irrigation facility				
2	Tractors				
3	Power tillers				
4	Others				

12. Experience:(in years)
a) Farming____ b) SHG____c) Enterprise____
d) Other livelihood activities_____(mention in detail)

13. Livelihood activities:

Sl.No	Crops grown	Area	Total Production	Purpose Household consumption/Marketing/both
1.	Jhum			
2.	Owned land			

a) Details about crop-based livelihood activities:

b) Details about livestock activities

Sl No	Details about livestock activities	Liv-1	Liv-2	Liv-3	Liv-4	Liv-5
1.	Name					
2.	a)Male					
	b)Female					
	c)Young ones					
	Total number					
3.	Purpose					
	i)Household consumption					
	ii)Selling					
	iii) Both					
4.	Maintenance					

	expenditure					
5.	Total profit					

b) Details about other agri-allied livelihood activities

Sl no	Particulars	Production	Income (₹)	Purpose
1	Mushroom cultivation			
2.	Vermi-compost			
3.	Floriculture			
4.	Medicinal plants			
5.	Apiary			
6.	Aqua farm			
	Others			

c) Forest-based livelihood activities

Sl.No	Species	Parts used	Collection (kg/No)	Consumption (kg/No)	Sale (Kg/No)	Income (₹)
1						
2						
3						
4						
5						
6						
7						

e) Details about other source of livelihood

Sl.No	Livelihood	Types	Income (₹)
1.	Wage employed worker		
i	Regular		
ii	Non-regular		
2.	Self-employed worker		
i	Private business owner		
ii	Shopkeeper		
iii	Weaver		
iv	Tailoring		
v	Embroidery works		
vi	Vending/Marketing		
vii	Stone crusher		
viii	Craft work/arts		

f) Migration: How many household members left home to seek employment elsewhere? _____

Sl. no	Particulars	1	2	3
1	Name			
2	Sex			
3	Age			
4	Marital status			
5	Relation with the respondent			
6	Current employment			
7	Type of migration permanent/seasonal			
8	Migration distance/place			
9	Migration period			
10	Income			
11	Money received			
12	Utilization of the remittance			

14. Communication variable

1) Source of information

a) Personal Localite:

Sl no.	Sources of information	Degree of utilization			
		Most Often	Often	Sometimes	Never
1	Relatives				
2	Friends				
3	Progressive Farmers				
4	Neighbors				
5	Input dealer				

b) Personal cosmopolite/ Extension Contact:

Sl No.	Sources of information	Degree of utilization			
		Most Often	Often	Sometimes	Never
1	Agricultural Officer				
2	Horticultural Officer				
3	VLW/ AFA				

4	KVK personnel				
5	Veterinary Officer				
6	ATMA personnel				
7	NGO personnel				
8	NABARD personnel				
9	Others				

c) Impersonal cosmopolite

Sl No	Sources of information	Degree of utilization			
		Most Often	Often	Sometimes	Never
1	Radio				
2	Television				
3	Newspaper				
4	Magazines/Pamphlets/Folders/Leaflets				
5	Radio+ Television				
6	Radio+ Television+ Magazines/Pamphlets/Folders/Leaflets				
7	Mobile phones				
8	Email /Internet				

2) Mass media exposure

Sl no.	Sources of information	Degree of utilization			
		Most Often	Often	Sometimes	Never
1	Mobile phones				
2	Exhibition				
3	Newspaper				
4	Magazines				
5	TV				
6	Radio				
7	Advertisement				
8	Farm publication				

3) Training exposure:

a) Have you got an opportunity to attend training regarding any source of your livelihood? Yes/No.

Sl. No	Aspect	Topic/Area	Organization/institution who conducted the training	Duration	Year	Place	Remarks Beneficial/Not beneficial	Training need assessment		
								Most needed	needed	Not needed
1	Health oriented training	General health training								
		Family welfare								
		Malnutrition								
		Gen. sanitation								
		AIDS awareness								
		Others								
2	Agri trainings	General agri training								
		Paddy cultivation								
		Banana cultivation								
		Vegetable cultivation								
		Seed treatment								
		Water management								
		Vermicompost								
		Grain storage								
		Tree planting								
		General cattle management								
		Dairy management								
		Poultry management								
		Others								
3	Cookery items	Jam/Jelly preparation								
		Pickle preparation								

4.	Tailoring	General tailoring								
		Embroidery works								
5	Other training	Computer								
		Entrepreneurial Training								
		Soap making								
		Skill training								
		Others								

b) Have you taken any exposure trip outside the state related any source of your livelihood? Yes/No. If yes, please specify.

Name of participant	Purpose of the trip	Organization/ institution which conducted the trip	Duration	Place

c) Where is your preferred place of training?

Sl.no	Place	Preference ranking
1	Village Community Hall	
2	NGO premises	
3	KVK Institution	
4	Any place	

4. Extension contact:

Sl. No	Extension agent	Do you know these change agents?		How often does the change agent come to visit you?				Do you seek advice from the change agent on problems of Banana cultivation? Yes/no. If yes, how often?			
		Yes	No	Most often	Often	Sometimes	Never	Most often	Often	Some times	Never
1.	VLW/AFA										
2.	SMS										
3.	AO										
4.	SDAO										
5.	KVK personn										

	el										
6.	ATM										
7.	BTM										

PART B

1. Livelihood asset status of the respondents

Capital	Component	Sub-component	Indicators
a)Human capital	Education, knowledge and skill	Education	Illiterate (0)/ Functional literate (1)/ primary (2)/ Middle (3)/ High school (4)/ Intermediate (5)/ Graduate (6),P.G. (7)
		Occupational skill	Highly skilled (2) / Skilled (1)/ Unskilled (0)
		Occupational knowledge	Excellent (2)/Good (1) /Poor (0)
		Traditional skills	Weaving (1)/Handloom(1)/Handicraft(1)/Others (1)
		Skill training attended	Yes (1)/No (0)
	Health	Health facilities	Sub-centre (1)/PHC (2)/Hospital (3)
		Health status	Poor (0)/Average (1)/Good (2)
		Nutritional status	Poor (0)/Average (1)/Good (2)
b)Physical capital	Amenities	Housing	Kutcha(1)/Pucca (2)/Rcc (3)
		Drinking water facility	Watershed(1)/Bore well(2)/PHE (3)
		Electricity	Yes/No
		Solar panels	Yes/no
		Cooking fuel	Firewood/Kerosene/Electric heater/LPG
	Transportation	Road connectivity within and outside the village	Kutcha road(1)/Agri-link road (2) /Black top (3)
		Vehicle owned	Bike(1)/Scooter(1)/Rickshaw (2)/Car (3)/Sumo (4)/Pick up (4)LPK (5)/Truck (5)/Tipper(5)
	Possession	Agricultural land	Landless / Marginal (up to 1.0 ha) / Small (1.1 to 2.0 ha) / Medium (2.1 to 4.0 ha)/ Large (> 4.0 ha)

		Farm equipment	Chem (1),chemkawm (1), tuthlawh (1), hachhek (1)/Wooden plough (1)/ Sickle (1)/ Spade (1)/ Axe (1) Harrow (1)/ Duster (2)/ Sprayer (2)/ Power tiller (3)/ Pump set (2)/ Electric motor (2)/ Tractor (4)
		Household items	Radio, Heater, TV, Mobile phone, Fridge, Washing machine
c)Environmental/Natural capital	Forest resources	For consumption purpose	Wild medicines/ Wild fruit / Herbs/ Bamboo shoot/Mushroom/Other vegetables
		For other purposes other than consumption	Construction timber/Fuel wood/Grasses for thatching/Bamboo/Mulch/compost/wooden furniture
	Water resources	For household consumption	Drinking/ Bathing/ Washing/ Cleaning utensils
		For other purposes other than consumption	Irrigation/ Fishery
	Land resources	Agricultural	Field crops (1)/ Silviculture (1)/ Horticultural crops (1)/ Animal husbandry (1)/ Fishery (1)/ Sericulture (1)
		Non-Agricultural	Construction of house/ Construction of fishery pond
	Abiotic resources	Use of abiotic resources	Rock for building, fences, retainer walls etc. (1)/ Sand for building (1)
	Animal resources	Use of animal resources	Insects (1)/ eggs (1)/ Animal meat (1)/ Medicine (1)/ Honey (1)
d)Economic/Financial capital	Finance	Monthly income	Up to 10000, up to 20000, up to 30000, up to 40000, 50000 and above
		No. of income sources	1, 2, 3
	Assets	Savings	No saving (0)/ Savings up to 10000/ year (1)/ Savings> 10000/ year (2)
		Other cash assets	Cash assets up to ` 1000 (1)/ up to 2000, up to 3000, up to 4000, 5000and above

		Savings done at	Relatives/Chit funds/ post office/ cooperative/ SHg/ Bank
e) Social capital	Relations in the village	No of organization	1,2,3,4,5
		Relatives in the village	Yes/No
		Close friends	Yes/No
	Involvement with others	Help received	Growing crops/Harvesting/Livestock rearing/Borrowing seeds/Construction of houses/ Others
		Help given	Growing crops/Harvesting/Livestock rearing/Borrowing seeds/Construction of houses/ Others
	Social networks	When emergency arises, and I need money….. assist me	Family, friends, neighbours, shg/other groups where I am a member
		When emergency arises, and I need food…….Assist me	Family, friends, neighbours, shg/other groups where I am a member
		When emergency arises, and I need extra labor….Assist me	Family, friends, neighbours, shg/other groups where I am a member

2. Vulnerability

Trends

1. Have you noticed any changes in the population trend of your village over the past 10 years?
2. Do you feel that more people are migrating to the cities and towns to find better livelihood opportunity?
3. Do you think that the natural resources in your village are depleting due to increase in population?
4. Do you think that jhumming is bad for your environment? Can you suggest measure that could be used as an alternative to jhum cultivation?

5. Have you noticed any changes in the infrastructure of your village over the past 10 years?
6. Have you noticed any changes in the price of different commodities in your village? If yes, How so?
7. Have you experienced any outbreak of diseases/ pest attack that were not present before? What are the strategies adopted?
8. How has Mau tam (Bamboo flowering) affected your family?
9. Have you noticed any changes in the agricultural practices followed in your village?

i. Introduction of new crops
ii. Introduction of new crop varieties
iii. Introduction of soil conservation methods
iv. Introduction of water conservation methods
v. Introduction of integrated farming system
vi. Introduction of FIG/ FPOs etc

I. Shocks
   A. Climate Change

i. Have you noticed any change in climatic pattern during the past 5 years? (Yes/No).
ii. If yes, which of the following changes do you notice?
   a. Change in rainfall pattern.
   b. Occurrence of flash floods due to rain cloudburst.
   c. Erosion of soil fertility affecting the crop vigour.
   d. Depletion of ground water leading to disappearance of spring well.
   e. Increase in wind velocity

   f. Other changes_____

iii. Have you observed any reduction in crop production due to any of / more than one / all of the following climatic factors?
   i. High temperature ( )
   ii. Low temperature ( )
   iii. Heavy rainfall ( )
   iv. Flood ( )
   v. Stagnant water more than requirement ( )
   vi. Cloudburst ( )
   vii. Hailstorms ( )
   viii. Drought ( )
   ix. Others ( )
iv. Have you ever received any help from the government when such incidences occurred? (Yes/No)

v. Have you experienced prolonged wet spell (yes / no) or dry spell conditions during the crop growth? Yes/No

vi. What measure have you taken to cope with these conditions?

a. Provision of irrigation system ( )
(construction of reservoir, canals, pipelines, etc)

b. Construction of drainage system ( )

c. Selection of crop variety, selection of appropriate planting calendar, inter cropping, crop rotation ( )

B. Covid 19

i. How has Covid-19 affected your livelihood in general?

ii. What are the livelihood strategies adopted during this time?

C. Pest and diseases

i. Have you noticed any new pest in your farm? If yes, what measures did you adopt to control them?

ii. Have you noticed any new diseases in your farm? If yes, what measures did you adopt to control them?

iii. Have you experienced any type of diseases affecting your livestock?

iv. Have you encountered any type of conflict with wild animals in your farm/ jhum? Yes/ No. How do you deal with it?

v. Have you noticed any type of theft in your farm/ house/shop?

d. Domestic problems?

i. Are you exposed to any type of violence in your house? Physical/verbal/both

ii. Are any member of your family suffering from disease due to poor sanitary conditions (malaria, cholera, dysentery)?

iii. Are any members of your family suffering from any chronic diseases (Diabetes, high blood pressure, cancer etc.)

iv. Have you or anyone from your family suffer from any type of accident during the last 2 years?

V Do you have smart/golden card OR Are you included in health care scheme?

vi. Do you have any type of conflict with your relatives or neighbours that leads to loss of land or assets?

II. Seasonality

i. Does the climatic condition in your village allow you to grow crops for more than one season in a year?

ii. Do you notice any change in the price of commodities according to different types of season in a year?

ii. Has productivity changed depending on season?

iii. Do you face the problem of labour unavailability due to changing season?

iv. Have you noticed any changes in the health condition of your family depending on the season?

v. How does job availability differ over the season?

vi. How does season affect the occurrence of pest and diseases?

PART C

WOMEN EMPOWERMENT

A) Economic Empowerment

1. Economic motivation

Sl.No	Statements	SA	A	UD	DA	SDA
1	A woman should look towards large yield/income and economic profit.					
2	The most successful woman is one who makes profit.					
3	A woman should try new idea which helps her to earn more money.					
4	A farm woman should grow other cash crops to increase monetary profit in comparison to growing food crops for home consumption.					
5	It is difficult for farm women's children to make a good start unless she provide them with economic assistance					
6.	A women must earn her living but the most important things in life cannot be defined in economic terms.					

2. Risk preference

Sl.No	Statements	SA	A	UD	DA	SDA
1	A woman should rather take more chance in making a big profit rather than to be content with a matter but less risky profit.					
2	A woman who is willing to take greater risk than average women usually does better financially.					
3	It is good for a women to take risk when she knows her chance of success is fairly high.					

4	Trying an entirely new method in livelihood by a women involves risk but it is worthy.					
5	A woman should be engaged in different livelihood to avoid greater risk					
6.	It is better for women not to try new ventures unless most other have used them with success.					

3. Marketing orientation

Sl.No	Statements	SA	A	UD	DA	SDA
1	One should produce/ sell at a time when the price in the market is the highest.					
2	One can get better price by selling excess produce through producer's co-operative.					
3	It is profitable to sell produce through local vendors					
4	One should purchase their inputs from where the other relatives purchase.					
5	One should sell their produce to the nearest market irrespective of the price.					
6.	One should grow those crops or get involved in business which have more market demand.					

4. Management Orientation

Sl.No	Statements	SA	A	UD	DA	SDA
1	A woman must know the necessary skill for managing any business.					
2	Proper management of all the resources at hand is the heart of success for a woman.					
3	Carrying out different activities according to time schedule is a key to success of any business.					
4	A good woman develops plan of work according to the condition which is why they get maximum return from their activities.					
5	A woman is always aware of different requirement in different activities and good judge to select the right person for the right job.					

6.	Crisis does not deter a woman to carry out different operations as she knows how to manage resources at critical periods.					
7.	For successful woman, management ability for optimal use of resources in different operations is highly appreciated.					

5. Achievement motivation

Sl.No	Statements	SA	A	U	DA	SDA
1.	Work should come first even if one cannot get proper rest in order to achieve one's goals					
2.	It is better to be content with whatever little one has than to be always struggling to do more.					
3.	No matter what I have done I always want to do more.					
4.	I would like to try hard at something really difficult even if it provides that I cannot do it.					
5.	The way things are now-a-days discourage one to work hard.					
6.	One should succeed in occupation even if one has to neglect his family.					

6. Decision making ability

Sl.No	Statements	SA	A	U	DA	SDA
1.	A woman should be free to make her own decisions in regards to her livelihood activity.					
2.	A woman should be self-reliant in making her own decision in regards to her livelihood activity.					
3.	Independence in decision making is the most important quality of a successful woman.					
4.	A woman should teach her children to be able to make their decision independently.					
5.	Due to independent decisions sometimes you get in trouble and have no place to turn					
6.	A women should decide what is right for herself irrespective of what others think of					

	her for her decision.					
7.	Perhaps, the greatest reward comes from the opportunity to make one's own decision.					

B) SOCIAL EMPOWERMENT

1. Social participation

Sl. No	Organization	Yes/No	Office bearer	Extent of participation/visit		
				Regularly	Occasionally	Never
1	Panchayat					
2	Political party					
3	Self-help group					
4	Religious society					
5	Cultural society					
6	YMA					
7	MHIP					
8	Farmers' cooperative					
9	Farmers' association					
10	Trade union					
11	Credit/savings group					
12	Professional Assoc. (doctors, teachers, veterans).					
13	Traders/Business Assoc.					
14	Others					

2. Cosmopoliteness

a) Are you a member of any organization outside your village? Yes/No
b) Do you go to nearby town/village to meet officials to seek information related to your enterprise? Yes/ no (If Yes, whom do you meet?)
c) Have you lived for some time in a large town/City for any specific purpose related to your enterprise during the last 3 months?

C) POLITICAL EMPOWERMENT

1. Political Awareness

To what extent do the following statements apply to you? (Where 0 = Not at all; 1= To a limited extent; 2 = To a moderate extent; 3= to a large extent; 4 = Fully).

Sl. no	Statement	0	1	2	3	4

1.	I have knowledge of the political system					
2.	I have knowledge of my voting rights					
3.	I am aware of the voting age					
4.	I am aware about the role of gram panchayat					
5.	I know people with political post in this village					
6.	I think gender equality could be achieved through political support to women					

2. Political participation

Sl no	Statement	0	1	2	3	4
1.	I cast votes regularly					
2.	I am free to vote for the person of my choice					
3.	I ama member of a political party					
4.	I have a leadership role in the party					
5.	I believe involvement of women in politics is necessary					
6.	I believe women's problems could be solved more effectively by women leaders					
7.	I have support from my family in case I want to get engaged in politics					
8.	I am involved in political activities (campaigns. Polls etc.)					
9.	I am willing to speak about women political issue in public meetings					
10	I attend gram sabha meetings					
11	I participate during discussion in gram sabha meetings					

D) EDUCATIONAL EMPOWERMENT

Sl.No	Statements	SA	A	U	D	SD
1.	Education can create self-confidence in the minds of women					
2.	Education have positive impact on personality of a women.					
3.	Without education a women cannot get her identity in the society					
4.	Women's education is essential to create consciousness about health and hygiene					
5.	Women's education is necessary to empower themselves					
6.	Women's education is essential for fulfilment of economic needs.					

7.	Education of women is not a symbol of modernization.					
8.	Girls should not go for higher education even if they are very intelligent					
9.	To become a successful mother education is essential					
10.	An educated women becomes more successful in life than uneducated women					
11.	Women's education is essential to know the government plans and policies regarding women					
12.	Status of women will be improved in society of they are educated					
13.	Women's education is necessary for the development of society					
14.	Educated women have more likelihood to enrol their children in schools than illiterate women					
15.	Living standards of family will improve if daughters are educated.					
16.	Girl students coming from the lower strata of society need to be encouraged for higher education					
17.	Girl students need more orientation for education than boys					
18.	Girl's education is necessary for their mental, social, emotional and physical development					

E) PSYCHOLOGICAL EMPOWERMENT

Sl.no	Statements	SA	A	U	D	SD
1	I have high self-esteem/ I always feel that I am worth when I am with others					
2	I always believe that I can accomplish specific goals I have set (i.e., self-efficacy)					
3	Generally, I am happy and well					
4	I feel isolated or lonely in my life					
5	I participate in meetings					
6	I think I am excluded from community activities					
7	I interact & socialize well with people from different social groups					
8	I am hopeful about a better life in future					
9	I always desire/long for peace					

10	I believe that I can control events that affect my life/ carry out his or her intentions (personal control).					

G. FAMILIAL EMPOWERMENT

To what extent does the following statement apply to you? Where 0= not at all, 1= to a limited extent, 2= to a moderate extent, 3= to a large extent, 4 = fully

Sl.No	Statement	0	1	2	3	4
1.	I participate in decision making in my household					
2.	I make decision on child bearing/use of contraceptives/family planning					
3.	I have the freedom to choose my husband					
4.	I participate in making decision regarding my children's education					
5.	I participate in making decision regarding my children's marriage					
6.	I am free to decide on the type of health care I received including those of my children					
7.	I am free to roam or travel wherever I want					

How much decision making power do you have over the following? (where 0= not at all, 1= to a limited extent, 2= to a moderate extent, 3= to a large extent, 4= fully)

Sl.no		0	1	2	3	4
1.	Purchase of land/ building					
2.	Purchase of vehicle					
3.	Purchase of fridge/washing machine					
4.	Day to day purchase related to cooking					
5.	Recreational activities					
6.	Donation to different organizations in the village					
7.	Others					

D.Constraints faced by women related to livelihood strategies adopted

Sl. No.	Constraints	Major constraint	Moderate constraint	No constraint	Measures suggested by the respondent to mitigate the constraint
1	**Socio-personal**				

	constraints				
	i. Lack of land holding power/land rights				
	ii. Lack of decision making power				
	iii. Male dominance				
	iv. Multi-dimensional role of women				
	v. Lack of improved tools specific for women				
	vi. Insufficient education				
	vii. Health problems				
	viii. Difficulty in performing certain agricultural operations				
	ix. Gender bias in recognition of work performance				
	x. Less opportunity to lead the community organization				
2	**Economic constraints** i. No equal wage for equal work				
	ii. Un-remunerative price for produce				
	iii. Lack of access to resources				
	iv.Lack of support for self-employment venture				
	v. No insurance for loss in an economic activity				

3.	**Scientific constraints** i. Lack of location specific cropping system in contingent periods				
	ii. Lack of high yielding varieties of crops				
	iii.Non-availability of drudgery reducing technologies				
	iv. Limited infrastructure for dairy / poultry				
	v. Lack of access to nutritional feed for livestock				
4.	**Psychological constraints** i. minimal support from family / society to participate in developmental activities				
	ii. No due considerations in decision making on financial issues				
	iii. Inadequate orientation towards leadership				
	iv. Not assuming responsibilities due to experiencing hardship in certain higher positions				
	v. Not adequately involving in the decision making by family / society				
5.	**Political constraints** i. Allocation of				

	insufficient fund for the villager's needs				
	ii. Less integration of officials with non-officials				
	iii. Lack of training to assume political leadership				
	iv. Gender inequality in political participation				
	v. Inhibitions of women to involve in political activities				
7	**Credit, Financial & savings constraints**				
	i.Insuffiecient credit				
	ii.Complicated procedure in sanctioning loans				
	iii.Loans not received on time				
	iiv.High rates of interest				
	v.Inadequate guidance on credit availability				
	vi.Inadequate subsidy for inputs				
	vii.Insufficient repayment time				
8	**Extension related constraints**				
	i. Lack of technical help/ less contact with technical expert				
	ii.Inadequate guidance and expertise				

	iii. Insufficient training to develop competency.				
	iv.Inadequate exposure visit to develop confidence				
	v. No motivational incentives to attend training				
	vi. Lack of cooperation between dept. and women				
	vii.Less women extension trainers				
9	**Production & Marketing constraints**				
	i.Complications in procurement of inputs and materials				
	ii. Unavailability of quality inputs and materials.				
	iii.Inadequate infrastructure				
	iv. Inadequate expertise				
	v.Exploitation by businessmen/dealer				
	ii. Lack of knowledge about market				
	iii. Fluctuation in prices				
	iv. Low price at the time bulk prodn.				
10	**Situational constraints** i.Distant location of market				
	ii.Distant location of land				

	iii.Poor transport facility				
	iv.Lack of storage facility				
	v.Storage loss				
	vi.Post-harvest loss due to rodents				
	vii. Lack of labour				
	Viii. High cost of labour				
11.	**SHG related constraints** i. Difficulty in enrolling potential members				
	ii.Low level of participation of members				
	iii.Internal group conflict				
	iv.External group conflict				
	v.Lack of suitable leader				
	vi.Lack of coordination among members				
	vii.Irregularity of meeting arrangement				
	viii. Lack of proper infrastructure for SHG activities				

Plate 1: Respondent from Mualthuam North village working on her

Plate 2: Respondent with her freshly plucked tea leaves

Plate 3: Mualthuam North roadside market

Plate 4: Researcher with respondent at Chekawn village

Plate 5: Researcher with respondent at Phairuangkai village

Plate 6: Researcher with respondents at North Mualcheng village

Plate 7: Poultry farm at Samtlang Village

Plate 8: Paddy field at Serchhip district

Plate 9: Researcher with respondent at Bungtlang village

Plate 10: Researcher with respondent at Lungsen village