

**Ph.D. Thesis
on
AGRICULTURAL CREDIT AND FARMERS' WELFARE IN
NAGALAND**

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**Submitted
In partial fulfilment of the requirements for the Degree of Doctor of Philosophy in
Commerce of Nagaland University**

Declaration

**Nagaland University
January 2026**

I, Miss. Emilo kikon 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 basis of the award of any previous degree to me or to the best of my knowledge to anybody else, and that the thesis has not been submitted by me for any research degree in any other University/Institute.

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This is to certify that the thesis entitled “**AGRICULTURAL CREDIT AND FARMERS’ WELFARE IN NAGALAND**” submitted to Nagaland University for the degree of Doctor of Philosophy in Commerce is a record of research work undertaken by EMILO KIKON, Research Scholar of Department of Commerce, Nagaland University, bearing Reg. No. PhD/COM/00464, dated 30/11/2020, under my supervision and guidance. She has fulfilled all the requirements laid down in the Ph. D regulations of Nagaland University.

This thesis is fit for the submission for the degree of Doctor of Philosophy in Commerce.

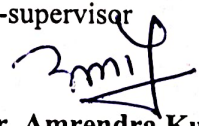
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CONTENTS

Chapter	Contents	Page No.
One	1.1 Introduction 1.2 Review of literature 1.3 Research Gap 1.4. Statement of the problem 1.5. Significance of the study 1.6. Objectives of the study 1.7. Hypotheses 1.8. Research methodology 1.9. Tools used for the study 1.10. Chapterisation 1.11. Concluding remark	1-7 7-28 28 29 30 31 32 32-36 36-38 39-40 40
TWO	Agricultural credit in Nagaland: An overview 2.1. Introduction 2.2. Agriculture in Nagaland: Brief overview 2.3. Methods of farming 2.4. Land holding and ownership in Nagaland 2.5. Major Crops: Area, Production, and yield 2.6. Net State Value Added (NSVA) from crops for financial year 2016-17 to 2022-23 2.7. Role of credit in Agriculture 2.8. History of Agricultural finance in Nagaland 2.9. Institutional credit and the role of investment credit in capital formation, Nagaland 2.10. Outreach of Banking Sector	41 41-42 42-46 47-49 50-54 54-55 55 55-57 57-59 59-64 64-67

	2.11. Trends in Growth and Achievement of Crop Loans and Agricultural Term Loans and Kisan credit card in Northeast India for financial year 2016-17 to 2023-24	67-77
	2.12. Performance of Kisan Credit Card (KCC) in Nagaland	77
	2.13: Concluding Remark	
Three	Agricultural credit and socio- economic development of farmers in Kohima and Wokha districts	
	3.1 Introduction	78
	3.2 Demographic profile of the respondents	78-86
	3.3. Rank, Descriptive statistic, ANOVA for Socio economics status of farmers in Nagaland.	86-107
	3.4 T Test for social impact and personal impact	107-110
	3.5 Conclusion	110
FOUR	Utilization pattern and repayment of Agricultural credit in Kohima and Wokha Districts	
	4.1. Introduction	111
	4.2. Factors affecting the farmer's choice of credit sources based on financial and institution problems	112-113
	4.3. Descriptive statistic and ANOVA for factors affecting the farmer's choice of credit sources	114-144
	4.4. Utilization pattern of Agricultural credit in Kohima and Wokha Districts	145-158
	4.5. Repayment performance of the farmers	158-164
	4.6. Default in repayment of agricultural credit	164-168
	4.7 Source of repayment	168-172
	4.8 Conclusion	172

FIVE	Challenges and Prospects of Farmers in Kohima and Wokha Districts	
	5.1 Introduction	173
	5.2 Challenges faced by farmers in Nagaland	173-175
	5.3. Factor analysis	175-176
	5.4 sampling adequacy	176-177
	5.5 Communalities	177-178
	5.6 Rotated Component Matrix	179-183
	5.7. Hypothesis testing	183-194
	5.8. Prospects of farmers in Kohima and Wokha District	194-196
	5.9. Concluding remark	196-197
Six	Summary and Conclusion	198-206
Appendices	Bibliography Annexure 1- Questionnaire	

LIST OF TABLES

Chapter One

Table no:1.1.3.1	Agency wise short-term refinance disbursed (₹ in crore)
Table no:1.1.3.2	Agency wise long-term amount Disbursed (₹ in crore)
Table no:1.2.1.1	Top 5 sources of publication of Agricultural Credit
Table no 1.2.1.2	Top 5 Potentials authors
Table no 1.2.1.3.	Top Publication Countries wise

Chapter Two

Table no:2.3.1	Operational steps and time under shifting cultivation
Table no:2.3.2	List of crops produce and time of sowing and harvest in shifting cultivation
Table no:2.3.3	Operational steps and time under terrace cultivation
Table no: 2.3.4	classification of Agricultural workers in Nagaland as per 2011 census
Table no:2.4.1.1	categories of land holding
Table no:2.4.1.2	Number, Area, and Average Size of Operational Land Holdings
Table no:2.5.1	Trend Analysis: Area Under Cultivation for Major Crops in Nagaland (2016-17 to 2023-24)
Table no:2.5.2	Trend Analysis: Production of Major Crops in Nagaland (2016-17 to 2023-24)
Table no:2.5.3	Trend Analysis: Yield of Major Crops in Nagaland (2016-17 to 2023-24)
Table no:2.6.1	Net State Value Added (NSVA) from crops at current price in Northeast states, India
Table no:2.9.1	Government investment in Agriculture, Nagaland
Table no:2.9.2.	Refinance for ST-SAO and LT-SAO extended during the last 6 years
Table no:2.10.1	District-wise Average Population Per Bank Office (APPBO) as on 31.12.2024

Table no:2.10.2	District wise Branch Network Report of Nagaland as on date 31-12-2024
Table no:2.10.3	Bank wise Branch Network Report of Nagaland as on date 31-12-2024
Table no:2.10.4	Number of ATM in each district of Nagaland as on 31.12.2024
Table no:2.11.1	per account loan size of crop loan in North-east India for FY 2016-17 to 2023-24
Table no:2.11.2	Per account loan size of Term loan in North-east India India for the FY 2016-17 to 2023-24
Table no:2.12.1	Cumulative number of Kisan Credit Card issued including renewal for financial year 2015-16 to 2024-25 in North-eastern state of India.
Table no:2.12.2.	Trend analysis for total number of active KCC holders according to banking sector in Nagaland.
Table no:2.12.3.	Trend analysis for Total number of active KCC card holders according to district wise Nagaland
Table no:2.12.4	percentage change in total amount of KCC loan disbursed according to sector wise.
Table no:2.12.5	Trend analysis for total amount of KCC loan disbursed according to district wise.

Chapter Three

Table no:3.2.1:	Frequency distribution of Age of the Respondents
Table no: 3.2.2.	Farm Size Distribution of Farmers across Age Group.
Table no 3.2.3	Distribution of respondents by Gender
Table no: 3.2.4.	Farm size distribution of farmers across gender.
Table no 3.2.5	Education qualification of the respondents
Table no 3.2.6	Education qualification and farm size distribution of the farmers
Table no 3.2.7	Marital status distribution of the respondents
Table no 3.2.8	Marital status and farm size distribution of the farmers
Table no 3.2.9	Frequency distribution of Non-agricultural occupation

Table no 3.2.11	Occupation and farm size distribution of the farmers
Table no 3.2.12	Frequency of respondents by type of land ownership
Table no 3.2.13	ownership and farm size distribution of the farmers
Table no 3.2.14	Type of agricultural production engaged by the farmers.
Table no 3.2.16	Agricultural production and farm size distribution of the farmers
Table no:3.3.1	Prioritization of Economic Factors Based on Respondent Rankings
Table no:3.3.2	Prioritization of social Factors Based on Respondent Rankings
Table no 3.3.3	Descriptive statistics on Economic Status and its Association with Marital Status
Table no 3.3.4	Descriptive statistics on social factor and its Association with Marital Status.
Table no: 3.3.5	ANOVA test result for marital status and social economic status of farmers in Nagaland.
Table no:3.3.6	Descriptive statistics on Economic Characteristics of Respondents by Age Group
Table no: 3.3.7	Descriptive statistics on Social Characteristics of Respondents by Age Group
Table no: 3.3.8	ANOVA result for Age of farmers and social economic status of farmers in Nagaland
Table no: 3.3.9	Descriptive statistics on Economic Perceptions by Farmers' Education Level
Table no: 3.3.10	Descriptive Analysis of Socio factors by Educational Qualification
Table no: 3.3.11	ANOVA result for education qualification of farmers on social economic status of farmers in Nagaland
Table no: 3.3.12	Descriptive Statistics of Economic factors by Farm Size
Table no: 3.3.13	Descriptive Statistics of socio factors by Farm Size
Table no: 3.3.14	ANOVA result for area owned by farmers on social economic status of farmers in Nagaland
Table no 3.3.15	Descriptive Statistics of Agricultural types and their Economic factor on Farmers' Socio-Economic Status in Nagaland

Table no: 3.3.16	Descriptive Statistics of Agricultural types and their Social Impact on Farmers' Socio-Economic Status in Nagaland.
Table no: 3.3.17	ANOVA result for type of agriculture on social economic status of farmers in Nagaland.
Table no:3.3.18	Descriptive statistics for loan sanctioned on economic status of farmers in Nagaland
Table no:3.3.19	Descriptive statistics for loan sanctioned on socio economic status of farmers in Nagaland
Table no: 3.3.20	ANOVA result for loan sanctioned for social economic status of farmers in Nagaland.
Table no 3.3.21	Influence of Annual Agricultural Income on the Perceived economic factors among Farmers in Nagaland
Table no 3.3.22	Influence of Annual Agricultural Income on the Perceived social factors among Farmers in Nagaland
Table no: 3.3.23	ANOVA result for annual income from agricultural activity for social economic status of farmers in Nagaland.
Table no.3.3.24	Influence of Bank Type on Perceived Economic Benefits among Farmers in Nagaland
Table no.3.3.25	Influence of Bank Type on Perceived social Benefits among Farmers in Nagaland
Table no: 3.3.26	ANOVA result for sources for availing loan for social economic status of farmers in Nagaland.
Table no: 3.4.1	T-Test for economic factors
Table no: 3.4.2	T-Test for social factors

Chapter four

Table no 4.2.1	Identification of factors influencing farmers choice of credit
Table no: 4.3.1	Descriptive table showing age of respondents on factors affecting farmers choice of credit based on.
Table no: 4.3.2	ANOVA analysis for factors affecting the farmer's choice of credit sources based on Age categories
Table no: 4.3.3	Descriptive table showing Education qualification of respondents on factors affecting farmers choice of credit.

Table no: 4.3.4	ANOVA analysis showing Education qualification of respondents on factors affecting farmers choice of credit
Table no: 4.3.5	Descriptive table showing area owned by farmers on factors affecting farmers choice of credit.
Table no: 4.3.6	ANOVA table showing area owned by farmers on factors affecting farmers choice of credit.
Table no: 4.3.7	Descriptive table showing type of ownership and factors affecting farmers choice of credit.
Table no: 4.3.8	ANOVA table showing type of ownership and factors affecting farmers choice of credit.
Table no: 4.3.9	Descriptive table showing type of farming's and factors affecting farmers choice of credit.
Table no: 4.3.10	ANOVA table showing type of farming's and factors affecting farmers choice of credit.
Table no: 4.3.11	Descriptive table showing amount of loan sanctioned and factors affecting farmers choice of credit.
Table no: 4.3.12	ANOVA table showing amount of loan sanctioned and factors affecting farmers choice of credit.
Table no: 4.3.13	Descriptive table showing annual income and factors affecting farmers choice of credit.
Table no: 4.7.14	ANOVA table showing annual income and factors affecting farmers choice of credit.
Table no: 4.3.15	Descriptive table showing source of availing credit and factors affecting farmers choice of credit.
Table no: 4.3.16	ANOVA table showing source of availing credit and factors affecting farmers choice of credit.
Table 4.3.17	Rank analysis of factors affecting the farmers choice of credit based on institutional problems.
Table no 4.3.18	Descriptive table showing age of farmers and factors affecting farmers choice of credit.
Table no: 4.3.19	ANOVA table showing age of farmers and factors affecting farmers choice of credit.
Table no 4.3.20	Descriptive table showing Education qualification of farmers and factor affecting farmers choice of credit.

Table no 4.3.21	ANOVA table showing Education qualification of farmers and factor affecting farmers choice of credit.
Table no 4.3.22	Descriptive table showing area owned for farming of farmers and factor affecting farmers choice of credit.
Table no 4.3.23	ANOVA table showing area owned for farming of farmers and factor affecting farmers choice of credit
Table no 4.3.24	Descriptive table showing type of farming and factor affecting farmers choice of credit.
Table no 4.3.25	ANOVA table showing type of farming and factor affecting farmers choice of credit.
Table no 4.3.26	Descriptive table showing type of ownership and factor affecting farmers choice of credit.
Table no 4.3.27	ANOVA table showing type of ownership and factor affecting farmers choice of credit.
Table no 4.3.28	Descriptive table showing amount of loan sanctioned and factor affecting farmers choice of credit.
Table no 4.3.29	ANOVA table showing amount of loan sanctioned and factor affecting farmers choice of credit.
Table no 4.3.30	Descriptive table showing annual income and factor affecting farmers choice of credit.
Table no 4.3.31	ANOVA table showing annual income and factor affecting farmers choice of credit.
Table no 4.3.32	Descriptive table showing source of credit and factor affecting farmers choice of credit.
Table no 4.3.33	ANOVA table showing source of credit and factor affecting farmers choice of credit.
Table no: 4.4.1	Rank analysis for utilization of agricultural credit.
Table no 4.4.2	Rank analysis for categorised variables for utilisation of agricultural credit
Table no: 4.4.3	Age of respondents and utilisation pattern of agricultural credit.
Table no: 4.4.4	Chi-Square Test statistics (Based on the Age of respondents)
Table no: 4.4.5	Education qualification and Utilization pattern of agricultural credit

Table no: 4.4.6	Chi-Square Test statistics (based on Education qualification).
Table 4.4.7	Area owned for farming and Utilization pattern of agricultural credit
Table no: 4.4.8	Chi-Square Test statistics (based on Area owned)
Table no: 4.4.9	Type of farming and Utilization pattern of agricultural credit
Table no 4.4.10	Chi-Square Test statistics (based on type of farming)
Table no: 4.4.11	Amount of loan sanctioned and Utilization pattern of agricultural credit.
Table no 4.4.12	Chi-Square Test statistics (based on loan sanctioned)
Table no 4.4.13	Annual income from agricultural activity and Utilization pattern of agricultural credit.
Table no 4.4.14	Chi-Square Test statistics (based on annual income)
Table no: 4.4.15	Source of loan and Utilization pattern of agricultural credit.
Table no: 4.4.16	Chi-Square Test statistics (based on sources of loan availed)
Table no: 4.5.1	Age of respondents and ability to pay off debt.
Table no: 4.5.2	Chi-square test statistic (based on Age of farmers)
Table no: 4.5.3	Type of agricultural farming and ability to pay off debt.
Table no: 4.5.4	chi-square test statistics (based on type of farming)
Table no: 4.5.5	Annual income from agriculture and ability to pay off debt.
Table no: 4.5.6	Chi- square test statistic (based on annual income from agriculture)
Table no 4.6.1	Rank analysis for default of Repayment for agricultural credit
Table no 4.6.2	Classification of Default in Repayment of agricultural credit
Table no: 4.6.3	Cross tabulation for Age of respondent and reason for default in payment
Table no: 4.6.4	Cross tabulation for type of Farming and Reason for default in payment
Table no: 4.6.5	Cross tabulation for Annual income from agricultural activity and Reason for default in payment
Table no:4.7.1	Rank analysis for source of Repayment for agricultural credit
Table no:4.7.2	Classification of Source of agricultural credit repayment.

Table no: 4.7.2	Cross tabulation for Age of respondent and sources of repayment
Table no: 4.7.3	Cross tabulation for Type of farming and source of repayment
Table no: 4.7.4	Cross tabulation for Annual income and sources of repayment

Chapter Five

Table no: 5.2.1	Farmer Constraints: Perception Analysis and Ranking
Table no:5.3.1.1	Cronbach's Alpha Analysis
Table no: 5.4.1	KMO and Bartlett's Test
Table no:5.5.1	Communalities
Table no: 5.6.1	Rotated compound matrix
Table no: 5.7.1	Descriptive statistics of Agricultural Challenge Factors by Age Group
Table no: 5.7.2	ANOVA analysis for agricultural Challenge factors by Age Group
Table no:5.7.3	Descriptive statistics of Agricultural Challenge Factors by land holding size
Table no: 5.7.4	ANOVA analysis of Agricultural Challenge Factors by land holding size
Table no: 5.7.5.	Descriptive statistics of Agricultural Challenge Factors by type of ownership
Table no: 5.7.6	ANOVA analysis of Agricultural Challenge Factors by type of ownership
Table no: 5.7.7	Descriptive statistics of Agricultural Challenge Factors by type of farming

Table no: 5.7.8	ANOVA analysis of Agricultural Challenge Factors by type of farming.
Table no: 5.7.9	Descriptive statistics of Agricultural Challenge Factors by loan amount sanctioned.
Table no:5.7.10	ANOVA analysis of Agricultural Challenge Factors by amount sanctioned.
Table no: 5.8.1	Prospective Agricultural Credit and Risk Management Reforms: Farmers' Prioritized Recommendations

LIST OF FIGURES AND CHARTS

Chapter one

- Figure 1.1 Flow diagram of search strategy (PRISMA Framework 2020)
- Figure 1.2 Network visualization of keywords
- Figure 1.3 Network visualization of authorship
- Figure: 1.3.1 Research Gap and Objective Mapping

Chapter Two

- Figure 2.4.1.1 Comparison chart for % share of land holding and %share of area
- Figure: 2.12.1 Trend analysis for number of KCC card issued and active KCC holders Nagaland

Chapter Four

- Figure 4.4.1 Categorised variables for agricultural credit utilisation
- Figure 4.6.1 Classification of Default in Repayment of agricultural credit
- Figure 4.7.1 Classification of Source of agricultural credit repayment

ABBREVIATIONS

ACD	Agricultural Credit Department
ACDI	Agricultural Credit Disparity Index
AGRVA	Agricultural Value Added
ANOVA	Analysis of Variance
APPBO	Average Population Per Bank Branch Office
APY	Area, Production, and Yield
CAGR	Compound Annual Growth Rate
CBs	Commercial Banks
CEMAC	Central African Economic and Monetary Community
FAW	Fall Armyworm
FC	Forward Caste
FFCB	Federal Farm Credit Banks Funding Corporation
FPOs	Farmer Producer Organizations
GDP	Gross Domestic Product
GRAIL	Gram Panchayat Agent Intermediated Lending
HSLC	High School Leaving Certificate
HSSLC	Higher Secondary School Leaving Certificate
IAC	Institutional Agricultural Credit
ISS	Interest Subvention Scheme
KCC	Kisan Credit Card
KMO	Kaiser-Meyer-Olkin
LTLs	Long-Term Loans
LTRCF	Long Term Rural Credit Fund
MFIs	Microfinance Institutions
NABARD	National Bank for Agriculture and Rural Development
NABKISAN	NABARD's Kisan Credit Card Scheme
NABFINS	NABARD Financial Services

NBFCS	Non-Banking Financial Companies
NBFC-mFI	Non-Banking Financial Company - Micro Finance Institution
NEC	North-eastern Council
NPA	Non-Performing Asset
NRB	Nagaland Rural Bank
NSVA	Net State Value Added
NSCB	Nagaland State Cooperative Bank Ltd.
PACS	Primary Agricultural Credit Societies
PCA	Principal Component Analysis
PHKAP	Physical Capital
PMFBY	Pradhan Mantri Fasal Bima Yojana
PMJDY	Pradhan Mantri Jan-Dhan Yojana
PPP	Public-Private Partnership
PRISMA	Preferred Reporting Items for Systematic Review and Meta-Analysis
PSBs	Public Sector Banks
RFIs	Rural Financial Institutions
RBI	Reserve Bank of India
RRBs	Regional Rural Banks
SACP	Special Agricultural Credit Plans
SAO	Seasonal Agricultural Operations
SBI	State Bank of India
SC	Scheduled Caste
SCARDBs	State Cooperative Agriculture and Rural Development Banks
SCBs	State Cooperative Banks
SD	Standard Deviation
SDG	Sustainable Development Goal
SFB	Small Finance Bank
SHGs	Self-Help Groups

SPSS	Statistical Package for the Social Sciences
ST	Scheduled Tribe
STCRCF	Short Term Credit Refinance Fund
STL	Short-Term Loan
ST-SAO	Short-Term Seasonal Agricultural Operations
STRRBF	Short Term Regional Rural Bank Refinance Fund
TRAIL	Trader Agent Intermediated Lending

Chapter 1

Introduction

*“Yonjak ejum Enya....
Oh.....oho.... oho...ho
Enongi yutsoro, owo lelle to
Etsen jana thung Ekyio
Yari kiroa kalo
Oh.....oho.... oho...ho
Nshi jana thung ekiwo yari
Yari kiroa kalo
Oh.....oho.... oho...ho”*

Wokhae Eran Lijon khi (Bhalerao et al., 2016) is a Lotha folksong meaning *The elderly Farmers’ Song of Wokha*. This folksong represents the spirit of farmers life where time and nature speak the accent of their work. It calls out the farmers to move quickly and efficiently to cope up with the changing seasons otherwise the farming will get late. This folksong also serves as a motivator and a remainder to the farmers to work fast. “Work fast” mirror the relentless pace of agricultural labour, where delays can lead to failed harvests and hunger. References to drying leaves convey the farmers to observe the health of their crops and the changing seasons, the decaying flowers represent the fading rewards of a farmer's hard work, where months of effort can be destroyed by lack of rain, insects, or market fluctuations. A timely and successful harvest directly translates into financial stability, allowing farmers to meet their credit obligations without defaulting. Despite many obstacles face by the farmers, the folk music also embraces the strength and determination of the farming communities in this way, the song becomes a timeless anthem for farmers, echoing their connection to the land and their firm spirit to face against the misery. A remainder that agriculture is not just a livelihood, but a way of life for the people which extends beyond food production, influencing economy and human wellbeing governed by natural cycle.

1.1 Introduction

The above folksong unveils the status of agriculture where farming is not just a livelihood but a traditional habit that connect people to nature. Likewise, India being an agricultural country with large rural population, doing agriculture activities not just as a profession, but a way of life that is deeply rooted in tradition, culture, and connection to the land. Most people rely on agriculture for their livelihood, and it provides food for a huge people and ensures food security(NA Mujumdar, 2006). Farmers in India usually practice two types of agriculture namely subsistence farming where the farmers use to cultivate plants for their personal consumption and the cultivation is in small scale, whereas Commercial farming involves raising crops and animals with the intention of selling them(S Rath - Agriculture & Food, 2021)

The foundation of the Indian economy is agriculture, and its farmers are the engine of it (Malpani, 2024). In India, Farmers are classified according to their size of landholdings such as marginal farmers, medium farmers, and large farmers. Landowners with less than one acre are known as marginal farmers, those landowners who own between one to five acres of land are considered medium farmers and those owing more than five acres of land are considered large farmers (categorisation of farmers, 2019).

Agriculture has a significant role in economic development, contributing the largest portion of the labor force about 46 percent during the financial year 2023-24(Economic Survey, 2024), though its share in overall gross domestic product (GDP) is only 18 percent (The Times of India, 2024).

In developing nations like India, agricultural output is lower because of limited land holdings, traditional farming practices, inadequate irrigation systems, and a lack of improper application of modern farm technologies. To mitigate the challenges faced by the farmers, they need a financial support. Farmers get major financial support from various credit agencies, as credit is an essential asset that will allow farmers to improve the farming qualities. Concessional credit has long been thought to boost agricultural output by assisting farmers in implementing new technologies, promoting investments

in irrigation and machinery, and enhancing the use of high-quality inputs(Sahu et al., 2005). Hence, Agricultural credit comes to play a vital role in expansion and advancement of agricultural activities.

1.1.1 Background of India's Agricultural Credit

Traditionally, the farmers in India were borrowing from the non-institutional sources such as Mahajan, Landlord and Sahukars (Pal, 2016). The famous Darling's statement (Studies, 1985) "The Indian farmers were born in debt, lived in debt and died in debt". So, the problem of farmers indebtedness has a long history. During the pre-independence era, farmers face problems while applying loans from institutional sources and non-institutional sources. Since the banking system was not yet fully formed, farmers had to rely on non-institutional lenders. These informal lenders adopted foul means to exploit the cultivators in the form of collecting exorbitant interest rateOne of the most widespread and enduring phenomena among Indian rural farmers is the exploitation of farmers in the credit market. Consequently, farmers become labor in their own agricultural land(Mishra et al., 2020). Under the British colonial authority, India's institutional agricultural credit system began to evolve in the 1870s, where institutional credit was extended to farmers especially during the drought year. The Act on Land Improvement Loans was passed in 1883 to provide credit for constructing wells and tanks, preparing land for irrigation, building drainage systems, and funding other permanent land improvements for agricultural purposes(The Land Improvement Loans Act, 1883).

Subsequently, an Act on Agriculturists' Loans was passed in 1884(Shah et al., 2007),provided emergency and seasonal crop loans to farmers. If a farmer's seeds were wiped out by a flood, their plow oxen died, or they had no food to last until the next harvest, they could, in theory, get a loan from the government under this Act to cover these specific costs(Devaraja, 2011). In 1904, the government of India passed the Cooperative Societies Act was passed by the Indian government to address the nation's credit needs, particularly in the rural areas (Mohan, 2004).The Reserve Bank of India (RBI) Act of 1934 included a unique provision to increase institutional credit access

to agriculture through its Agricultural Credit Department (ACD) in response to the insufficiency of agricultural credit. RBI directed other banks to follow the functions regarding the extension of agricultural loan to rural people(Myron Scholes, 1996). The Imperial Bank of India was nationalized in 1955, and the new State Bank of India was established in July 1955 to provide commercial banking services to rural and semi-urban areas(M. M. Shah et al., 2007)

Following severe back-to-back droughts that hit Indian agriculture in 1965 and 1966, the Green Revolution got underway, it became crucial to guarantee that sufficient finance was available, which was essential for farmers to purchase the required modern inputs(Goswami et al., 2017). As a result, a review committee All-India Rural Credit was set up in July 1966 which strongly recommended that the commercial bank should provide increasing agricultural finance in rural areas (Pradhan, 2013). Adhering to the suggestions of the Narsimham working group (1975), In order to offer loans and other services, especially to small and marginal farmers, the Regional Rural Banks (RRBs) were established in 1976. The National Bank for Agriculture and Rural Development (NABARD), which was founded in 1982, gave rural finance another significant boost for the promotion and development of Agriculture by Act 61, 1981 of Parliament(Chain of Events in the History or Evolution of Rural Credit, 1989). Special Agricultural Credit Plans (SACP) were evolved to monitor and augment the flow of credit to agriculture by public sector banks in 1994 and private sector banks in 2004. An introduction of Kisan Credit Scheme (KCC) in august 1988 aims to provide adequate and timely credit support from the banking system to the farmers. On August 2014, the central government rolled out Pradhan Mantri Jan-Dhan Yojana (PMJDY), to accelerate the level of financial inclusion in a sustainable manner. The current agricultural credit system represents the system's reaction to the stimulus of ongoing discontent with credit delivery and is the result of both evolution and intervention(Mohan, 2006).

1.1.2 Agricultural Credit and its needs.

Credit is one of the critical inputs for agricultural development. It capitalizes farmers to undertake new investments and/or adopt new technologies (K.N., 2016) as modern agriculture in the form of new agricultural strategy is a costly affair. Millions of small farmers in India are responsible for the country's agricultural output. About 85% of the total farmers are small land holders and marginal land holders' farmers(Chakraborty Supervisor Anoop, 2021). Therefore, there is a great demand for an appropriate agricultural financing institution. Since majority of farmers are financially dependent in informal credit system (Development, 2019)As farmer who possesses a low volume of assets and has low purchasing power is bond to borrow money for their day-to-day farming activities. Credit inadequacy is a great bottleneck is the full exploitation of the potential productivity of available resources (U. Singh & D Jha, 1971)Credit is needed for day-to-day farming operations, family expenses and long-term improvement on the farm.

Farmers can obtain credit from two main sources of organization i.e., institutional, and non-institutional sources. The non-institutional agencies comprise the money lender, landlords, traders commission agent and the friends and relatives of the farmers. Whereas loans from commercial banks like Regional Rural Banks (RRBs) and State Banks of India (SBI), as well as loans from co-operatives, are examples of institutional sources of credit. Before giving out loans, institutional sources of credit follow a set of necessary legal steps. Institutional sources charge a lot less interest than non-institutional sources(Difference Between Institutional and Non-Institutional Source Of Credit, 2024). The National Bank of Agricultural and Rural Development is the apex institution level for agricultural credit and provides refinance assistance to institutional credit agencies. The Reserve Bank of India plays a crucial role in the sphere of agricultural loan by giving overall direction to rural credit and financial support to the NABARD and Rural development.

With the expansion and strengthening of the institutional loan facilities for the agriculturist, the value of non-institutional credit has come down. According to a survey cited by ThePrint on 30 June 2018, non-institutional financiers mostly professional moneylenders and relatives accounted for about 34 percent of the total outstanding credit in rural India. The remaining 66 percent came from institutional sources (ThePrint,2021)However, the moneylender remains one of the important sources for credit needs for the rural people.

1.1.3 Agricultural credit and its Types

Short-term credit: To cover their immediate needs, such as buying seeds, fertilizer, and paying hired laborers, Indian farmers need loans for a duration of less than 15 months. Typically, these loans are paid back following harvest (Pandey et al., 2019)

Table no:1.1.3.1 Agency wise short-term refinance disbursed (₹ in crore)

Purpose	Coop.Banks	RRBs	Total
ST-SAO	32079.11	7023.74	39102.85
Additional ST-SAO	72865.56	29351.20	102216.76
ST-others	31124.43	16276.00	47400.43
Small Finance Bank (SFB)	-	-	162.69
Total	136069.10	52650.94	188882.73

Source: NABARD, Department of Refinance 2025

An amount of ₹ 1,88,882.73 crore was disbursed as short- term refinance during the year 2024-25, out of which ₹ 39,102.85 crore was provided as concessional refinance under Short Term Credit Refinance Fund (STCRCF) and Short Term Regional Rural Bank (STRRBF) (NABARD, 2025).

Medium term credit: It includes financial requirement of farmers for a period ranging between 15 months and 5 years and it is utilised by farmers for acquiring cattle, pumping sets, other agricultural implements etc(Acharya, 2006) .

Long term credit: When the farmers take loans for capital expenditure like to buy a new piece of land or tractor and other equipment's, the loan must be of much longer

duration. These are called the long-term loans whose maturity periods may extend beyond five years (economics, 2012)

Table no:1.1.3.2 Agency wise long-term amount Disbursed (₹ in crore)

Agency	2024-25		2023-24	
	Disbursed	%Share	Disbursed	%Share
Commercial Bank	58372.00	58.7	88378.15	66.7
RRBs	10242.15	10.3	13460.61	10.2
StCBs	12281.54	12.4	17113.97	12.9
State Corporative Agriculture and Rural Development Bank (SCARDBs)	2578.41	2.6	2100.65	1.6
NabSamruddhi	839.26	0.8	1019.61	0.8
NABKISAN	1716.24	1.7	1479.18	1.1
NABFINS	2098.86	2.1	1934.75	1.5
NBFC including NBFC-mFI	11270.00	11.3	7000	5.3
State Govt	0.00	0.0	--	-
Total	99,398.46	100	132486.92	100

Source: NABARD, Department of Refinance 2025

Amount amounting to ₹ 99,398.46 crore has been sanctioned under the long-term refinance during the year 2024-25, out of that concessional refinance of ₹ 8,023.73 crore was provided under Long Term Rural Credit Fund (LTRCF) (NABARD, 2025).

1.2. Review of literature

1.2.1. Bibliometric

Bibliometric analysis was utilized to establish a quantitative, data-driven basis for the literature review. By carefully assessing publishing trends, citation patterns, and keyword networks from a predetermined set of scholarly works, it objectively maps the intellectual landscape of agricultural credit research. This process helps find the

top authors, core journals, and new research themes. Agricultural related study data based were extracted from Scopus. The search strategy involves a combination of keywords and controlled vocabulary terms such as TITLE-ABS-KEY (("agricultural credit" OR "agricultural loan schemes") AND ("farm credit " OR nabard OR "kisan credit card"))

Articles, conference proceedings, and review of book chapter that were published between 2003 and 2023 fall under the inclusion criteria. 52 articles in total were first found using the database search. 41 articles were chosen for the study after the articles were screened for relevance to agricultural credit and based on pertinent keywords. The gathered data is then subjected to a thorough analysis process using bibliometric methods like network visualization for co-authorship and keywords.

According to PRISMA (Preferred Reporting Items for Systematic Review and Meta-Analysis) guidelines, the flow diagram for Topic, Scopus, eligibility, screening, and determining eligibility for inclusion (Page et al., 2021)

Analysis

Table 1.2.1.1: Top 5 sources of publication of Agricultural Credit

Rank	journal publication	public ation	citation s	average citation per article
1	Agricultural Finance Review	17	205	12.06
2	Indian Journal of Agricultural Economics	4	33	8.25
3	Agricultural Finance and Credit	2	0	0.00
4	Journal Of Rural Development	2	3	1.50
5	A Critical Appraisal of India's Self-Reliance in Agriculture	1	0	0.00

Source: Author computation

Agricultural finance review rank 1 with 12.06% average citation per article where Two articles each were published in the year 2004,2015 and 2022. one each in the year 2005, 2010, ,2012, 2013,2019,2020. 2017 results the highest number with 5 publications. Indian Journal of Agricultural Economics rank 2 with two publications in 2006 and one each in 2007 and 2011.

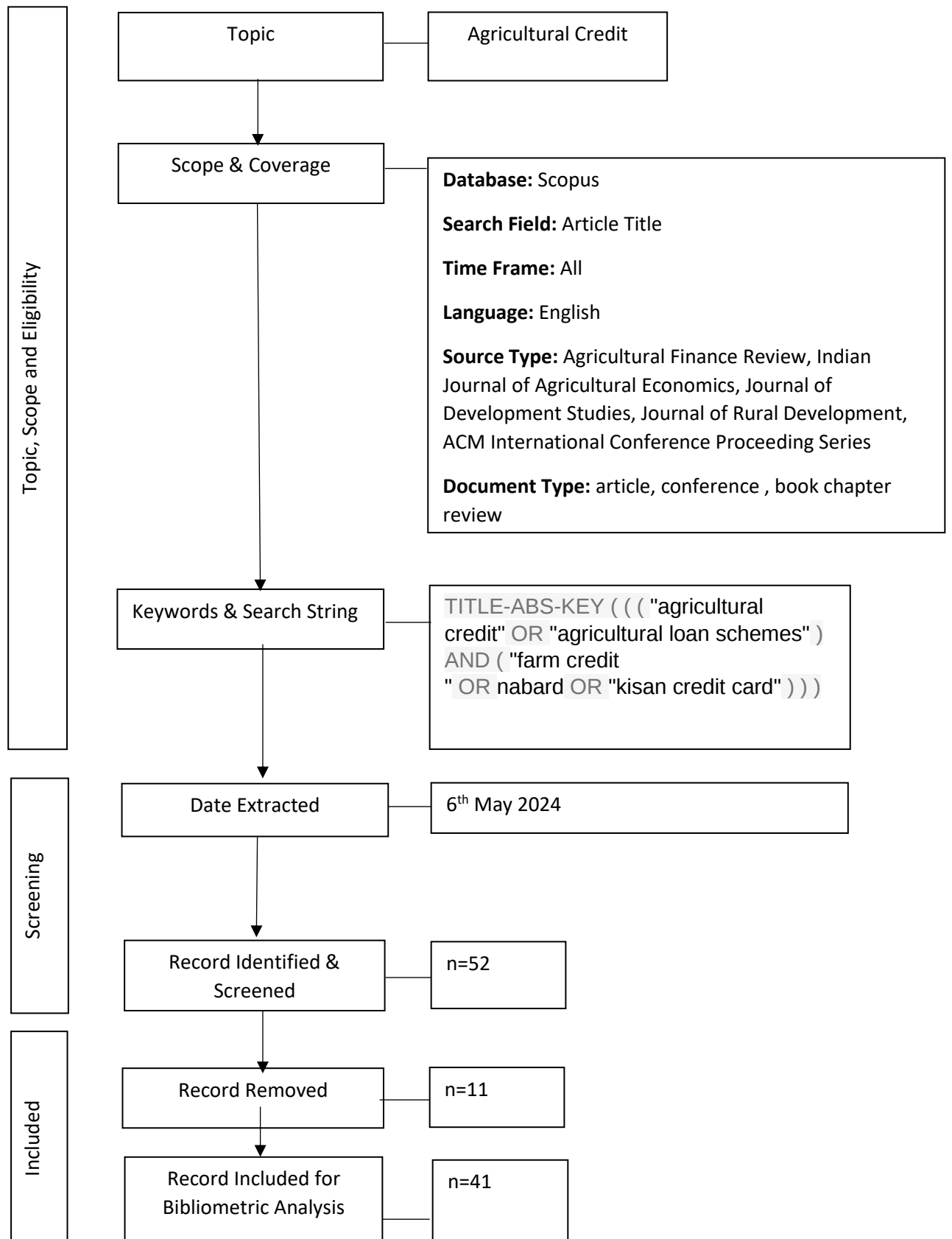


Figure 1.1: Flow diagram of search strategy (PRISMA Framework 2020)

Table 1.2.1.2 Top 5 Potentials authors

Rank	Authors	Publication	Citations	Average Citation Per Article
1	G Calum Turvey	4	51	12.75
2	Valentina, hartarska	3	59	19.67
3	Denis, Nadolnyak	3	59	19.67
4	Charles B. Dodson	2	16	8.00
5	Anjani Kumar	2	55	27.50

Source: Author computation

G Calum Turvey top the rank with 4 publications, the author published an article entitled “ *The effects of government sponsored enterprise (GSE) status on the pricing of bonds issued by the Federal Farm Credit Banks Funding Corporation*” (FFCB)(2012) , “ *Policy rationing in rural credit markets*”(2013), “ *Historical developments in agricultural finance and the genesis of America’s farm credit system*”(2017) and “*Market microstructure and the historical relationship between the US farm credit system, farm service agency and commercial bank lending*”(2020) which were published in Agricultural Finance Review journal.

Figure:1.2.Top keywords in publication

The researcher uses VOS viewer, a program frequently used for bibliometric analysis, to visualize this data and investigate the relationship between these keywords. As a result, the keywords that frequently occurred in agricultural research are displayed in Figure 1.2's network visualization. The relationships between the terms are represented by varying text size, colours, and lengths. Green is the colour of agricultural credit. India is represented by the pink cluster, the farm credit system by the chartreuse green cluster, and agricultural financing by the red cluster. The figure 1.2 shows that agricultural credit is the most used keywords with total link strength of 69 and 10

occurrences, followed by credit provision with 60 total link strength and India with total link strength of 60 and 9 occurrences.

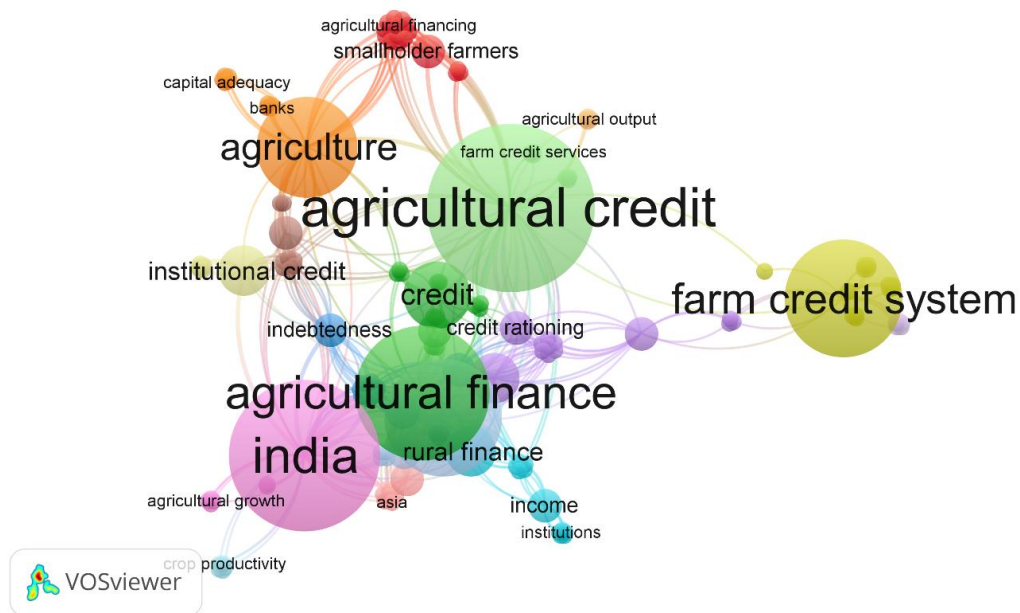


Fig 1.2: Network visualization of keywords

Figure 1. 3: Authorship

In figure 1.3 The network visualization of authors is shown. Co-authorship analysis was used to determine the collaborative relationship between authors that depicted by nodes. Based on figure 2 the strength of the collaborative relationship was reached by Kumar, Anjani with 7 total link strength 2 documents and 55 citations. Kumar, Anjani was connecting to all the clusters. It means that he formed many relationships through co-authorship which has indirectly influenced research on Agricultural credit literature.

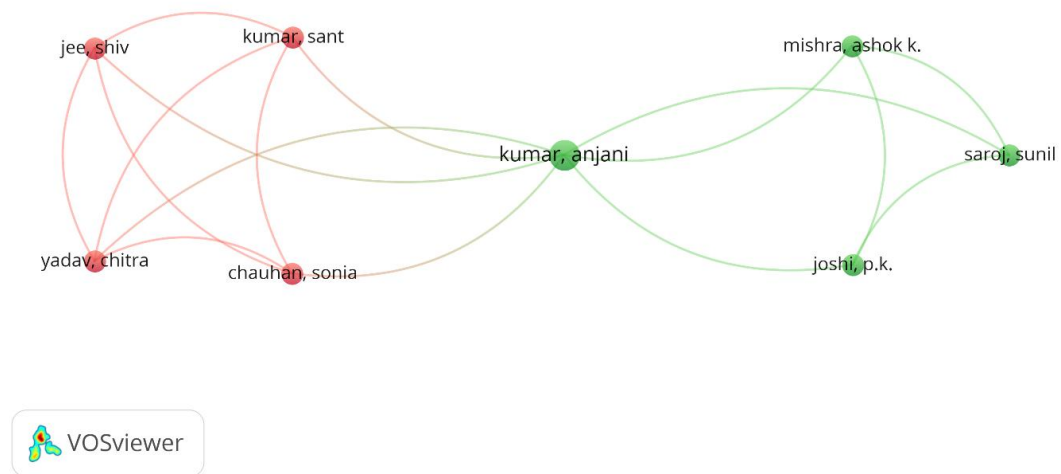


Fig 1.3: Network visualization of authorship

Table 1.2.1.3. Top Publication Countries wise

country	publication
United States	22
India	15
Belgium	2
Canada	1
China	1

Source: Author computation

The above table shows the top 5 countries with the top publication, where united states results the highest publication with 22 publications, followed by India with 15 publications, followed by Belgium with 2, China, and Canada each had one publication.

1.2.2. A Comprehensive Review of Literature

Rajeev & Deb, (1998) discussed that formal lenders like commercial banks suffer from low repayment, partly because farmers perceive no guaranteed future access despite timely repayment. Conversely, informal lenders achieve high recovery rates through relational enforcement, showing the credit challenge is not just supply, but designing reliable, responsive systems.

Dongre & Narayana Swamy, (1999) evaluation model for Primary Agricultural Credit Societies (PACSs) which was developed using nine key financial indicators. Their research demonstrated that many PACSs suffer from poor fund management despite having adequate resources, often leading to financial instability even in structurally sound societies. This model successfully classified societies into performance categories (good, satisfactory, poor) using analysis and cluster analysis. The study's validation confirmed the model's effectiveness in identifying financially viable societies, providing a crucial tool for improving PACS management.

Jha & Jha, (2002) This study finds that India's extensive cooperative lending system has fundamentally failed, as evidenced by a case study of Bihar. The system is ineffective, exclusive, and does not give credit to the appropriate people at the right time, even though it was meant to free farmers from moneylenders. The authors contend that this credit failure constitutes the principal impediment to agricultural development. They also say that government-led rural development projects from the top down have been a waste of time and money because they don't grasp what people in the area need and they erode cultural values. Instead of helping communities combine their traditional strengths with modern demands, these programs have done the opposite.

Mandal et al., (2005) find a hazardous circle of risk that makes it hard to get finance for farming. Farmers are forced to do subsistence farming with low inputs and outputs since they do not have much ideas on what they will produce or how much they will sell. This leads to a lot of non-performing assets, which makes banks very hesitant to

lend money. The situation is made worse by the fact that there is no crop insurance or dependable agricultural statistics. The study indicates that breaking this loop necessitates specialized technologies, enhanced market connections for high-value commodities, and comprehensive data and insurance frameworks to mitigate financing risks.

Sahu & D Rajasekhar, (2005) Based on the study, India's directed credit program for farming hasn't worked very well. Even if there were goals, agriculture's share of formal credit went down, notably after the reforms of the 1990s. This was because agricultural financing was too expensive, borrowers didn't pay back their loans, and banks couldn't make money on it. This led to credit rationing and a bias against small-scale farmers. The study's conclusion is that just hiking interest rates is not helpful. Yet, systemic changes are needed to lower the cost of borrowing and make it easier to get back loans.

Mohan, (2006) This paper shows that India's institutional agricultural credit system has grown since the 1960s, making people less dependent on moneylenders. The agriculture sector's structure has undergone significant transformation, according to the report. Conventional grains are being replaced by more valuable products like dairy, meat, and horticulture. Credit policy must therefore undergo a radical transformation from a cereal-based, one-size-fits-all paradigm to a more diverse, "new mission mode" strategy. In addition to investing in value chains and marketing facilities that will support agricultural diversification and safeguard rural incomes, this new plan must provide tailored financial products for a variety of agricultural activities.

MS Sriram, (2007) The study states that India's policy of focusing on expanding the amount of agricultural loans is founded on a flawed concept. It does not uncover a clear link between more formal credit and higher agricultural productivity since credit is simply one aspect of a complicated system that is affected by things like technology, water, and input quality. The author says that policy should change from a single, supply-side push for agricultural loans to a wider, demand-driven approach that offers a range of financial services to people in rural areas.

Das et al., (2008) highlights that even if there have been policy changes to make it easier for small and marginal farmers to get financing, the system still fails them. The major findings show that institutional finance is still strongly biased against larger farmers, with long and complicated processes, low loan amounts, and long wait times for payments still happening. As a result, small farmers have to use informal loan markets that take control of them, where they have to deal with exorbitant interest rates and bad contracts that are linked to each other. The study says that banking changes haven't made it easier for the poorest farmers to receive credit and argues for regulations to make sure credit is distributed fairly.

Das et al., (2009) This research looks at the effects of institutional agricultural loans on agricultural production in India based on real-world data. It finds that even if more money is going to agriculture, this hasn't led to a similar increase in agricultural output at the national level. The study does show, though, that direct agricultural financing has a big and immediate positive effect on agricultural output when looking at dynamic panel data at the district level. Also, a rise in the number of people who borrow money indirectly also has a beneficial effect on output, but it takes a year for this to happen. The analysis concludes that institutional credit is still highly important for agricultural output, even though there are problems with the credit distribution system. It can be made more successful by making more people able to use it and by using regional ways that are specific to each area.

Hussain & Thapa, (2012) The paper finds that the way agricultural credit is given out in Pakistan is quite unfair and doesn't help the smallholders who need it the most. Even though the government wants to make lending cheaper for smallholders, they still have very little access to formal credit. Only 6% of their credit needs are met by formal sources. Upper smallholders, on the other hand, get 29% of their credit through legal means. The survey shows that 88% of lower smallholders use informal credit since traditional lending has complicated rules, requires collateral, and costs a lot of money to do business. The study finds that credit rules do not help the poorest farmers get out

of poverty because institutional barriers keep the smallest landowners from getting formal loans.

Khurshed & Biradar, (2013) revealed that, in comparison to the pre-reform era, the annual growth rate of total institutional credit for agricultural and related activities increased significantly during the reform period. During the reform regime, there has been a notable increase in the average institutional credit per hectare as well as as a percentage of agricultural GDP. Throughout the entire period, the RRBs and SCBs had the highest growth rates in production credit when compared to the CBs; this was higher compared to the time before the reform. During the reform period, the SCBs had the highest growth rate of investment credit compared to the CBs, followed by the RRBs.

Nihar & Murty, (2013) This article asserts that a Public-Private Partnership (PPP) model for microfinance is an effective strategy to tackle Rwanda's agricultural issues and attain its Millennium Development Goals. It ends by saying that targeted microcredit may be efficiently routed to female farmers by strategically combining government support and regulation with private sector resources and efficiency. This financial support for inputs, equipment, and market access will make farmers more productive, lower poverty, and promote gender equality.

Sharma & S Choudhary, (2013) This research indicates that the Kisan Credit Card (KCC) system exerts a substantial favourable effect on farmers in Madhya Pradesh. The study indicates that access to finance resulted in significant enhancements in agricultural productivity and income. Farmers who got KCC loans saw their crop yields go up by 33% for soybeans and 82% for wheat, and their income go up by 39% to 75% for different crops. As a result, the percentage of farmers in the high-income group (more than Rs. 90,000) jumped from 7.5% to 32.5%, and the percentage of farmers in the low-income group fell from 51% to 12.5%. The study finds that KCC helps farmers buy high-quality inputs, which leads to better use of agricultural technologies and better payback habits.

PK Goyal, (2015) This research finds that the National Bank for Agriculture and Rural Development (NABARD) is India's top development bank and is very important for the growth of the agricultural and rural sectors. Its main jobs are to provide and control credit, refinance rural banks, fund infrastructure projects in rural areas, promote microfinance through Self-Help Groups (SHGs), and come up with new credit programs like the Kisan Credit Card. The report says that NABARD is the most important part of making credit available, coordinating rural financing activities, and making sure that development happens in a way that benefits everyone. This makes it the foundation for "growth with social justice" in rural India.

Jitender Kumar, (2016) mentioned that Individual, household, and farm characteristics as well as financial institution factors such as age, sex, education, household and farm size, membership in cooperatives, household assets, livestock, complex procedures, interest rate, and distance from the bank all influenced credit accessibility. Probit Model estimates revealed that factors such as the age of the head of the household, education level, interest rate, size of the farm, and household assets in the Jaipur district had a significant impact on credit availability. In contrast, several factors in the Rajsamand district affected credit availability, including the age of the head of the household, the size of the farm, the assets of the household, the interest rate, and the distance from the bank.

S Narayanan, (2016) Using state-level panel data spanning for the years 1995–1996 to 2011–2012, this researcher investigates the nature of the relationship between formal agricultural credit and agricultural GDP in India, with a focus on the former's support of agricultural growth. According to the analysis's conclusions, all the inputs are very sensitive to an increase in institutional credit given to agriculture during this time. A nominal 10% increase in credit flow causes a 1.7% physical increase in fertilizer (N, P, and K) consumption, a 5.1% increase in pesticide tonnes, and a 10.8% increase in tractor purchases. Overall, it is evident that while the GDP of agriculture is not affected by credit flow, input use is. Thus, credit appears to be an enabling input, but its efficacy is compromised by low productivity and technical efficiency.

Misra et al., (2016) The study finds that formal agricultural finance, especially direct loan to farmers, significantly enhances agricultural production and output in India. The study utilizes state-level data from 2000 to 2012 to demonstrate that a higher intensity of agricultural credit, as shown by the credit-to-GDP ratio, correlates with increased total factor productivity, with a more significant impact observed from direct credit in comparison to total credit. A case study at the district level in Andhra Pradesh further corroborates that agricultural financing is a principal factor influencing agricultural production. The results confirm India's policy of making agriculture a top priority for bank lending. They also show how important it is to keep providing institutional credit to help agriculture flourish, ease rural misery, and help reduce poverty.

Chandio et al., (2018) shows that agricultural credit has a big beneficial influence on wheat production on small farms in Sindh, Pakistan, but the benefit depends on the type of loan. When it comes to wheat productivity, short-term loans (STLs) have a bigger effect right away than long-term loans (LTLs). The paper says that this is because STLs are mostly used to buy inputs that improve yields right away, like better seeds and fertilizers, which increase productivity in the same crop cycle. LTLs, on the other hand, are used for long-term investments like preparing land and watering it, which may not show their effects on productivity until years later. The study shows that credit is very important for increasing agricultural output. It also suggests that formal financial institutions should make it easier for small-scale farmers to get short-term credit so that they can fast increase their crop yields.

Kaur & NK Dhaliwal, (2018) This paper finds that the Kisan Credit Card (KCC) scheme in India showed significant growth from its inception in 1998-99 to 2012-13, with the number of cards issued increasing from 7.84 lakh to 129.82 lakh and the amount sanctioned rising from ₹2,310 crore to ₹126,280 crore. The study concludes that commercial banks were the most successful agency in implementing the scheme, leading in both the number of cards issued and the amount sanctioned, outperforming Regional Rural Banks (RRBs) and Cooperative Banks.

Karthick & S Madheswaran, (2018) The study utilizes national survey data to demonstrate that SC and ST farmers have reduced access to formal credit and get lower average loan amounts in comparison to Forward Caste (FC) farmers, even when controlling for variables such as landholding, education, and wealth. Decomposition study indicates that around 50% of the credit disparity between FC and SC/ST farmers arises from discrimination within the credit market, rather than variations in endowments or credentials. The study finds that caste identity still plays a big role in who can get money in rural India, which makes it harder for everyone to thrive.

N Bharti, (2018) The study demonstrates that many of the current policy changes meant to improve agricultural financing and microfinance in India were suggested or tried out in the past but didn't work. The analysis finds that India would be a top country in financial inclusion now if the prior policies had been followed through on. The study shows that even though there have been many governmental measures over the years, lack of access to finance is still a big problem for making money in agriculture in India.

Gulati & Juneja, (2019) This paper finds that India's agricultural credit system has significantly expanded through policies like bank nationalization, priority sector lending, and innovations like Kisan Credit Cards (KCCs) and the Self-Help Group (SHG) bank linkage program. The system, on the other hand, has big problems. For example, a lot of subsidized agricultural loans are being used for non-agricultural purposes, the amount of long-term investment credit is going down, which could hurt capital formation, and a lot of small and marginal farmers still rely on non-institutional sources. Also, the system's long-term health is at risk because of rising Non-Performing Assets (NPAs) connected to farm loan waivers, which create moral hazard. The study indicates that although policy improvements have augmented the volume of credit, a re-evaluation of the interest subvention scheme and a transition towards direct income support, rather than subsidized credit, are essential for a more efficient, inclusive, and sustainable agricultural lending system.

Vyas et al., (2019) studied that NABARD is an important and useful part of making agricultural lending better in India. The study finds that NABARD has successfully

increased the flow of credit to the rural sector by providing banks with refinancing help. From 2015-16 to 2017-18, long-term refinance disbursements grew at a compound annual growth rate of 16.5%. Some of the most important accomplishments are the successful implementation of programs like the Farmers' Club Program, watershed development, and the Self-Help Group bank connection program. Also, the performance of rural financial institutions that NABARD supports, such as State Cooperative Banks and Regional Rural Banks, is also seen as good. The study supports the idea that NABARD's actions have a favourable effect on the flow of agricultural credit. This strengthens NABARD's position as a key player in India's rural finance system and agricultural development.

A Chanda & Arthaniti, (2020) indicates that state-specific variables unrelated to their agricultural sector have a major influence on the extent of KCC adoption. Initial agricultural productivity, the proportion of agricultural production, and other metrics do not offer any a measure of the KCC's implementation level. The author also looks at the consequences of the plan on yields and growth in agriculture and demonstrates that states having greater amounts of agricultural credit are shown after initially improved access to it. KCC Loans. Bihar and other BIMARU states, however, exhibit quicker adoption rates that their recent accelerations in growth cannot account for. In Bihar, it shows that KCC had initially lent more money are still pulling more separate from other areas, and there is proof of account holders' convergence.

Maia et al., (2020) This article indicates that Brazil's rural lending program for family farmers (PRONAF) has a big and good effect on farming. The study employs a quasi-experimental methodology utilizing data from 4.1 million farmers, demonstrating that those who got PRONAF loans saw enhanced production. One important conclusion is that the program had the biggest effect in the poorest parts of the country, which suggests that it helped to narrow the gap between areas. The research indicates that farmers who obtained loans were positively selected, suggesting they possessed superior pre-existing circumstances, such as larger land holdings. The authors assert that rural finance is vital for smallholder production while advocating for a comprehensive evaluation of the entire costs and benefits of such subsidized programs.

Haque & A Goyal (2021) identifies a substantial and enduring geographical disparity in the allocation of institutional credit to agriculture in India. The Eastern area (Bihar, Jharkhand, Odisha, and West Bengal) gets a disproportionately small percentage of credit (only 9.05%) relative to its agricultural GDP and potential, even if the total amount of credit has expanded. The study found that states with better irrigation, a larger agricultural GDP, and more bank branches have easier access to credit. The main poll shows that small farmers, women, and tenants in the Eastern states are most disadvantaged since they rely on informal, high-interest loans. The study says that the Eastern region should get more institutional financing so that it can reach its full agricultural potential and lower poverty.

MM Islam, (2020) investigate how Bangladesh's agricultural productivity is affected by agricultural credit. The study's conclusions showed that there are both short- and long-term relationships between agricultural credit and productivity, and that other dynamic variables like inflation, interest rates, and government spending on agriculture also have an impact on the sector's productivity. The author's conclusion is that to improve agricultural output and support Bangladesh's economic growth, there should be a rise in the growth of agricultural credit.

M Sahni, (2020) analyse the problems associated with agricultural credit in India and assess potential solutions. According to the author, institutional sources accounted for 72% of the credit requirement, while non-institutional sources accounted for 28%. The Primary Agricultural Credit Societies of the State were designated to disburse loans for agriculture production worth Rs. 16000.00 crores in 2018–19. The main investors in the State of Bihar's Kisan Credit Card distribution are Primary Agricultural Credit Societies and Distract Central Cooperative Banks.

S. Yadav & Yadav (2020)examine the productivity and production of all crops are positively impacted by institutional agricultural credit (IAC). The cropping areas of commercial crops are positively impacted by IAC, whereas the cropping areas of traditional crops are negatively impacted. IAC contributes significantly to job creation in two ways: as covert family laborers involved in farming (marginal productivity is 0

or negative) are free to work in other economic sectors and were trying to employment in the service industry, and another is farmers' easy access to labour from the market, which promotes greater consumption and short-term job growth. Farmers prefer open markets and hybrid varieties of seeds, so institutional agricultural credit facilitates their purchase of seeds and other inputs from these sources or IAC are used in place of common seeds.

Tuan Anh et al., (2020) studied that agricultural credit has a long- and short-term positive impact on agricultural GDP. It is confirmed that there is a unidirectional causal relationship between credit and agricultural GDP. The findings also show that labour and rainfall have long-term, positive, and significant effects on agricultural GDP.

Chandio et al., (2021) studied that formal education, household size, landholding size, and farming experience were favourable socioeconomic determinants that had a significant impact on farmers' ability to obtain formal credit. The author concludes that these socioeconomic factors should act as a guide for financial institutions to provide formal credit in an efficient manner. According to the study, formal credit significantly raises sugarcane productivity. This indicates that the nation's top formal institution, Zarai Taraqiati Bank Limited (ZTBL), has been instrumental in providing agricultural credit to sugarcane farmers.

Kumar et al., (2021) This paper finds that it is quite unfair for people in Eastern India to get institutional credit, and it has gotten worse over time. The government tried to help, but the percentage of institutional credit in the area dropped from 62.6% in 2003 to 54.5% in 2013. Small and marginal farmers and socially disadvantaged castes faced a lot of problems. The study finds that asset value, landholding size, and education level are important factors that affect access to formal credit. This makes it harder for the most vulnerable farmers to get credit. So, these groups have to rely on informal lenders who charge interest rates that are more than double the rates set by banks and other institutions. The disparity is getting worse with time. The study finds that the current credit delivery mechanisms do not help the people who need it most, which keeps this poor area from getting any better.

Mahesh K.M, (2021) This study highlights that the effectiveness of various agricultural programs and identifies the benefits and beneficiaries of these schemes. Under this research, various financial services, subsidies, funds released, online platform for agricultural products, funds for micro-irrigation, and so on benefits provided by the government of India were studied.

Maurya & Vishwakarma, (2021) This research paper finds that while institutional agricultural credit in India has grown, its distribution is unequal across different farm sizes. Key findings indicate that marginal and small farmers, who constitute the majority, rely more on short-term loans, and have lower overall indebtedness compared to larger landowners. However, states with a high concentration of smallholders, like West Bengal and Bihar, show a high incidence of marginal farmer indebtedness. Conversely, agriculturally advanced states like Punjab and Rajasthan have a higher proportion of indebted large farmers. The study concludes that government policy should focus on improving credit access and creditworthiness for small and marginal farmers.

RL & AK Mishra, (2022) show a strong correlation between the socioeconomic status and demographic traits of South Indian agricultural households and their ability to obtain credit. The likelihood that a household will have access to institutional credit is positively correlated with the asset position and size of the holdings. Higher access to formal credit is also found to be correlated with family size and education. Conversely, households that are socially disadvantaged have less access to formal credit. In a similar vein, additional factors like assets, holding size, and education are linked to higher credit per household.

Chaiya et al., (2023) investigate the effects of credit, including its use, misuse, and factors that affect the amount of credit available for agriculture in Pakistan. Percentage use indicates that improper use of the credit was more common than proper use. Credit

was used by farmers to pay for everyday labour, seeds, fertilizer, pesticides, and land preparation. They abused agricultural loans for business, domestic needs, children's education, and healthcare. The extent of agricultural credit was determined by the farmers' age, experience, farm size, income, labour, and land ownership, according to the regression model's results.

Damain Ezechi et al., (2023)examine how Nigeria's agricultural value-added growth rate is impacted by the fund of the agricultural credit guarantee scheme. According to the author, government spending has no discernible impact on Nigeria's rate of increase in agricultural value added between 2003 and 2022.

Dey et al., (2023)This study reveals that farmers are happier when they can get institutional loans, but only in an indirect way. The beneficial impact of credit is facilitated by essential intermediaries: it augments working capital, elevates the perceived value of the loan, and diminishes risk perception, therefore enhancing pleasure. Also, this whole system works much better for farmers who know about money and can get help with their farms. The study also shows that a farmer's decision to use formal credit in the first place is greatly affected by socioeconomic characteristics, the quality of the service, and the terms of the loan.

Ngong et al., (2023) demonstrates that bank lending exerts a substantial and beneficial influence on agricultural productivity within the Central African Economic and Monetary Community (CEMAC) region. The examination of data spanning from 1990 to 2019 indicates that a 1% rise in domestic credit to the private sector by banks results in a 0.63% augmentation in agricultural value added to the GDP over the long term. Other things, like agricultural land and physical capital, have good benefits, whereas inflation and the supply of workers have bad effects. The research indicates that improving the availability of bank credit to the agriculture sector is essential for increasing production in the CEMAC region.

Ngong et al., (2023) shows that Long-term co-integration between the variables is demonstrated by the co-integration test results. The results show that PHKAP, land, and DCPSB have a positive impact on the AGRVA. Labour, the INF, and the broad money supply have a negative effect on the AGRVA to the GDP.

Sonehekpon & Fiamohe, (2023) show that farmers favour long-term, low-interest agricultural loans obtained through mobile banking. Farmers' credit demand is positively connected with the combination of a low interest rate and a collateralized credit type. The authors also discovered that the variability in farmers' credit demands contributes to the heterogeneity of agricultural credit markets. As a result, three distinct rural credit market segments have been identified in the study sites that were chosen. The market share simulation indicates that the preferred credit type for farmers in two segments has a sizable market share.

Meenakshi Devi, (2023) finds out that the beneficiaries of the Kisan Credit Card saw improvements in a few areas of their agricultural output. Most farmers visit KCC to buy pesticides, fertilizers, and seeds, and then they buy farming equipment. Additionally, all farmers utilized the KCC loan amount to buy urea, seed, plant protection chemicals, and to carry out the threshing and harvesting processes.

S. Singh et al., (2023) study that beneficiary farmers under the KCC scheme have access to enough credit to meet their credit needs. The study also shows that the loan purpose(s) granted to beneficiary farmers under the KCC scheme are significantly impacted by the sufficiency of credit. The primary factor that determines the purpose of the loan is credit adequacy. Therefore, it can be said that the KCC scheme's loan purpose(s) to beneficiary farmers are greatly influenced by the sufficiency of credit.

Ema Sawarkar, (2024) discuss that e-NAM (National Agriculture Market) has enhanced price realization and market access, and government agricultural schemes like the Pradhan Mantri Fasal Bima Yojana (PMFBY) and Kisan Credit Card (KCC) have been essential in giving farmers financial stability.

Fasasi et al., (2024)examine the linear relationship that exists between the total amount of loans granted and the loans given to individuals, cooperatives, and businesses. To ascertain the degree of correlation between the total amount of loans made and the loans made to individuals, cooperatives, and businesses to fit a proper model that can be used for forecasting. The outcome demonstrates that individual and cooperative contributions to the fitted model were significant among the independent variables. The model has a high predictive power, according to the predictive power test. Given that there is a variable that contributes to the fitted model using individual test, the model is generally dependable for predictions.

Maitra et al., (2024)demonstrates that the TRAIL scheme outperformed the GRAIL scheme in increasing the farm incomes of borrowers because the households recommended by the Trader Agent Intermediated Lending (TRAI) agents tended to have economic ties with the agent, whereas the households recommended by the Gram Panchayat Agent Intermediated Lending (GRAIL) agents were more likely to share political ties. Only in TRAIL did farm profits rise and production unit costs significantly decline. The results are primarily driven by a greater reduction in unit production costs for TRAIL treated farmers compared to GRAIL treated farmers of similar ability or landholding, even though there is some evidence of superior selection by ability and landholding in TRAIL.

Ozdemir, (2024)shows that large farmers must compete with small farmers for scarce financial resources, particularly in developing nations. Smallholder farmers' credit limitations have a direct and indirect impact on agricultural output. Agricultural output and rural household income can be increased by increasing the amount of loans and advances given to financial institutions by farmers or rural households, as well as the number of subsidies provided by governments as a tool for agriculture finance. Eventually, as agricultural productivity increases, the negative effects of factors that cause problems with food security, like climate change, can be minimized.

Sarla Kadu Mahale, (2024)discuss that farmer from a variety of demographic backgrounds particularly those with smaller landholdings tend to rely on unofficial

sources of credit, which increases their debt load significantly. Growers of cash crops, like sugarcane and cotton, are especially susceptible to fluctuations in market prices, which can affect their profitability.

Saptia et al., (2024) discovers that when credit is impacted by interest rates, it can have a simultaneous impact on rice production and agricultural economic growth. Reducing credit interest rates to 3% or 5% in the simulation model boosts rice production, agricultural economic growth, and the distribution of agricultural credit. In comparison to a simulation model that only offers a credit interest rate of 5% or 3%, the combination of a 20% increase in agricultural credit distribution and a 5% interest rate has a greater effect on raising rice production and stimulating economic growth in the agricultural sector.

Yadav & MS Rao, (2024) this paper illustrates that access to institutional agricultural loans markedly enhances crop productivity for small and marginal farmers in India. The research, which looked at data from hundreds of farmers, revealed that those who got formal loans had much higher yields for important crops including paddy, wheat, cotton, and pulses than those who didn't. The results show that India's policy of expanding formal farm credit is really helping the most vulnerable farming groups become more productive.

Ouattara et al., (2025) This study shows that agricultural credit has a big positive effect on the technical efficiency of rice farmers. However, this effect is very different depending on where the credit comes from. Farmers who got credit saw their technical efficiency go up by 5% on average. The data shows, however, that borrowing from agricultural cooperatives and buyers/processors of paddy rice has a big and favourable effect on efficiency. On the other hand, borrowing from microfinance institutions (MFIs) has a big negative influence on efficiency, while loans from friends or family don't have a big effect. This study shows that the source of loan is very important. It gives policymakers important information they need to build good agricultural credit models that work with the best lenders.

1.3. Research Gap:

- The bibliometric study reveals a significant absence of research connecting critical issues such as socio-economic development, credit consumption, climate risk, and digital inclusion to the contexts of under researched regions like Nagaland. Moreover, previous research has not done enough to show how these problems are related to each other, which is a major gap that needs to be filled.
- While agricultural finance is well-researched globally, significant gaps remain in the specific context of Nagaland. The systemic factors leading to credit exclusion for small and marginal farmers, which are influenced by the state's peculiar hilly topography and tribal agricultural organization, are not well understood, and need to be mapped out in depth.
- The relationship between how credit is used, its subsequent repayment performance, and its wider socio-economic impacts is not yet fully understood
- The evolving financial landscape raises critical questions about how digital inclusion influences credit source selection in remote farming communities. This research gap is compounded by a poor understanding of how social identity and cultural factors in tribal societies shape these financial decisions.
- A significant research gap exists regarding the specific challenges such as climate vulnerability, distinct land tenure, and poor infrastructure confronting farmers in Nagaland's hilly terrain. This study seeks to fill this interconnected gap.

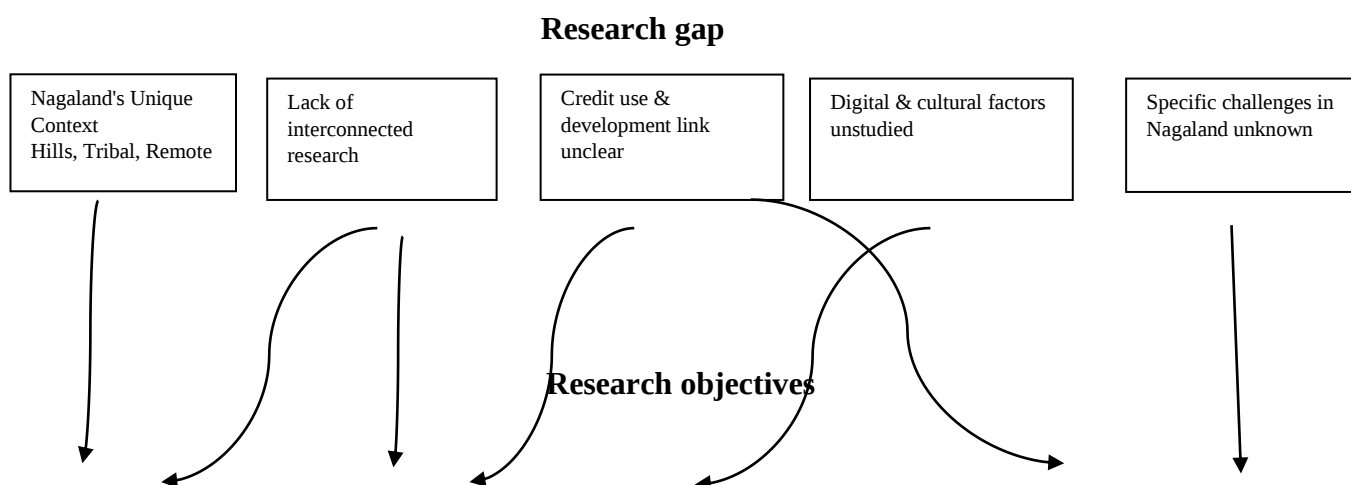
1.4. Statement of the problem:

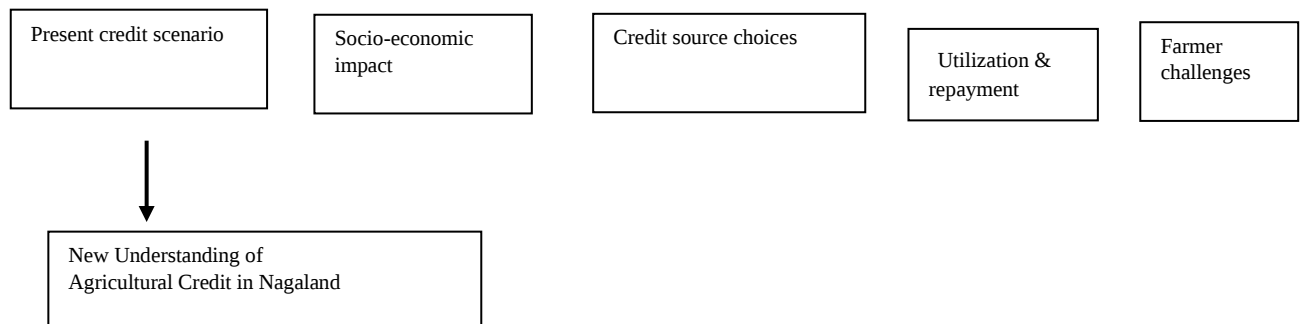
The availability of Agricultural credit has become one of the crucial forces of policy makers as most of the farmers lack finance to contribute for their agricultural operations. Despite huge increase in agricultural credit by banks, farmers still face the problem of shortage of funds and are forced to depend on non- institutional sources comprising of money lenders and indigenous bankers.

For the advancement and development of Agricultural sector in Nagaland, Credit plays an important role. Most of the rural farmers continue to face serious problem because of deteriorating agricultural production by lack of capital. Poor farmers possess low-income level which is inadequate to satisfy their requirements of working capital and smooth consumption. At the beginning of the crop cycle, farmers face a considerable capital need for purchasing seeds, fertilizers, pesticides and to improve the allied sectors etc. To purchase all these inputs and to meet consumption needs over the period of production, farmers require credit. Farmers generally fulfil their credit requirements either from institutional or non- institutional sources. Repayment of agricultural credit is made after harvesting season. The agricultural credit availability and repayment depends on various factors. This leads to number of questions such as: to what extents does agricultural credit affect the socio- economic conditions of farmers in Nagaland? What are the factors that affect the utilisation pattern and repayment performance of agricultural credit in Nagaland? And what are the challenges faced by farmers in Nagaland? The proposed work will attempt to assess the research problems.

Figure: 1.3.1. Research Gap and Objective Mapping

The figure below provides a cohesive, logical, and targeted investigation designed to generate meaningful insights into a critically under-researched area Nagaland.





Source: Generated with the help of various literature review

1.5. Significance of the study

Agricultural growth and production are highly fundamental for the economic prosperity and development of a nation as it can generate employment opportunities, provide food securities, provide raw materials to industries, and contribute to national income. Hence, to develop the agricultural sector, it depends on numerous forces comprising of availability and quality of agricultural inputs such as land, water, seeds, fertilizers, and availability of Agricultural credit facilities.

The term agricultural credit is not a new concept. Much research on Agricultural Credit has been conducted. Even though ample of studies has been done on Agricultural Credit it has been found that only few studies has been conducted in Nagaland.

Nagaland presents a compelling and critical context for research on agricultural credit and welfare schemes, precisely because of the profound awareness gap that exists among its farming community. The core issue is not a lack of government initiatives, both central schemes like the Kisan Credit Card (KCC), PM-KISAN, and crop insurance, and state-specific programs exist but rather a systemic failure in communication and outreach that prevents these resources from reaching their intended beneficiaries. This disconnect is exacerbated by Nagaland's unique socio-geographical landscape, its diverse tribal languages create communication barriers,

and traditional community land ownership complicates access to formal credit. Research here is crucial to understand why these well-intentioned schemes fail to reach the grassroots, providing vital insights for creating more effective and inclusive agricultural support policies for the region

The study will try to analyse the present scenario of agriculture credit sector in Nagaland, impact of agricultural credit on socio- economic conditions of farmers, utilization pattern, repayment performance, and problems of agricultural credit from the level of agricultural borrowers. The understanding of the present system of credit and the problem associated with it will help the bankers, agriculturists, and policy makers to perform their part well to have an efficient agricultural credit system. Hence, it will be highly relevant to carry out an in-depth study on the efficiency of agricultural credit in Nagaland. It is also expected that the result will be useful to the farmers, bankers, government, researchers, public, policy makers and those involved in Agricultural credit system directly or indirectly.

1.6. Objectives of the study

The proposed study has the following objectives:

1. To review the present scenario of agricultural credit in Nagaland.
2. To analyse the impact of agricultural credit on socio economic development of farmers in Nagaland.
3. To examine the factors which affect the farmer's choice of credit sources.
4. To examine the utilization pattern and repayment performance of farmers in Nagaland.
5. To examine the challenges faced by the farmers in Nagaland.

1.7. Hypotheses

The proposed research work has the following hypothesis for testing:

1. There is no significant impact of agricultural credit on socio economic conditions of farmers in Kohima and Wokha districts.

2. There is no significant association between the categories of borrower's and their utilization pattern of Agricultural credit.
3. There is no significant association between the categories of borrowers and their repayment of agricultural credit.

1.8. Research methodology

Both primary as well as secondary data have been used for the study. The primary information has been collected from 420 sampled farmers belonging to Wokha and Kohima districts. The secondary data has been collected from the various issues of Handbook of Statistics on the Indian Economy, NABARD, The State Level Bankers' Committee, Directorate of Economics and Statistical Government of Nagaland, Department of Horticulture, Nagaland, publications of the RBI.

1.8.1 Primary data

Primary data was collected from the 420 respondents in the two districts through structured interview schedule, and personal interviews with the farmers availing Agricultural credit. Samples were taken from two circles in Kohima district and two circles in Wokha districts. Multistage sampling method was used in choosing the study population and the minimum sample size was determined using the Krejcie and Morgan sampling table. The reliability of the responses was tested using Cronbach alpha test and to verify the validity of the questionnaires the researcher opted for the expert opinions.

a. Multistage sampling:

Multistage sampling was applied and carried out in two districts of Nagaland. The stages are discussed below:

First stage: Selection of Districts

Two districts in Nagaland Kohima and Wokha were purposively selected for this study. The selection was justified by their significant cultivator populations, as per the 2011 census, and their distinct socio-agrarian profiles. Kohima, the state capital, is a developed district characterized predominantly by terrace farming practices. In contrast, Wokha, known as the "land of plenty," is a moderately developed district (Ezung & Jamir, 2016) where jhum (shifting) cultivation is common. This deliberate contrast ensures that the study captures a diverse range of farming practices and development contexts within the state

Second stage: Selection of Circles/Blocks

Within each of the selected districts, two administrative blocks with the highest population densities were chosen for the study. From Kohima district out of 7 (Government of Nagaland, 2025) blocks 2 blocks were selected, the blocks of Kohima Sadar and Jakhama were selected. Similarly, from Wokha district out of 5 blocks (list of recognised villages: admin hq-wise and reporting structure of hqs color code district hq adc sub-div, 2006) 2 blocks were selected, the blocks of Wokha Sadar and Bhandari were chosen.

Third stage: Determination of Sample Size

The minimum sample size was calculated using the total cultivator population of both districts ($N = 79,879$). The Yamane formula yielded a sample size of 397, while the Krejcie and Morgan table recommended 384. The study ultimately selected a sample size of 420 respondents to ensure robustness and account for potential inconsistencies.

The formulas developed by Yamane (1967), Krejice and Morgan (1970) have been utilized to obtain the minimum sample size.

Number of cultivators in kohima district as per 2011 census 38,017

Number of Cultivator in wokha district as per 2011 census 41,862

Total number of populations for both the districts 79879

According to Yamane formula $n = N / (1 + Ne^2)$

Where,

n=sample size

N=population size

e = Margin of error i.e., 5% based on research condition

by using Yamane formula

$= 79879 / [1 + 79879 \times 0.0025]$

$= 397$

According to Krejcie and Morgan (krejcie, 1970) table if the population size is between 75,000 to 1,00,000 the selected sample size would be 384.

Final stage: Selection of Individual Respondents

From the chosen circles/blocks, 420 farmers who had availed Agricultural Credit were selected as respondents. The specific method of selecting these individuals (e.g., random sampling from beneficiary lists) was implied using bank-provided beneficiary lists during the pilot survey, ensuring the respondents were relevant to the study's objective.

b. Pilot survey

For validating and reliability the interview scheduled researcher visit the study area with predesigned interview scheduled for Agricultural credit beneficiaries and visited 50 beneficiary's household selected through beneficiaries list collected from the Banks. After the first-round pilot survey, keeping in view of the findings and observation derived from the results some necessary modifications were incorporated in interview scheduled and finalised the interview scheduled for the final survey.

c. validity and reliability

To ensure the validity of the interview scheduled, experts from banks, mediators who help in availing the banking services, senior research scholars who worked in Agricultural, research supervisor and professors from the department.

After collecting the data Cronbach's alpha was applied to check the reliability of the interview schedule.

Reliability Statistics

Cronbach's Alpha	N of Items
0.721	54

Since the value of the $\alpha=0.72$ which range between 0.70-0.79 the interview schedule is acceptable. (Nunnally, 1967)

1.8.2. Secondary data sources

a. National Bank for Agriculture and Rural Development (NABARD).

Data relating to Refinance of Short-Term Seasonal Agriculture Operations and Long-term Seasonal Agriculture Operations were extracted from NABARD state focus paper 2024-2025.

b. Directorate of Economics and Statistical Government of Nagaland

Statistics of land use in Nagaland, data on crop production, area under different crops and agricultural productivity were collected from datasets provided by directorate of economics and statistics Government of Nagaland i.e., from Nagaland at glance, economic survey of Nagaland, Agricultural census of Nagaland.

c. Department of Horticulture, Nagaland

Data relating to Operational steps and time under terrace cultivation, List of crops produce and time of sowing and harvest in shifting cultivation were collected from the department of Horticulture office.

d. Agriculture Statistics at Glance

Data related to crop loan and term loan were collected from agriculture statistics at glance.

e. The State Level Bankers' Committee

The State Level Bankers' Committee report was used to obtain the number of Kisan Credit card holders, Beneficiaries of KCC loans, Amount of KCC loans disbursed according to district wise in Nagaland from the period of 2015-16 to 2024-25.

f. The NEC Yearbook 2025

Classification of Agricultural workers, Land holding size, Area and production of crops were collected from The NEC yearbook 2025

1.9. Tools used for the study

To achieve the objectives of this study, a combination of statistical techniques was employed. Descriptive statistics were first used to summarize the key characteristics of the dataset, providing an overview of central tendencies data using mean and standard deviation. Respectively cross-tabulation was then applied to examine relationships between categorical variables, helping to identify patterns and associations within the data. To determine the significance of these relationships, the Chi-square test was conducted.

For comparisons involving continuous data, independent samples t-tests were used to assess differences between two groups, while one-way ANOVA was employed when comparing means across three or more groups. All statistical analyses were carried out using SPSS for reliability in the results. A brief description about those tools is given below:

Descriptive statistics

Percentage analyses were done for demographic and economic profile of the respondents. The study has estimated the mean and standard deviation and various demographic characteristics were examined to understand their relationship with farm size. The key demographic factors considered included the age of the respondents, gender, education level, marital status, occupation, area owned for farming, type of land owned, and type of farming. Frequency and percentage distributions were used to summarize the demographic profile of the respondents. Additionally, cross-tabulation was employed to explore the associations between the dependent variable, farm size, and the independent variables, which encompassed all the demographic factors. This analytical approach helped in identifying potential patterns or trends, such as whether certain age groups, educational backgrounds, or types of land ownership were correlated with larger or smaller farm sizes. By using cross-tabulation, the study aimed to uncover meaningful insights into how different demographic variables might influence agricultural landholding among the respondents.

ANOVA

The one-way analysis of variance (ANOVA) was used to determine whether there are any statically difference between the means of two or more independent variables. The dependent variable for economic factor includes increase in income of farmers, improve in employment opportunity, increase in assets holding and increase in household facilities. For social factor, the variables include improvement in children education, improvement in status of society, and improvement in skilled labour. The independent variables considered are marital status, age, education qualification, area owned for farming, type of agricultural production, loan sanction amount, annual income from agricultural activities, and sources of loans. To achieve the stated objective 2 and 3rank analysis was carried out and then ANOVA was applied to see if there is any mean different among the groups of farmers (based on age, income, etc.) had significantly different views on the importance of each socio-economic factor.

T Test

A t-test was used to compare the mean scores of exactly two groups (Kohima and Wokha districts) on their perceptions of socio-economic conditions. It determines if the observed difference between the two districts' average scores is statistically significant or just due to random chance. T-test was applied to test the 1st Hypothesis "There is no significant impact of agricultural credit on socio economic conditions of farmers in Kohima and Wokha districts. It tested whether the average (mean) scores for each socio-economic factor (like "increase in income" or "improve children's education") were significantly different between these two specific groups.

Chi-square test

Chi-square was used to test for a significant association between categorical borrower traits (like age, education, farming type) and how they used credit. In order to achieve the hypothesis two and three Chi square test was applied.

Factor analysis

Factor analysis was used to simplify and summarize the 18 specific challenges into a smaller set of five core, underlying problem groups (factors). This identified the main themes like "Debt Repayment" or "Credit Access" that were driving the farmers' challenges, making the complex data easier to understand and analyse.

1.10. Chapterisation:

Chapter 1: Introduction

Chapter one shows an overview introduction of Agriculture in India and need of agriculture credit. This chapter also include Review of literature, Statement of the problem, Significance of the study, Objectives of the study, Hypotheses, Research methodology, Statistical framework, and chapter classification.

Chapter 2: Agricultural credit in Nagaland: An overview

This chapter fulfils the first objective of the study by providing a comprehensive overview of agricultural credit in Nagaland. It examines the structure of land holdings and ownership patterns, the prevalent methods and operational steps of farming, and the significance of horticulture and plantation crops. Furthermore, it analyses the state's agricultural land use and the broader framework of agricultural finance. This includes a detailed assessment of crop loans, the reach of banking institutions, and the performance of Kisan Credit Card (KCC) across the state.

Chapter 3: Agricultural credit and socio- economic development of farmers in Kohima and Wokha districts

The focus of Chapter 3 is to evaluate the socio-economic development of farmers in the Kohima and Wokha districts, thereby addressing the second objective of the study. This analysis is grounded in a comprehensive demographic profile of the 420 respondents, which includes variables like age, gender, education, marital status, occupation, land ownership, and agricultural practices. The chapter subsequently aim to achieve first hypothesis using t-test.

Chapter 4: Utilisation pattern and repayment of Agricultural credit in Kohima and Wokha districts

The present chapter investigates the utilization patterns and repayment behaviour of agricultural credit among farmers and the factors which affect the farmers choice of credit sources in the districts of Kohima and Wokha, Nagaland. The analysis, corresponding to Objectives 3 and 4, seeks to understand the allocation of borrowed funds and the determinants of timely repayment, thereby testing the propositions set forth in Hypotheses 2 and 3 using ANOVA and chi-square.

Chapter 5: Challenges and Prospects of farmers in Kohima and Wokha districts

This chapter provides an analysis of challenges and prospects of famers in Kohima and Wokha districts. The chapter addresses the last objective i.e., “To examine the challenges faced by the farmers in Nagaland. The stated objective were achieved through statistical analysis like factor analysis and ANOVA. Finally, the chapter

concludes by presenting the farmers' own ranked recommendations for solutions, highlighting that simplifying credit procedures.

Chapter 6: Summary and Conclusion

This chapter aims to present the conclusion and subsequently draw suggestions and recommendations based on the findings, analysis, and results.

1.11. Concluding remark

These chapter sketches background of the study and describe formal and informal rural credit system in agricultural sector. It highlights the need for a more particular understanding of agricultural credit systems, particularly in addressing exclusion, leveraging technology, and adapting to socio-economic and environmental challenges. Bridging these gaps could inform policies that enhance financial inclusion, sustainability, and flexibility for farmers.

Chapter 2

Agricultural credit in Nagaland: An overview

2.1. Introduction

Nagaland, the 16th state of Indian union has a geographical area about 16,579 sq. km out of which 7225 sq.km (43.37%) falls under cultivable area (Kikhi, 2021). The state of Nagaland shares its boundary to the west by Assam, to the east by Myanmar (Burma), to the north by Arunachal Pradesh and a portion of Assam, and to the south by Manipur. On December 1st, 1963, it was formally established as the 16th state of the Indian union and the state comprises of 16 administrative districts. There are seventeen major tribes in the state, along with numerous smaller tribes, when it comes to traditions, dialect, and attire, each tribe is unique from the others (Nagaland Government, 2025)

Nagaland is renowned for its colourful festivals, which highlight the rich cultural legacy of the state. Every tribe in the state celebrates their own festivals with a pageantry of colour, music, and dance, making the entire year filled with festivities. These celebrations have roots in historical periods before the arrival of Christianity (M, 2020). Since agriculture is the backbone of Naga society, it is the theme of most of these celebrations. The state's economy, culture, and identity have all been significantly shaped by agriculture, from prehistoric shifting cultivation to contemporary sustainable methods.

2.2. Agriculture in Nagaland: Brief overview

With total population of two million, where majority 73% of the people in Nagaland are dependent on Agriculture (V, 2009). It is presiding occupation in the state both in employment and income source. The state economy mainly depends on the agricultural activity.

The present Agricultural status in Nagaland is organic by default, as the state is hilly by nature, mechanization is not feasible unlike the modern mechanized farming system in plain area of the country (RK Yadav, 2004). Efforts are being given to produce different varieties of crops. Depending on the different types of farming system practice in the state, and the diverse farming systems provide families with various sources of income from their produce.

Historically, people in Nagaland practice shifting agriculture. This meant cutting down trees and other plants in the forest and burning them to make the soil richer. As new crops like cotton, millet, and maize were introduced, agricultural practices have changed over a period. The creation of simple irrigation systems during the Middle Ages contributed to the expansion of agricultural potential. (Hindi, 1995)

The overall climate of locations within Nagaland mainly depends upon their altitude. The locations situated at elevations up to 1,200 meters, the climate is hot to warm sub-tropical. On the other hand, in areas with elevations of 1,200 m and above, the climate is warm sub-temperate. As per data furnished in the Nagaland Statistical Handbook (2021), the monthly mean temperatures ranged between 18°C-30°C in the hottest month and 10°C-19°C in the coldest month. The state has comparatively lower rainfall than the other NE states, and its average annual rainfall is 1,664.6 mm.

2.3. Methods of farming:

Agriculture is related to Land-Man relationship. The growth of agricultural products and developments depends on various devices, i.e., type of land, control or holding of land, irrigation, communication, technical and mechanical development, seeds, fertilizers, rainfall, climate, customary law, and ownership of land. "Agriculture is accepted as the major and basic occupation of the people" (k.Alam, 1993). The basic occupation of the people in the state is agriculture, just as in all other region. Mostly, people in the village depend on agriculture for their livelihood. Every family or individual in the village has sufficient plot of land for cultivation.

Generally, there are two methods of cultivations in Nagaland, they are jhum or shifting cultivation and the terrace cultivation. Shifting cultivation is one of the ancient systems of agriculture. “...the method is regarded as the first step in the transition of humanity from the stage of food gathering and hunting to the stage of food production.” (Subha, 2012) . Under the system of shifting cultivation, a fertile land on the hill slopes is cultivated by clearing the jungles.

Under jhum cultivation, first an area is identified and selected, followed by the clearing of an area. When the felled jungle dries up, the field is set to fire. The burning of the field enriches the fertility of the soil. The unburnt logs and pieces of woods are gathered and burned again. After preparing the beds of the soil, paddy is sown into it. In addition to paddy, various types of vegetables such as yam, tomato, gourd, soya beans, chilly, cucumber, millet, maize, potato, brinjal, etc. are sown in the same field. Some are sown ahead of sowing paddy while others are done together with paddy or after it.

Table no:2.3.1. Operational steps and time under shifting cultivation

Sl. No.	Steps of operation	Time of operation
1	Selection of Jhum site	August-September
2	Clearing of the site	October-November
3	Drying and burning	January-February
4	Construction of field hut	After the burning process
5	Re-setting of fire	February
6	Preparation of plot for sowing	February
7	Seeding	February-March
8	Weeding	March-April
9	Harvesting	June onwards
10	Carrying and storing	During harvest

Source: Department of Horticulture, Nagaland

Table no:2.3.2: List of crops produce and time of sowing and harvest in shifting cultivation

Sl.no.	Crops	Time of sowing	Harvest period
1	Maize	February-March	July-August
2	Beans	February-March	June-August
3	Yam	January-February	October-November
4	Naga onion	January-February	July-August
5	Millet	February-March	July-August
6	Brinjal	March-April	July-August
7	Ginger	January-February	October-November
8	Chilly	February-March	July-August
9	Pumpkin	January-February	August-September
10	Potato	February-March	July-August
11	Tomato	February-March	June-July
12	Bitter gourd	March-April	July-August
13	Cabbage	June-July	November-December
14	Soya bean	June-July	November
15	Cow pea	February-March	September-October
16	Sweet potato	February-March	October-November
17	Groundnut	March-April	November-December
18	Paddy rice	February-March	September-October

Source: Department of Horticulture, Nagaland

Another method of cultivation is the terrace cultivation. Terrace method of cultivation is practice in the lower hill slopes and the valleys where there is enough flowing water and where there is maximum rainfall in those area. "...terrace fields are cultivated in the lower hill slopes and valleys, which has good access to water sources near about." (Joseph, 1997). Irrigation canals are dug to link up the field with the water sources. In this method of cultivation, the lower hill slopes, and valleys where water can be channelled into area is selected. The selected plot is dug and prepared into flat levelled stretches alone the hill slopes or by the side of the river valleys. Tools such as spade, hoe pickaxe, digging bar, etc. are used for digging the plot. The side of each terraced plots are raised to retain water in them. An irrigation canal is then dug from the water source, which may be a river, stream, etc. and linked to the plot.

Each year, the terrace field are cleared, and the seedbeds are dug up preparing it for transplantations of seeds. When the monsoon season start, water is brought to the field

and the whole field is dug again. This time, the raised edges of the terrace beds are carefully smoothened with mud and water passages cut at the sides, so that the overflowing water is allowed to pass to the other beds. When the beds are ready, seedling are brought from the seeds beds and planted in the terraced fields. Weeding of unwanted plants is done whenever necessary.

Water is retained in the terrace plots for the whole time till the crops ripen. Once the field is ready for harvest, water is diverted from the canal and the field dried up. Harvest is generally done in the month of October to November. In the terrace field, no other crops are cultivated except paddy. However different varieties of fruits such as orange, guava, plums, pineapple, banana, mango, etc. are planted at the periphery, in around the paddy field.

Table no:2.3.3 Operational steps and time under terrace cultivation

Sl.no.	Steps of operation	Time of operation
1	Cutting of paddy grass in dry terrace	December-January
2	Digging of dry terrace	December-February
3	Clearing of water source	March-April, before rainy season
4	Paddling of field	May-August
5	Transplantation of rice	May-August
6	Weeding of terrace field	July-September
7	Harvest and carrying	October-November
Preparation of 'soli'		
1	Selection of the site	September-October
2	Clearing of the site	October-November
3	Burning and digging	January-February
4	Sowing of the seed	March-April

Source: Department of Horticulture, Nagaland

Under the process of shifting and terrace cultivation, the work is done either by cultivator or agricultural labourer. A person is considered as cultivator if he or she is engaged either as employer, single worker, or family worker in cultivation. The cultivator might be land owned or held from private persons or institutions for payment in money, kind or share of crop. A person who worked in another person's land for

wages in cash, kind or share was regarded as an agricultural labourer(NEC YEARBOOK 2025)

Table no: 2.3.4 classification of Agricultural workers in Nagaland as per 2011 census

Category	Cultivators	Agricultural labourers	Male cultivator	Male cultivator labourer	Female cultivator	Female cultivator labourer
Total	537702	62962	259454	31857	278248	31105
Rural	516783	55677	250559	28133	266224	27544
Urban	20919	7285	8895	3724	12024	3561
Total	1075404	125924	518908	63714	556496	62210

Source: The NEC yearbook 2025

Table 2.3.4 present the classification of agricultural workers in Nagaland according to the category of farmers as per 2011 census, the data shows about total agricultural workforce in Nagaland. Over 90% of the farmers are cultivators rather than agricultural labourer and the work is based in rural areas. In terms of gender distribution with total number of cultivators are relatively balanced with 259454 male and 278248 female and it has been observed that women domination is slightly more. For agricultural labourer men are reported more than women. Indicating that women are often recorded as the primary cultivators on family-owned land while men are engaged more in wage labourer.

2.4. Land holding and ownership in Nagaland:

The state of Nagaland in NER is abandoned with agrobiodiversity and hence, the people of these state enjoyed their authority over the land and its resources since time immortal. Out of 7,22,464 ha of total cultivated area only 3000 ha of land is under certified organic farming benefitting 3,575 farmers growing crops like maize, soyabean, French-bean, ginger, large cardamon, passion fruits and chilli (Anonymous, 2013).

Land is considered as the most important property in the state. The wealth of the family is also measured or looked up from the plot of land the family own in the village. The land ownership system in the state is strictly follows customary law and practices transmitted from one generation to another. One cannot just sale or transfer or buy the land. To buy the land, one must fulfil customary sanction No land or part of land can be sold, mortgaged, leased, bartered, and gifted or transferred to outsiders. In case a person would like to sell of his land, he has to consult with the nearest family members and given the chance to buy it. If no suitable buyers are available, then his clan or relatives are given chance. If no buyer is found, then it can be sold off to a prospective buyer of other clan. Generally, land is not sold to a prospective buyer of another villager (Horam, 2018).

In the entire Naga society, only males can inherit the landed ancestral properties such as homestead, terraced paddy fields, jhum areas, and woodland. In case of a man who has no son, the ancestral properties both moveable and immoveable will go to the nearest relatives. According to Naga custom, immovable properties like land, buildings etc., which are inherited from the ancestral, cannot be given to the daughter but any goods, which are not inherited from the ancestral, can be shared and given to the daughters also.

2.4.1 Categories of land holding

The area of land that a person, family, or organization owns or cultivates is referred to as their land holdings. India's inheritance laws, agricultural techniques, and socioeconomic circumstances all have a significant impact on the size and distribution of holdings (Kumbhar, 2024). According to Agriculture census of India, the operational holdings of land are categorised into five sizes as shown in table 2.4.2.1. (categories of farmers , 2019).

Table no:2.4.1.1. categories of land holding

Type of land Holding	Area Operated
Marginal	Less than 1.0 hectare
Small	1.0 hectare – 2.0 hectares
Semi-medium	2.0 hectare – 4.0 hectares
Medium	4.0 hectare – 10.0 hectares
Large	Above 10 hectares

Source: The NEC yearbook 2025

Table no:2.4.1.2. Number, Area, and Average Size of Operational Land Holdings

Type of land holding	Number of operational land holdings	Area of operational holdings (in hectare)	Average size of holding
Marginal	8211	4608.78	0.57
Small	29790	36803.15	1.24
Semi-medium	63332	169447.90	2.68
Medium	73769	431165.50	5.84
Large	21430	314413.90	14.67

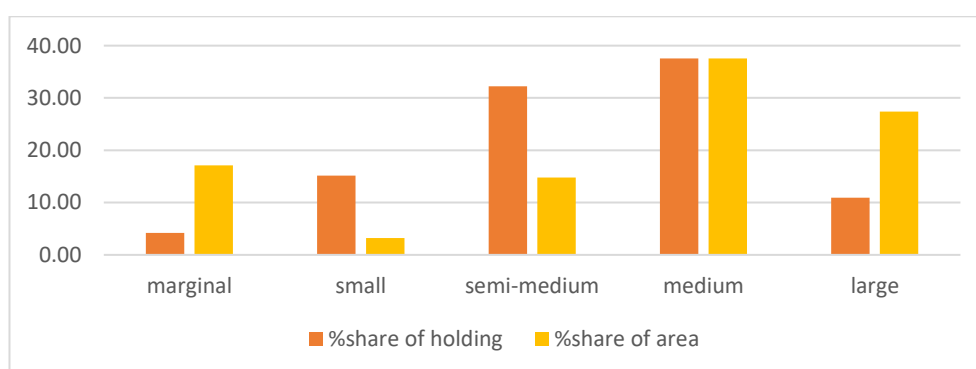
Source: The NEC yearbook 2025

Table 2.4.2.2 provides an overview of operational land holdings classified by type, showing the number of holdings, total area, and average size per category in Nagaland. Among all the category of land holding the medium holding category is the most common with 73,769 holdings. Also, these medium holdings own the biggest piece of land, which is 4,31,165 hectares. This means that medium-sized farms are the most important part of this agricultural system in terms of numbers and land area.

Nonetheless, the impact of larger-scale operations is still significant. Although there are the fewest number of large holdings (21,430), they possess the second-largest overall area, 314,413.90 hectares. Therefore, the average holding size reaches its maximum of 14.67 hectares, suggesting a notable concentration of land at the top. The marginal, small, and semi-medium groups, on the other hand, are highly large when combined, yet they only occupy a significantly smaller portion of the land. For instance, there is significant land fragmentation at the bottom of the 82,211 marginal holdings, which have an average size of just 0.57 hectares. Despite being the largest

category of smallholders, they own less land overall than the medium and large groups combined. According to Md Aslam (Md Aslam, 2025) primary reason for huge number in small scale farmers is the historical practice of land being distributed among heirs over generation. As a farm is passed down, it is often subdivided among the inheritance transforming what was once a medium holding into several marginal or small plots. This process of fragmentation leads to several increasingly smaller holdings (census, 2020).

Figure 2.4.1.1 Comparison chart for % share of land holding and %share of area



From the above figure no 2.4.2.1 it illustrates the comparison between percentage share of land holdings and percentage share of area. The chart reveals an inequality distribution of land. The categories of "marginal" and "small" holdings dominate in terms of their number, representing the largest shares of total holdings. However, their portion of the total land area is the smallest. This indicates that a vast majority of farmers own or operate on very small plots of land. "large" holdings constitute a very small proportion of the total number of holdings. Yet, they account for the largest share of the total area even larger than the "medium" category. This signifies that a small minority of large landowners' control most of the agricultural land.

2.5. Major Crops: Area, Production, and yield

The Department of Agriculture and Farmers' Welfare of the Ministry of Agriculture and Farmers' Welfare, Government of India classifies the following as the Major Crops i.e., Rice, Wheat, Nutri & Coarse Cereals, Pulses, Food-grains, Oilseeds, Sugarcane, Cotton, and Jute & Mesta are cultivated in India (NEC, 2025). The following table give the area, production, and yield (APY) data for the state of Nagaland. The period covered by the tables extends from AY 2016-17 to AY 2023-24.

Table no 2.5.1: Trend Analysis: Area Under Cultivation for Major Crops in Nagaland (2016-17 to 2023-24)

Year	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
Major crops	Area'000hectare,							
Rice	100	102.56 41	103.77 36	104.98 31	105.85 39	59.071 12	102.12 87	101.79
Wheat	100	100.00	100.00	100.00	100.00	41.18	41.18	41.18
Nutri & coarse cereals	100	100.74	98.76	98.89	98.89	60.02	70.42	77.48
Pulses	100	18.73	17.58	18.57	18.46	21.21	15.59	15.45
Oilseeds	100	100.30 44	100.76 1	102.58 75	101.21 77	29.375 95	55.251 14	55.859 97
Sugarcane	100	100.00	100.00	102.27	102.27	84.09	56.82	59.09
Jute & Mesta	100	100.00	100.00	100.00	88.00	2.00	88.00	94.00

Source: unified portal for agricultural statistics

Based on Table 2.5.1 Using 2016-17 as the base year 100, the indexed data provides the following crop-by-crop assessment of the agricultural area trends:

Data on rice reveals a fluctuating pattern. In 2021-2022, following a period of steady expansion, the cultivated area experienced a severe but brief drop. But it showed a spectacular and quick recovery, returning nearly immediately to its initial level the next year and stabilizing there. This suggests that rice production was only temporarily shocked and that the crop is still a consistent and important aspect of the agricultural landscape. There is a rapid and persistent drop in the price of wheat. After four years

of completely consistent agriculture, it fell apart in 2021-22, with its area dropping dramatically. Wheat has not recovered at all since then, which is quite important. It is still less than half of its original baseline area.

Nutri and Coarse Cereals reveal a pattern of a sudden shock followed by a slow, but not full, recovery. After staying stable for a while, their cultivated area dropped sharply in 2021-22. These crops, on the other hand, have shown a steady rise every year since then, unlike wheat. Even while the recovery trend is good, the area under cultivation has not yet restored to its original level, which means that the sector is still dealing with the repercussions of the initial collapse but is clearly on recovery.

The data for Pulses shows that there is a long-lasting and crisis. After the base year, the area that was farmed fell sharply and quickly, dropping to a small fraction of what it had been before. It has not gotten better like other crops have, and it has been low for seven years straight. This shows that there is a long-term, deep-seated problem that has made growing pulses unprofitable or unappealing to farmers, which has led to a long-term and serious lack of production area. Food grain production in the state has dropped due to drought like environment (Morung, 2023). In 2021-22, oilseeds dropped out in the worst way, and the crops have only partially recovered since then. The area has stayed at little over half of the baseline, which means it has had a long-term detrimental effect. Sugarcane is also on the decline, but in a way that is concerning. After an initial reduction, its area kept falling the next year and has only made a little comeback, which suggests a longer-term downward shift. In contrast, Jute & Mesta is very unstable but quite strong. After a near-total collapse in the same problematic year, it staged a complete and strong rebound, ultimately exceeding its original cultivation area.

Table no 2.5.2: Trend Analysis: Production of Major Crops in Nagaland (2016-17 to 2023-24)

Year	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
Major crops	production in '000MT							
Rice	100	100	100	100	100	100	100	100
Wheat	1.84	1.80	1.77	1.73	0.93	1.59	0.70	0.70
Nutri & coarse cereals	44.40	42.99	41.72	41.04	40.66	46.58	27.85	29.49
Pulses	12.65	13.19	13.01	12.88	12.82	19.97	10.44	10.57
Food grain	158.90	157.98	156.46	155.63	155.20	168.15	138.97	140.73
Oilseeds	20.46	19.79	19.48	19.49	19.11	13.14	10.60	10.92
Sugarcane	57.14	55.15	54.16	53.29	55.25	69.41	29.34	31.19
Jute & Mesta	2.35	12.67	12.48	12.28	10.37	0.60	11.22	11.63

Source: unified portal for agricultural statistics

Based on the data provided in table 2.5.2. it shows that Rice output stayed the same the whole time, with no changes from the base year, forming the agricultural backbone as rice is the stable food occupying more than 47% of the total crop area (Deka, 2022) Wheat output was very low and kept going down, with a big decrease after 2019-20 that it never got back up from.

Nutri and Coarse Cereals production slowly went down for four years, then shot up in 2021-22 before crashing to its lowest levels. Pulses were stable at first, then in 2021-22 there was a remarkable production spike, followed by an even bigger drop to their lowest recorded levels.

The production of food grains followed the same path as the rest of the crops. it was stable at first but started to go down slightly. Then, in 2021-22, it reached a high and then dropped significantly. The price of oilseeds kept going down for the whole time, and at the end, production had almost decreased.

For sugarcane it dropped at first, then shot up in 2021-22, and then fell to almost half of its original production. Jute and Mesta had the biggest ups and downs. They went up five times after the base year, then fell to almost zero in 2021-22 and then came back up a lot.

The years 2021 and 2022 seem strange since a lot of crops (Nutri Cereals, Pulses, Sugarcane) had production peaks that were out of the ordinary. The Government of India's centrally financed flagship programs and state plan interventions have significantly increased agricultural crop productivity and production (express, 2024) In 2022-23, on the other hand, production fell across most crops. 2022-2023 was the worst, with output falling to its lowest point. Nagaland has reported a massive Fall Armyworm (FAW) infestation, affecting 231 villages over 2848 hectares (Nurumi, 2021)

Table no 2.5.3: Trend Analysis: Yield of Major Crops in Nagaland (2016-17 to 2023-24)

Year	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
Major crops	yield in kg per hectare							
Rice	100	101.22 77	102.08 72	102.82 38	103.06 94	75.752	107.48 93	107.61 2
Wheat	100	99.78	99.46	99.51	99.67	91.74	99.89	100.00
Nutri & coarse cereals	100	99.84	100.81	100.86	101.08	78.38	97.73	94.00
Pulses	100	106.43	112.95	106.61	107.07	106.89	107.81	110.28
Oilseeds	100	100	100	100	100.57 1	97.619	102.76 2	104.76 2
Sugarcane	100	99.96	99.96	99.96	104.58	65.92	100.10	100.10
Jute & Mesta	100	553.63	99.81	99.81	97.37	131.38	82.59	98.69

Source: unified portal for agricultural statistics

The yield of rice improved at first, but then dropped sharply in 2021-22. It then bounced back rapidly to reach its best levels in the last two years. Wheat yield stayed very steady for most of the time, with only a little drop in 2021-22 before going back to normal levels.

The yield of Nutri & Coarse Cereals stayed rather consistent in the first few years, dropped a lot in 2021-22, and has been going back up since then, but it has not reached its old levels yet. Pulses had the most persistent positive trend, with big increases in yield from the start and higher production levels during the whole time.

For four years, the yield of oilseeds stayed the same. In the last three years, it has slowly gotten better. The output of sugarcane was constant at first, but it fell sharply

in 2021-22 and then fully recovered to its prior levels.

Jute and Mesta were quite unstable. In 2017-18, there was an unusual increase in yields, followed by a return to normal, and then another surge in 2021-22, followed by a return to normal.

The data shows that 2021-22 was a very hard year for most crops. Rice, Nutri Cereals, and Sugarcane all saw big drops in their yields, but Pulses kept growing at a steady rate and Jute showed unexpected improvement during this time.

2.6. Net State Value Added (NSVA) from crops for financial year 2016-17 to 2022-23

The economy activities included in agricultural crops are (i) growing of field crops, fruits, nuts, seeds, and vegetables. (ii) Management of tea, coffee, and rubber plantations. (iii) Agricultural and horticultural services on a fee or on contract basis such as harvesting, baling, and thrashing, preparation of tobacco for marketing, pest control, spraying, picking packing. and (iv) Ancillary activities such as Gur making, transportation of own product to primary market (The NEC Yearbook, 2025)

Table no: 2.6.1 Net State Value Added (NSVA) from crops at current price in Northeast states, India

Amount in lakhs								
state	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	CAGR
Arunachal Pradesh	274703	294708	300113	319568	339885	367707	378351	5%
Assam	2967137	3112293	3323795	3784860	4500050	4548133	5483667	11%
Manipur	194498	418727	475386	508327	554631	610685	545625	19%
Meghalaya	194498	418727	475386	508327	554631	610685	545625	19%
Mizoram	139764	159623	168041	173464	183698	174499	175315	4%
Nagaland	360220	400530	380830	376920	385517	221041	343582	-1%
Sikkim	137539	178394	211691	233508	234837	247741	260126	11%
Tripura	720137	725687	911299	1014006	1157026	1398809	1644960	15%

Source: Agricultural statistical at glance

The Net State Value Added (NSVA) of the Northeast India from crops, emphasizing variations in growth between states were shown in table no 2.6.1. Assam's dominance in regional crop output is reflected in its largest contribution, which has significant growth over a period. Rapid agricultural growth indicates the fastest expansion in Tripura with CAGR of 15%, which is followed by Manipur and Meghalaya. Likewise, Sikkim makes consistent improvement, although Mizoram makes very small advances. Arunachal Pradesh has a moderate 5% growth rate with gradual increasing trend. Nagaland, on the other hand, has a negative CAGR (-1%), indicating a drop in crop value with the volatility in the trend. The negative CAGR in Nagaland's crop value reflects the economic manifestation of the ecological and social constraints (Pratayaya Jagannath, 2025). Declining crop productivity due to traditional crop choices, traditional shifting cultivation, and drawback in modernization of agriculture inputs. Assam, Tripura, and Manipur are driving the region's strong agricultural growth, which is unequal throughout the state.

2.7. Role of credit in Agriculture

Credit plays a pivotal role in increasing agricultural production as well as improving the standard of living in the rural households. Credit refers to the "ability to command the other's capital in return for a promise to pay at some specified time in the future" (Archana Singh, 2018). Thus, it is a kind of resource, which provides the opportunity to use additional inputs and capital items especially to the farmers who intend to bring in improvement with their lot. Capital-intensive nature of modern agricultural technology or equipment's and inadequate savings of the farmers have encouraged them to go for external finances from different institutional and non-institutional sources.

2.8. History of Agricultural finance in Nagaland.

The history of agricultural financing in Nagaland is closely linked to the state's unique social and political development, its traditional ways of doing things. Before becoming a state in 1963, the idea of organized agricultural finance was almost non-existent. The economy was mostly focused on subsistence farming, which used "Jhum" or shifting agriculture and did not need much cash (Longchar, 2017). A strong system of

community and clan support met financial needs. Reciprocal labor exchange was a way for people to share resources and work, which worked like an informal, non-monetary credit system (T Thong, 2012). Because tribes or clans owned land together and not individually, there was no collateral for secured loans. This would eventually become a major barrier to formal financing.

After statehood, institutions started to get involved in agricultural finance. The Cooperative Movement started, which led to the creation of Primary Agricultural Credit Societies (PACS) to provide out short-term loans for crops. At the same time, the Lead Bank Scheme of 1969 made the United Bank of India the lead bank for Nagaland. This started a planned effort to map credit possibilities and grow the banking network (Rajest & Regin, 2024). But these early attempts had a lot of problems to deal with. The rugged terrain, the fact that most people did not have bank accounts, and, most importantly, the community land tenure system that made it impossible to utilize land as collateral all made it very hard for these formal financial institutions to reach and help people (BC Barah, 2007). Giving commercial banks Priority Sector Lending regulations did help get more credit flowing, but it did not always satisfy the demands of Naga farmers because their farming methods didn't match with how banks usually work.

The creation of the National Bank for Agriculture and Rural Development (NABARD) in 1982 and the promotion of new lending methods were major turning points. The Self-Help Group (SHG) Bank Linkage Programme from NABARD was a game-changer (Nirmala & Social, 2014). This concept effectively got around the main problem with Nagaland's land tenure system by employing group guarantee as social collateral instead of physical land collateral. It helped thousands of small and marginal farmers, especially women, get loans for farming and other related businesses including raising pigs, chickens, and plants. Other tools, like the Kisan loans Card (KCC) and the Rural Infrastructure Development Fund (RIDF), were also made available. The KCC was meant to give farmers short-term loans that they could use in a flexible way, while the RIDF was meant to create roads and irrigation systems that were needed in rural areas (Kumar & Sachetas, 2025)

Today, Nagaland's agricultural finance is a mix of government subsidies that are still available, bank loans, and new digital projects. State government missions that focus on horticulture, bamboo, and organic farming are generally related to credit-linked programs. But it is still changing because of ongoing problems. The system of common land ownership is still the biggest structural problem for large-scale agricultural investment and lending (Nakhro, 2010). The state also has a low Credit-Deposit Ratio (CDR), which means that a lot of the deposits it collects are not lent out in its economy. This is usually because people think there are not enough bankable projects or strong links between the market and the harvest (Reserve Bank of India, 2019). So, the history of agricultural finance in Nagaland is about how formal systems were slowly added to a traditional economy. Its eventual success will depend on new models that will work in Nagaland's particular social and agricultural setting.

2.9. Institutional credit and the role of investment credit in capital formation, Nagaland

There are two types of institutional credit available for agriculture: investment credit (medium and long-term loans) for capital formation and short-term loans for agricultural cultivation and commercialization. The government's agricultural investment is highlighted in Table 2.9.1.

Table no: 2.9.1 Government investment in Agriculture, Nagaland

Sl No.	Particulars	Amount in lakhs (2023-24)
1	Total Expenditure	23085.66
2	Revenue + Capital expenditure (Agri & allied sectors and irrigation)	1202.68
3	Revenue + Capital expenditure in Irrigation and Flood control	120.55
4	Share (%) of Agri and allied sectors and irrigation in total expenditure	5.20%
5	Share (%) of Irrigation and Flood control in total expenditure	0.52%

Source: state budget 2023-24

Higher government spending on infrastructure and other capital investments will create a crowding-in effect on private investments. Hence, public investment in agriculture needs to be increased to encourage private investments. The percentage

share of expenditure on agriculture and allied activities including irrigation in the total State Budget for 2023-24 is only 5.20%. Therefore, there is an urgent need for increasing government spending on capital investments ‘in’ and ‘for’ agriculture in the state to create the requisite environment for attracting private investments in the sector for the state to witness productive growth and development in the agriculture sector. NABARD also provides short term refinance to Rural Financial Institution (RFIs) including Cooperative banks and RRBs at concessional rate of Interest of 4.5% for lending to farmers for crop production and marketing activities. Most short-term credit requirements are for input costs or operating costs, with loan amounts up to ₹1.6 lakhs.

The short-term (ST) refinance is extended by NABARD for the following purpose.

- Seasonal Agriculture Operations (SAO) to RRBs and Cooperatives Banks
- Short Term (ST) refinance to RRBs and Public sector banks (PSBs) for directly financing to Primary Agriculture Cooperative Societies (PACS) for SAO
- Additional Short term (ST) refinance to state cooperative banks and RRBs for financing SAO

To facilitate assets creation for increasing production capacity leading to sustained agriculture production and increased income to farmers, NABARD provide refinance to banks for medium- and long-term loan for investment in assets for various agricultural and allied activities

Table no: 2.9.2. Refinance for ST-SAO and LT-SAO extended during the last 6 years

year	Refinance for ST-SAO		Refinance for LT-SAO	
	Amount (in lakh)	% Change	Amount (in lakh)	%Change
2017-18	500	-	3033	-
2018-19	500	0%	1800	-41%
2019-20	850	70%	3012	67%
2020-21	1200	41%	2045	-32%
2021-22	778.1	-35%	3781.9	85%
2022-23	800	3%	3000	-21%

Source: NABARD in Nagaland 2021-22, State focus paper 2024-25

Both short-term (ST-SAO) and long-term (LT-SAO) loan refinancing trends are extremely erratic, according to the statistics. While LT-SAO refinance had significant fluctuations and ended the period at the original level, ST-SAO amounts generally climbed from their starting position, although with a notable decline in 2021-2022. An inverse link is frequently evident, when a rise in one type of refinance is accompanied by a fall in the other, indicating changing priorities or market conditions. The frequent and significant year-over-year percentage variations for both categories point to a lack of stability.

2.10. Outreach of Banking Sector

To ensure "Financial Inclusion" and promote "Development through Credit," effective, efficient, and comprehensive financial services are essential. The Indian banking sector, which includes rural cooperatives, has made significant contributions to the nation's long-term economic expansion and food security. The banking system aids in the production of new capital, which promotes the development of all economic sectors, including trade, business, and agriculture as of December 31st 2024, with 22 commercial banks (12 public sector and 10 private sector) as well as Northeast Small Finance Bank, Nagaland Rural Bank, and Nagaland State Cooperative Bank Ltd. made up the state's banking network. In the network of 245 branches 84 branches are located in Rural area, 117 semi urban and only 44 in Urban area provides banking services throughout the state (NABARD, 2025-26). With 72 branches, the State Bank of India is the Lead Bank in every district of the state except for Chumoukedima and the Convener of the State Level Bankers' Committee (SLBC). The regional business offices of SBI are situated in Mokokchung and Dimapur, districts. The remaining commercial banks' controlling offices are in Kolkata or Assam (Jorhat, Dibrugarh, and Guwahati). The headquarters of Nagaland Rural Bank are in Kohima, whereas the headquarters of Nagaland State Cooperative Bank Ltd. are located in Dimapur.

2.10.1 Number of Bank Branches in Nagaland

Table no: 2.10.1. District-wise Average Population Per Bank Office (APPBO) as on 31.12.2024

Sr.No	Name of District	No. of Bank Branches	Population	APPBO
1	Dimapur	60	378811	6313.52
2	Kiphire	3	74004	24668.00
3	Kohima	55	267988	4872.51
4	Longleng	4	50484	12621.00
5	Mokokchung	26	194622	7485.46
6	Mon	15	250260	16684.00
7	Peren	6	95219	15869.83
8	Phek	9	163418	18157.56
9	Tuensang	7	196596	28085.14
10	Wokha	14	166343	11881.64
11	Zunheboto	12	140757	11729.75
12	Noklak	2	Newly created district	
13	Chumoukedima	25		
14	Niuland	2		
15	Shamator	2		
16	Tseminyu	3		
Total		245	1978502	158368.41

Source: SLBC agenda paper

Table no. 2.10.1 analyses banking penetration across Nagaland districts using the matric APPBO as on 31st December 2024. A lower APPBO indicates better banking access to the individuals, as it means more number of branches were available for customers. Dimapur, Kohima and Mokokchung districts indicates the best served

districts with lowest APPBO. Tuensang, Longleng, Mon and Kiphire has the poorest access while districts like Peren, Phek, Wokha and Zunheboto has mid-range. Newley created districts lack population data so APPBO cannot be calculated. The table shows that there is a massive gap in banking access across between the urban centres and the rural area specially in eastern districts.

Table no: 2.10.2. District wise Branch Network Report of Nagaland as on date 31-12-2024

District name	Rural branch	Semi-urban	Urban	Total
Chumoukedima	12	13	0	25
Dimapur	4	13	43	60
Kiphire	1	2	0	3
Kohima	9	46	0	55
Longleng	3	1	0	4
Mokokchung	14	11	1	26
Mon	9	6	0	15
Niuland	2	0	0	2
Noklak	1	1	0	2
Peren	5	1	0	6
Phek	5	4	0	9
Shamator	2	0	0	2
Tseminyu	2	1	0	3
Tuensang	3	4	0	7
Wokha	6	8	0	14
Zunheboto	6	6	0	12
Total	84	117	44	245

Source: SLBC agenda paper

The branch network statistics for Nagaland indicates that banking services are not distributed evenly throughout the state. The districts of Kohima and Dimapur have most of the branches with total of 60 and 55, respectively far more than any other area, which is due to Dimapur is a commercial centre and Kohima is the state Capital. In addition to that, more urban branches in Dimapur than in any other district. However, a large number of districts are critically underserved. Tseminyu and Kiphire have three branches, whereas Shamator, Noklak, and Niuland each have two. These smaller districts do not have any urban banking presence at all they only have rural and semi-

urban branches. Financial infrastructure is heavily concentrated in two districts, according to the statistics, leaving the remainder of the state with little access

Table no: 2.10.3. Bank wise Branch Network Report of Nagaland as on date 31-12-2024

Bank Name	Branch Rural	Branch Semi Urban	Branch Urban	Total Branch
BOB	5	6	3	14
BOI	0	1	1	2
BOM	0	1	1	2
CAN	1	5	2	8
CBI	2	4	1	7
IND	3	3	1	7
IOB	1	1	0	2
PNB	0	2	3	5
PSB	0	1	2	3
SBI	43	22	7	72
UCO	2	4	1	7
UNI	0	1	1	2
Total public	57	51	23	131
AXIS	0	11	3	14
BAND	3	6	3	12
FED	0	2	1	3
HDFC	0	9	3	12
ICICI	5	6	2	13
IDBI	1	5	1	7
IDFC	0	1	2	3
INDUS	0	1	2	3
SIB	0	0	1	1
YES	1	1	1	3
Private total	10	42	19	71
ESAF	0	1	1	2
NESFB	1	3	1	5
RRB	8	4	0	12
NSCB	8	16	0	24
Total	84	117	44	245

Source: SLBC agenda paper

The data indicates that public sector banks, which own a sizable majority of all branches, dominate the banking industry in Nagaland. Public sector banks dominate the state with 131 branches, led by State Bank of India (SBI), which alone operates 72 branches out of which 43 in rural region, 22 in semi urban and 7 in urban regions.

Private sector banks, with 71 branches shows a distinct strategic focus on semi-urban with 42 branches and urban areas with 19 branches, a minimal of 10 branches in rural branches. The minimal rural branch footprint of private sector banks is a strategic outcome of their profit-maximizing orientation, higher cost structures in rural areas, and their reliance on alternative channels to meet regulatory inclusion targets (Burgess et al., 2005).

Table no: 2.10.4. Number of ATM in each district of Nagaland as on 31.12.2024

District name	Rural branch	Semi-urban	Urban	Total
Chumoukedima	8	12	0	20
Dimapur	5	11	137	153
Kiphire	1	4	0	5
Kohima	6	93	0	99
Longleng	4	1	0	5
Mokokchung	9	27	0	36
Mon	4	8	0	12
Niuland	2	0	0	2
Noklak	1	1	0	2
Peren	5	1	0	6
Phek	5	4	0	9
Shamator	1	0	0	1
Tseminyu	2	1	0	3
Tuensang	1	6	0	7
Wokha	2	8	0	10
Zunheboto	3	8	0	11
Total	59	185	137	381

Source: SLBC agenda paper

According to the ATM data shown in table 2.10.4, Nagaland has very concentrated access to cash and financial services, which reflects the urban bias of the branch network. 252 of the 381 ATMs in the state are located in the districts of Dimapur and Kohima, which have a resounding lead. There are 153 ATMs in Dimapur alone, the great majority of them are found in cities. Kohima comes in second with 99, all of which are in semi-urban regions.

The remaining districts, meanwhile, are glaringly neglected. Niuland and Noklak each have two ATMs, although Shamator only has one. There are very few urban ATMs in

most regions, and there are very few in rural areas. Due to this arrangement, there is a notable difference in the convenience of financial services between the urban populations of only one or two districts and the rest of the state.

2.11. Trends in Growth and Achievement of Crop Loans and Agricultural Term Loans and Kisan credit card in Northeast India for financial year 2016-17 to 2023-24

Prior to the introduction of KCC scheme, the agricultural credit was given in terms of crop loan. Now the crop loans are given under the KCC scheme. From the table no.2.10.1 give below it highlight the per account loan size of crop loan in North-east India for financial year 2016-17 to 2023-24.

Table no: 2.11.1. per account loan size of crop loan in North-east India for FY 2016-17 to 2023-24

Amount in Crore								
State	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
Arunachal pradesh	0.007	0.597	0.344	0.591	0.007	0.604	2.247	0.045
Assam	0.004	0.390	6.904	0.388	0.051	0.723	0.783	0.009
Manipur	0.004	0.457	3.937	0.782	0.043	1.473	1.098	0.013
Meghalaya	0.008	0.742	0.364	0.525	0.042	0.460	0.938	0.008
Mizoram	0.004	0.445	4.911	0.797	0.004	0.717	0.742	0.009
Nagaland	0.003	0.267	0.556	0.330	0.004	0.424	0.552	0.006
Sikkim	0.021	1.159	0.995	1.088	0.008	0.700	2.546	0.017
Tripura	0.004	0.795	8.033	0.290	0.043	0.493	0.808	0.007

Source: Agricultural statistical at glance

From the table no. 2.11.1 it highlights the year wise analysis of per-account crop loan size in North-East India from 2016-17 to 2023-24. The table shows that during the financial year 2017-18 it showed a moderate growth, which was followed by an extraordinary spike in 2018-19 with states such as Tripura, Assam and Mizoram reporting usually high amounts. 2028-19 spike reflect not just an increase in credit volume, but also accelerating the substantial allied activity lending (RBI, 2018) 2019-

20 shows a moderate level. 2020-21 loan size collapsed nearly to zero. As this was driven by widespread lockdowns, interruption in banking operations and delays in Kisan Credit Card renewal (Michaud, 2022) A partial recovery occurred in 2021–22 and 2022–23, though volumes remained below pre-spike levels. The series concludes with an unprecedented and uniform drop in 2023–24, with all states reporting minimal values. Nagaland continuously had the smallest loan amounts per account during the study period and never exceeding over ₹0.55 crore. This is due to in Nagaland there is no official land record, such as a patta, that identifies the owner. Oral history, village council documents, and hereditary claims are frequently used as proof of ownership. In the event of a loan default, a bank must have a clear, legally defensible title that it may take and sell in action. This isn't feasible because Naga land titles are unclear, by allowing the government to grant the proprietor a valid land patta so they can get loans (times, 2025). The data across the Northeast reveal's large annual swings. Peaks were seen in most states in 2018-19 and 2022-23, with sharp drops in 2023-24.

Table no:2.11.2 Per account loan size of Term loan in North-east India India for the FY 2016-17 to 2023-24

Amount in crore								
State	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
Arunachal pradesh	0.027	4.067	1.743	0.696	0.015	6.115	2.112	0.216
Assam	0.007	0.803	1.573	1.819	0.013	0.492	1.691	0.019
Manipur	0.014	1.549	1.054	0.866	0.011	0.979	1.892	0.024
Meghalaya	0.010	1.066	4.959	6.182	0.008	1.002	0.262	0.011
Mizoram	0.011	1.406	0.320	1.001	0.011	1.355	1.238	0.017
Nagaland	0.014	2.917	3.053	2.108	0.016	1.045	1.970	0.016
Sikkim	0.013	1.340	1.310	1.395	0.028	0.906	1.359	0.136
Tripura	0.005	0.660	1.745	1.407	0.011	0.575	0.971	0.016

Source: Agricultural statistical at glance

As shown in the above table 2.11.2 With the largest per-account term loan size of ₹0.027 crore in the fiscal year 2016-17, Arunachal Pradesh demonstrated comparatively greater loan disbursements in contrast to other Northeast states. However, Tripura gained ₹0.005 crore per account, indicating that access to major

credit facilities is restricted and average loans are smaller. The early stage of the term loan boom in Northeast was reflected generally small in loan sizes throughout the region.

Arunachal Pradesh kept its lead in 2017-18, with a notable increase to ₹4.067 crore per account, indicating a significant increase in loan disbursement and potential institutional or commercial borrowing. However, Tripura once again had the lowest amount loan disbursement with ₹0.660 crore, indicating a slower rate of expansion in term loans.

Meghalaya outperformed all other states in 2018-19, earning an impressive ₹4.959 crore per account. Strong lending for capital-intensive industries is shown by this rapid growth. At ₹0.320 crore, Mizoram had the smallest per-account loan size, which suggests either smaller project loans or weaker institutional lending.

With its per-account loan size rising even more to ₹6.182 crore for 2019-20, Meghalaya maintained its remarkable performance and its top spot. Arunachal Pradesh, on the other hand, fell significantly to ₹0.696 crore, putting it at the bottom. The COVID-19 pandemic's impacts were evident in all north-eastern states in 2020-21. The greatest number, ₹0.028 crore, came from Sikkim, even this was extremely low, indicating a decrease in term loan disbursements throughout the region. Meghalaya, which had been in the lead in the previous years dropped sharply to the lowest amount in the region that year, ₹0.008 crore per account.

Arunachal Pradesh's impressive recovery in 2021-2022 with ₹6.115 crore per account showed a dramatic turnaround and heightened trust in term lending following the pandemic. Tripura, on the other hand, shows only a slight recovery in long-term credit, remaining at the bottom with ₹0.575 crore.

At ₹2.112 crore, Arunachal had the largest per-account term loan size in 2022-2023, indicating better access to credit and more investment activity. However, after a period of great performance, Meghalaya fell to the lowest rank with just ₹0.262 crore.

Arunachal Pradesh once again took the lead in 2023-2024 with ₹0.216 crore per account, but loan sizes were comparatively lower in other states, suggesting a tempered demand for long-term loans. At ₹0.019 crore, Assam had the lowest amount, indicating either conservative lending practices or a restricted credit flow in the state.

Over the course of the eight-year period from 2016-17 to 2023-24, Arunachal Pradesh and Meghalaya shown a higher ability to absorb larger term loans by regularly emerging as strong performers in several years. Tripura and Assam, on the other hand, were often among the lowest, indicating weaker average loan values across accounts and structural barriers to credit access. According to the NEC Yearbook, gross market borrowings of these two states were maintained annually across multiple years up to FY 2023-24, showing their ability to raise funds and service them through repayments(NEC YEARBOOK, 2025)

2.12. Performance of Kisan Credit Card (KCC) in Nagaland.

To simplify the procedure for farmers in getting adequate credit and boost the agricultural credit, The introduction of easy and cheap credit is the quickest way to give boost to the agricultural production (Muhammad Khalid Bashir, 2009). Hence, For the overall productivity and enhancement of the agricultural sector, R.V.Gupta recommended the Kisan Credit Card (KCC) scheme which targets the farmers with easy access to credit. On August 1998, the Government of India introduced the KCC scheme to provide term loan for agricultural needs of the farmers. A model of KCC was prepared by NABARD to simplify the procedure for farmers in getting adequate and timely credit.

NABARD has suggested the banking system to extend KCC to oral lessees/ tenant farmers/ Sharecroppers through Joint Liability Group (JLG) mode of financing. Which will enable the banks to reach the farmers through a group approach, adopt cluster approach, and facilitate peer education and credit discipline. Generally financing of small and marginal farmers are being done by the banking system through the Kisan Credit Card (KCC) mode. As per the revised Kisan Credit Card guidelines, all the

banks must provide Rupay Kisan Credit Cards to all the KCC account holders, which can be used at ATMs, PoS Machines and for E-Com transactions. The idea behind introducing “RuPay Kisan Cards” is to provide access of instant credit to the farmers on an ongoing basis instead of the prevailing cheque based KCCs, to substantially reduce visit to the bank branches by the farmers.

The historical performance of the Kisan Credit Card (KCC) scheme in Nagaland reveals a path towards constrained progress, heavily affected by the state's unique socio-legal and geographical context. Following the national launch, the initial phase of implementation pre-2010 to mid-2010s was markedly slow(2007 BC Barah, 2007) Due to Article 371A and tribal customary laws, individual land titles were widely absent, creating a collateral gap that conventional banking systems were unable to fill (India, 2016)

This, combined with a low density of rural bank branches in a challenging topographic region, resulted in limited penetration. As noted in NABARD's early assessment, KCC coverage remained "confined largely to valley areas and farmers with settled cultivation," effectively excluding a significant portion of the agrarian community, including jhum (shifting) cultivators(NABARD, 2017).

A period of gradual expansion occurred from approximately 2015-16 to 2019-20, driven by targeted policy campaigns. The state government's KCC Campaign 2015-16 aimed to simplify procedures, while the central Aspirational Districts Programme (ADP) later provided a significant, if temporary, impetus. Under the ADP, districts like Kiphire and Mon saw targeted saturation drives. Research indicates this led to a notable spike in credit limits in 2018-19, largely attributed to enhanced lending to Farmer Producer Organizations (FPOs) and concerted bank-level targets under the programme (NABARD, 2017). Despite this growth, critical exclusion gaps persisted. A study on agricultural credit in the Northeast highlighted that in Nagaland, "the gap between operational landholdings and KCC holders remains stark, indicating exclusion due to tenurial uncertainty," (Haque & Research, 2021)

This fragile progress was severely disrupted by the COVID-19 pandemic in 2020-21. Nationwide lockdowns crippled the physical processes field verification, document collection, and in-person applications that formed the backbone of KCC delivery in Nagaland's low-digital ecosystem. The Reserve Bank of India confirmed a system wide contraction, stating that "disbursements under priority sector lending, particularly short-term crop loans, contracted in 2020-21 due to operational challenges faced by banks," a disruption acutely felt in Nagaland (RBI, 2023). A major development has been the inclusion of allied activities under KCC, as per national guidelines extending the scheme to animal husbandry, dairy, and fisheries farmers, sectors with significant economic potential in the state (Department of Fisheries & Aquatic Resource, 2023).

The government of Nagaland launched the Kisan Credit Card program to give financial support to farmers in the state. This loan is given to tenants and farmers to increase crop yield. Kisan credit card schemes plays a vital role in enhancing the income and economy of NER (Brotta sing bey, 2023), The maximum loan amount that KCC in Nagaland can provide for any purpose pertaining to agriculture and related fields is ₹1.60 lakh. Furthermore, up to 3 lakhs with a 7% interest rate and no collateral is required (4% interest subvention under chief minister micro finance initiative). Union Minister for Corporate Affairs and Finance Nirmala Sitharaman established a deadline of September 1, 2022, to November 30, 2022, for each district in Nagaland to carry out their outreach programs about farmer credit schemes, specifically the Kisan Credit Card (KCC) Scheme.(Nagaland post, 2022). The total amount disbursed under the KCC loan and the number of KCC holders in Nagaland for the financial year 2015-16 to 2024-25 are also displayed in the table below.

Table no 2.12.1: Cumulative number of Kisan Credit Card issued including renewal for financial year 2015-16 to 2024-25 in North-eastern state of India.

State	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
	No. of card issued									
Arunachal Pradesh	17550	19,450	47,000	49,000	51,000	57,000	71,053	81,153	99,541	1,62,541
Assam	82991	18,26,000	19,22,000	23,68,000	26,42,000	28,25,000	37,32,540	44,05,691	50,76,523	52,60,723
Manipur	10614	16,228	69,228	81,228	86,228	90,228	1,15,384	1,34,531	1,54,230	1,85,030
Meghalaya	3357	1,55,000	2,07,000	2,21,000	2,27,000	2,40,000	3,30,504	4,00,560	4,77,982	4,98,582
Mizoram	33,486	1,01,000	1,49,000	1,54,000	2,83,000	3,30,000	3,50,889	3,86,344	4,37,905	4,75,605
Nagaland	3907	72,000	95,000	1,02,000	1,17,000	1,37,000	1,71,226	2,01,096	2,33,168	2,69,168
Sikkim	5363	36,000	39,000	49,000	56,000	67,000	80,864	88,680	98,795	1,13,395
Tripura	60553	6,57,000	7,21,000	9,07,000	10,63,000	10,72,000	13,42,970	15,90,302	17,55,218	20,71,518

Source: Agricultural statistical at glance, State levels bankers committee (SLBC)

Assam had the most agricultural credit penetration in 2015-16, issuing 82,991 Kisan Credit Cards (KCC), while Meghalaya had the lowest, issuing only 3,357 cards. Manipur and Arunachal Pradesh issued less than 6,000 cards respectively in 2016-17, but Assam once again dominated with almost 17.43 lakh cards, indicating a significant rise in coverage.

Assam continued to lead with 96,000 cards by 2017-18, followed by Tripura with 64,000, while Sikkim did poorly with just 3,000 cards. Assam maintained its lead in 2018-19 with 4.46 lakh cards, demonstrating steady credit development, while Mizoram and Nagaland trailed behind with only 5,000 to 7,000 cards, respectively.

Assam continued to top in 2019-20 with 2.74 lakh issued cards, while Manipur and Arunachal Pradesh issued only 2,000-5,000, continuing to be the less distributing states. Assam maintained its stronghold with 1.83 lakh cards during the epidemic year 2020-21, followed by Tripura (9,000), but Manipur and Mizoram had sharp drops.

With almost 9 lakh KCCs, Assam once again led the list when recovery started in 2021-2022, demonstrating strong credit inclusion. Whereas Sikkim stayed on the lower end, Nagaland and Mizoram had moderate improvements. Sikkim and Arunachal Pradesh produced fewer than 10,000 cards apiece in 2022-2023, while Assam maintained its lead with 6.73 lakh cards, followed by Tripura with 2.47 lakh. With 6.70 lakh cards, Assam continued to lead by 2023-2024, while Sikkim once more came in last with only 10,000. Ultimately, Arunachal Pradesh shown an unexpected increase to 63,000 cards in 2024-2025, although Tripura was the top performer with 3.16 lakh cards, while Meghalaya and Sikkim continued to rank among the lowest.

Arunachal Pradesh and Sikkim continued to do poorly in the majority of years, with minor growth, while Assam regularly outperformed the rest of the decade due to its more robust credit outreach.

Table no: 2.12.2. Trend analysis for total number of active KCC holders according to banking sector in Nagaland.

Year	Public	Private	NRB	NSCB
2015-16	100.00	100.00	100.00	100.00
2016-17	173.20	34.08	293.33	57.70
2017-18	253.21	1.79	993.33	4.58
2018-19	203.45	0.00	293.33	10.94
2019-20	119.58	10.31	140.00	20.87
2020-21	197.70	3.59	420.00	21.40
2021-22	191.44	2.69	1080.00	16.85
2022-23	237.43	4.93	1100.00	26.02
2023-24	71.18	32.29	133.33	27.28
2024-25	94.73	13.90	246.67	25.36

Source: State Levels Bankers Committee (SLBC)

Table no. 2.12.2 shows the number of active Kisan Credit Card (KCC) holders. From the table it shows that public sector banks have been the most consistent driver of KCC, maintaining active numbers of holders despite a sharp drop in 2023-24. The public sector saw significant fluctuations that were indicative of uneven credit outreach. Particularly between 2021-2022 and 2023-2024. Aadhaar-based

authentication and land ownership issues were major reasons for slow KCC progress in the state and decrease in number of beneficiaries in 2023-24 (NABARD, 2024). Private banks have performed very poorly, with coverage collapsing to nearly zero by 2018-19 and remaining minimal, indicating a very limited and retreating role in agricultural credit. The Private sector index plummeted to 0.00 in 2018-19, the year following the intensified ACAUT agitation. This unprecedented drop indicates a near-total freeze in private credit disbursement. Private banks, caught between militant groups' demands for a cut of loan amounts and public pressure to resist, opted to suspend fresh lending entirely (The hindu, 2018). The Nagaland State Co-operative Bank (NSCB) has maintained a small but relatively stable presence, with its numbers hanging modestly above the baseline. with sharp declines in 2018-19 and 2023-24 after huge rises in 2016-17, 2017-18, and 2020-21. In 2018-19 and 2019-20, the Nagaland State Cooperative Bank (NSCB) had notable increases, although subsequent declines were mild. The data generally shows uneven KCC growth in all sectors, with the public and NRB sectors showing more inconsistent performance.

Despite its volatility, the Nagaland Rural Bank (NRB) had the best overall performance according to the percentage change data. For several years, it had the highest growth rates. By providing banking services and facilities right at rural households' doorsteps, especially in rural areas with limited access to banking, regional rural banks are able to successfully accomplish their main goals of making loans to rural areas simple and affordable encourage saving for constructive uses in rural areas, as well as lending money and creating jobs there (GAGAN SINGH JAGGI, 2022).

Table no :2.12.3. Trend analysis for Total number of active KCC card holders according to district wise Nagaland

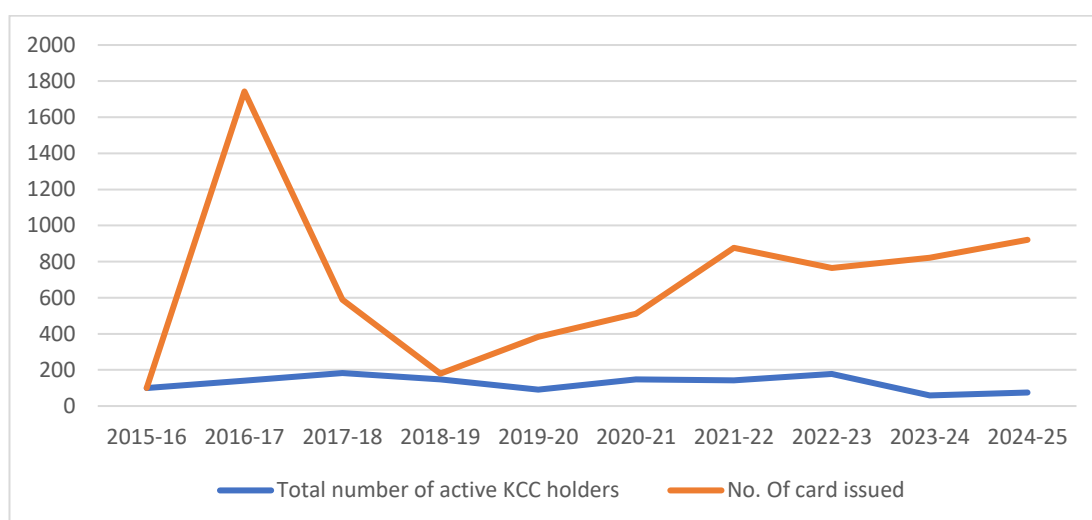
year	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
Dimapur	100	2461.19	511.73	414.08	299.82	387.36	423.10	271.30	94.22	64.98
Kiphire	100	54.69	84.30	30.87	45.85	109.21	133.57	181.41	96.75	113.00
Kohima	100	38.99	202.89	131.23	62.09	140.79	144.04	206.86	33.21	44.58
Longleng	100	3.25	21.48	16.97	11.37	50.18	57.76	41.34	8.30	31.05
Mokokchung	100	329.42	1279.96	1037.18	496.39	958.48	752.53	790.97	257.04	298.74
Mon	100	4.51	38.81	27.80	30.69	36.82	47.83	129.78	75.27	71.48
Peren	100	5.05	421.30	433.94	183.21	213.00	242.42	308.84	99.10	124.01
Phek	100	2.89	397.11	250.54	204.69	408.66	367.33	364.62	125.45	158.12
Tuensang	100	64.62	757.94	665.70	301.44	451.99	350.72	381.95	153.25	193.86
Wokha	100	9.39	132.31	114.44	148.56	178.52	235.20	297.11	100.36	148.01
Zunheboto	100	8.30	45.49	35.02	157.58	200.18	222.74	290.25	90.25	152.53
Noklak								100.00	100	16.79
Chumoukedima									100	120.22
Niuland									100	13.36
Shamator									100	18.05
Tseminyu									100	25.81

Source: State Levels Bankers Committee (SLBC)

As shown in table 2.12.3 Dimapur Peaked sharply in year 2016-17 with 2461, then fell steeply, ending at 64.98 by 2024–25. Highlighting an initial boom followed by sustained decline due to activity to newer districts. Mokokchung district Showed huge growth to 1279.96 by 2017-18, remained high until 2022-23, then moderated but stayed well above base. Over the years, Mokokchung has continuously led the way in agricultural financing availability and has consistently fared the best overall. The article from Mokokchung Times supports the statement that Mokokchung is leading in agricultural financing by highlighting its strong banking network and economic role in Nagaland. As a major urban and commercial hub, Mokokchung serves as a gateway to several districts and has seen significant growth in banking presence and services.

The expansion of banks, improved access to loans, promotion of digital banking, and increased financial inclusion have strengthened the town's economy (Times, 2023). Peren, Phek, Tuensang Saw major surges in 2017–18 with \ 421, 397, 757 respectively Noklak, Chumoukedima, Niuland, Shamator, Tseminy newly created districts Data starts later which show low indices mostly 13–120 range as of 2024-25, implying these are newly carved districts with lower base activity. Kohima, Mon, Wokha, Zunheboto show fluctuations over the year.

Figure: 2.12.1. Trend analysis for number of KCC card issued and active KCC holders Nagaland



Source: State Levels Bankers Committee (SLBC), Agricultural statistical at glance

Kisan Credit Cards (KCC) issued and active KCC holders in Nagaland are depicted in the chart no 2.12.1 from 2015-16 to 2024-25. Sharp swings can be seen in the number of cards issued a significant increase in new card issuance during 2016-17 is followed by a dramatic decrease and a slow recovery during 2018-19. The massive increase in Kisan Credit Card (KCC) issuance in 2016-17 was a direct result of a targeted, nationwide government campaign (budget 2015-16, 2015). There was another increase in 2021-2022, indicating a resurgence in loan activity. While issuance of card fluctuated dramatically, the actual number of active users moved only modestly. Despite the issuance of numerous new cards, this graph suggests that KCC activation and usage was largely constant throughout the course of the decade. Even while many

agricultural households may have access to KCCs (i.e., possess a card), actual operational coverage is far lower, suggesting that not all cards are actively used (SINGH, 2025).

Table no 2.12.4. percentage change in total amount of KCC loan disbursed according to sector wise.

Values in percentage

Year	Public	Private	NRB	NSCB
2015-16	-	-	-	-
2016-17	85.09	10	281.33	-14.2
2017-18	65.19	-99	226.92	-88.5
2018-19	-21.31	-100	-64.17	170.0
2019-20	-27.43	0	-49.85	74.6
2020-21	44.08	-54	200.00	322.5
2021-22	91.31	-45	73.49	8.4
2022-23	-24.58	83	41.56	30.1
2023-24	-45.64	365	-81.21	-24.5
2024-25	130.30	-4	102.41	18.3

Source: State Levels Bankers Committee (SLBC)

The percentage change in the overall amount of KCC loans given throughout Nagaland's sectors varies significantly from year to year, indicating unpredictability in the flow and use of credit. Public sector banks showed erratic but usually upward trends, with substantial upticks in 2016-17, 2020-21, 2021-22, and particularly 2024-25, suggesting that lending momentum had recovered from previous downturns. However, private sector banks showed erratic trends, with a notable uptick in 2022-2023 and 2023-2024 following several years of contraction, indicating intermittent expansion as opposed to persistent growth. The Nagaland Rural Bank (NRB) displayed significant decreases as well as dramatic increases in some years (such as 2016-17 and 2020-21), suggesting unequal outreach and repayment cycles. NSCB growth is highly volatile. It saw a massive one-year surge in 2020-21 with 322.5, swinging between sharp negatives and modest positives with no stable trend. For short-term agricultural loans, the Ministry of Agriculture & Farmer's Welfare, Government of India, has mandated that Aadhaar connection be used under the Interest Subvention Scheme

(ISS). Banks have received notification that the ISS benefit will be expanded solely to accounts that have had their Aadhaar (NABARD, State focus paper 2021-22, 2022), resulting in downfall of amount disbursement in public bank during FY 2022-23 and 2023-24.

Table no:2.12.5. Trend analysis for total amount of KCC loan disbursed according to district wise

year	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
Dimapur	100	5564.68	1221.43	1005.57	932.88	1274.26	2281.49	748.02	748.02	439.19
Kiphire	100	10.71	183.50	67.03	130.86	317.72	753.23	596.29	596.29	837.87
Kohima	100	199.08	605.32	314.96	150.91	366.32	577.81	486.91	486.91	388.43
Longleng	100	28.03	37.60	30.07	29.37	165.47	339.86	147.43	147.43	345.86
Mokokchung	100	350.96	3271.99	2643.41	1569.16	2660.13	4162.59	3416.57	3416.57	3034.02
Mon	100	12.48	77.43	55.46	52.50	64.96	226.83	399.80	399.80	1031.91
Peren	100	242.61	1080.92	1099.17	648.30	722.13	1274.58	927.47	927.47	795.94
Phek	100	143.74	890.12	585.38	630.08	1199.26	2050.02	1138.87	1138.87	1577.05
Tuensang	100	66.52	1844.70	1604.71	805.68	923.18	1653.30	1210.46	1210.46	1757.26
Wokha	100	16.53	309.54	267.71	392.65	500.55	1191.25	990.51	990.51	1589.86
Zunheboto	100	11.28	83.84	55.80	392.95	589.06	1355.45	1013.91	1013.91	1827.99
Noklak							100	100	182.25	163.89
Chumoukedima								100	1186.85	1143.33
Niuland								100	89.54	151.09
Shamator								100	78.81	116.90
Tseminyu								100	53.65	235.59

Source: State Levels Bankers Committee (SLBC)

The trend analysis shown in table no 2.12.5 display the total amount of KCC loans disbursed across Nagaland districts highlighting significant regional variations over the years. Based on the district-wise analysis of KCC loan disbursements from 2015-16 to 2024-25, Mokokchung stands out as the consistently dominant district, maintaining the highest disbursement almost every year, reflecting a deep-rooted and stable agricultural credit culture. In contrast, Dimapur witnessed a sharp boom, with an unsustainable early peak followed by a volatile mid-period and concerning decline in recent years, necessitating targeted revival efforts. Several districts demonstrated impressive growth. Kiphire and Wokha showed steady, consistent increases from low bases, transforming into top-tier performers, while Mon and Zunheboto exhibited explosive late-stage surges, particularly in the final year. Peren and Phek maintained robust, stable mid-to-high level performance with strong finishes, whereas Tuensang experienced high but volatile disbursement before a solid recovery. Kohima, while stable, showed a slight declining tendency that requires attention to prevent stagnation. Among the newer districts, Chumoukedima immediately emerged as a high-potential area with a remarkably strong start, while others like Noklak, Niuland, Shamator, and Tseminyu are in the nascent, building phase of credit uptake.

2.13: Concluding Remark:

KCC is a major way of crop loans to the farmers. The scope of the KCC card has been extended to include agricultural term loans and allied activities which is a reasonable component to meet the consumption of farmer's needs. In Nagaland most of the farmers face difficult in availing KCC loan due to land related issue. As the land ownership in the state is unique and due to its cultural and historical context. In Nagaland land ownership is often governed by customary laws and by communities or clans leading to limited formal documentation for clear land titles.

Based on the thorough analysis provided in this chapter, it can be said that although the Kisan Credit Card (KCC) scheme is an essential tool for Nagaland's agricultural finance system, its performance has been characterized by structural inefficiencies and high volatility rather than steady growth.

Agricultural credit and socio- economic development of farmers in Kohima and Wokha districts

3.1. Introduction

Agricultural credit plays a vital role in the socio- economic development of farmers in rural areas by the way of providing them with the necessary financial resources to improve their agricultural productivity, increase their income and enhance their overall livelihoods and it has helped to upgrade from traditional to modern farming. Agricultural credit enables the farmers to invest in modern inputs like organic pesticides and fertilizers, drone for crop monitoring and spraying, and equipment which leads to higher productivity and better yields. This in turns increases the farmers income and improve their standards of living. It enables the farmers to expand their operations, creating employment opportunities and empower rural women by engaging them to participate in agricultural activities. “Agriculture credit, facilitated by schemes like the Kisan Credit Card, remains pivotal for agricultural growth and rural development in India” (Kavita Agrawal, 2024).

3.2. Demographic profile of the respondents

The demographic variables considered in this study are the age of the respondents, gender, education, marital status, occupations, area owned for farming, type of land owned, type of farming adopted by the respondents.

Table 3.2.1: Frequency distribution of Age of the Respondents

Variables	Frequency	Percentage
Less than 30	75	17.8
31-40	173	41.2
41 & above	172	41.0
Total	420	100.0

Source: Author calculation

Table 3.2.1 indicates that 17.8% of the respondents falls under the age group of less than 30 years. Since most of the youth focus on formal education it faces challenges in attracting and retaining the young farmers. About 41.2% of the respondents are between the age group of 31 to 40 years, as many of the farmers in the State take over family farms. Remaining 41% of the respondents in the age category of 41 and above.

Table: 3.2.2. Farm Size Distribution of Farmers across Age Group.

Age of respondents	Size of land owned for farming					%	Total
	1 hectare or less	%	1 to 2 hectares	%	2 hectare or above		
less than 30	66	88%	6	8%	3	4%	75.0
31-40	151	87%	15	9%	7	4%	173
41 & above	124	72%	27	16%	21	12%	172
Total	341	81%	48	11%	31	7%	420

Source: Author calculation

Cross tabulation table no 3.2.2 present the distribution of farming land ownership across different age groups of respondents. Across all age groups, majority own one hectare or less than one hectare (marginal farmers) making up 81% of the total respondents. Majority of the Young farmers are marginal farmers, even the 87% early middle age group of 31 to 40 are marginal farmers. Regardless of age most of the farmers in the districts of Kohima and Wokha are holding marginal size of land. Only 11% of the respondents falls under small holdings.

41 and above aged farmers are working in marginal land. While 4% of the farmers are working in semi medium land age below 30. Middle aged farmers are having more diversified in land holdings size, and younger farmers are predominantly small or marginal farmers as most of the young farmers are engaged in non-agricultural works.

Table 3.2.3: Distribution of respondents by Gender

Variables	Frequency	Percent
Male	217	51.7
Female	203	48.3
Total	420	100.0

Source: Author calculation

Table 3.2.3 shows the gender wise classification of the respondents. It shows that out of 420 respondents 51.7% of the respondents were Male and 48.3% of the respondents were female. The result interprets that there is not much difference between the male and female respondents in doing agricultural activities.

Table: 3.2.4. Farm size distribution of farmers across gender.

Gender	Area owned for farming						Total
	1 hectare or less	%	1 to 2 hectares	%	2 hectare or above	%	
Male	166	76%	34.0	16%	17.0	8%	217
Female	175	86%	14.0	7%	14.0	7%	203
Total	341	81%	48.0	11%	31.0	7%	420

Source: Author calculation

Table 3.2.4 presents data on land ownership for farming categorised by gender and the size of the area owned. Around 81% of all farmers are marginal farmers out of which 86% are female and 76% are male farmers. Almost 11% of the respondent's own size 1 to 2 hectare out of which 16% are male and only 7% female. Remaining 7% of the respondents holds more than 2 hectares of land out of which 8% are male and 7% female.

Table 3.2.5: Education qualification of the respondents

Variables	Frequency	Percentage
No schooling	79	18.8
secondary	125	29.8
HSLC	88	21.0
HSSLC	64	15.2
Graduate & above	64	15.2
Total	420	100.0

Source: Author calculation

As shown in the table 3.2.5, out of 420 respondents 29.8% of the respondents are secondary education, 18.8% with no schooling, 21.0% have HSLC and only 15.2% are graduate and above.

Table 3.2.6: Education qualification and farm size distribution of the farmers

Education qualification	Area owned for farming						Total
	1 hectare or less	%	1 to 2 hectares	%	2 hectare or above	%	
No schooling	59	75.0%	12	15.0%	8	10.0%	79.0
secondary	107	86.0%	8	6.00%	10	8.00%	125
HSLC	74	84.0%	8	9.00%	6	7.00%	88.0
HSSLC	53	83.0%	8	13.0%	3	5.00%	64.0
Graduate & above	48	75.0%	12	19.0%	4	6.00%	64.0
Total	341	81.0%	48	11.0%	31	7.00%	420

Source: Author calculation

Farmers with no formal schooling show a mixed pattern of land ownership which is shown in table 3.2.6. It is found that 75% holds less than 1 hectares of land, 15% of the farmers holds area between 1 to 2 hectares and 10% of the farmers holds above 2 hectares of land.

Farmers with secondary qualification are mostly marginal farmers with 86 percent, 6.00 percent small holdings farmers and 8.00 percent are semi-medium holders' 84

percent of qualified farmers own marginal land holding, 9.00 percent small land holders and 7.00 percent semi-medium holders. 83 percent of farmers whose qualification shows HSSLC, who owns marginal land, 13 percent small land holders and 5 percent semi-medium. 75 percent Graduate and above farmers hold marginal land, 19.0 percent small holding and 6.00 percent semi medium sized.

3.2.7: Marital status distribution of the respondents

Variables	Frequency	Percentage
Married	328	78.1
Unmarried	72.0	17.1
Widowed	10.0	2.40
Divorced	10.0	2.40
Total	420	100.0

Source: Author calculation

The result in table no 3.2.7 represent the marital status of 420 farmers. Out of which 78.1 percent of farmer are married, 17.1 percent of the farmers are unmarried, 2.40 percent widowed, and the remaining 2.40 percent were divorced.

Table 3.2.8: Marital status and farm size distribution of the farmers

Marital status	Area owned for farming						Total
	Size 1 hectare or less	%Age	Size 1 to 2 hectares	%Age	Size 2 hectare or above	%Age	
Married	266	81%	36.0	11%	26.0	8%	328
Unmarried	59.0	82%	8.00	11%	5.00	7%	72
Widowed	9.00	90%	1.00	10%	0	0%	10
Divorced	7.00	70%	3.00	30%	0	0%	10
Total	341	81%	48	11%	31	7%	420

Source: Author calculation

Table no 3.2.8 shows the gross tabulation of the marital status and farm size distribution of the farmers. Out of 420 respondents 328 respondents were married. 81 percent of the married farmers own marginal land size, 11 percent small holding, and rest of them has 8 percent semi-medium. 82 percent of the Farmers who are not

married own marginal land size, 11 percent small holders and 7.00 percent semi-medium. Out of 10 Widowed farmers, 90% own marginal size and 10% own small size. Divorced farmers shows that 70 percent are marginal farmers and 30 percent small holding farmers.

Table 3.2.9: Frequency distribution of Non-agricultural occupation

Variables	Frequency	Percentage
No other occupation	351	83.6
Government employee	40	9.5
Private sector employee	29	6.9
Total	420	100.0

Source: Author calculation

The table above shows that 83.6% of the respondents totally depends on agricultural sector while 6.9% of the respondents are government employed and 6.8% of the respondents are private employed. Out of 29 respondents engaged in private sector 26 respondents consider agricultural as their main occupation. Since the private sector employee's salary is low to sustain their living, they consider agriculture as their main occupation.

Table 3.2.11: Occupation and farm size distribution of the farmers

Other occupation apart from agriculture	Variables	Area owned for farming						Total
		Size 1 hectare or less	%Age	Size 1 to 2 hectares	%Age	Size 2 hectare or above	%Age	
	No other occupation	298	85%	31	9%	22	6%	351
	Government employee	24	60%	12	30%	4	10%	40
	Private sector employee	19	66%	5	17%	5	17%	29
	Total	341	81%	48	11%	31	7%	420

Source: Author calculation

Table no 3.2.11 cross tabulation reveal that 85 percent of the farmers with no other occupation are marginal land holders, 9.00 percent small land holders and 6.00 percent of the farmers are semi-medium land holders. Out of 40 respondents from government employees' 60 percent are marginal land holders, 30 percent are small land holders and 10 percent semi-land holders. The private sector employees show that out of 29 respondents' 66 percent are marginal land holders, 17 percent small holders and 17 percent semi-medium land holders

Table 3.2.12: Frequency of respondents by type of land ownership

Variables	Frequency	Percentage
Ancestral	321	76.4
Purchased	62	14.8
Rented	37	8.8
Total	420	100.0

Source: Author calculation

Based on the table no 3.2.12, 76.4% of the respondents have ancestral land as most of the community in the state are influenced by traditional farming and inheritance, only 14.8% of the respondents have acquired land by purchasing. This is a smaller portion, which indicate a variety of factors such as the cost of land, access to credit, and the land is primarily inherited rather than bought in the community. A smaller proportion (8.8%) of respondents used rental land for farming. This suggest that renting land is less common in Nagaland.

Table 3.2.13: ownership and farm size distribution of the farmers

Type of land ownership	variables	Area owned for farming						Total
		size 1 hectare or less	%Age	Size 1 to 2 hectares	%Age	Size 2 hectare or above	%Age	
	Ancestral	276	86%	25	8%	20	6%	321
	Purchased	30	48%	21	34%	11	18%	62
	Rented	35	95%	2	5%	0	0%	37
Total		341	81%	48	11%	31	7%	420

Source: Author calculation

Table no 3.2.13 shows that out of 321 farmers who owned land through ancestral 86 % of the farmers are marginal farmers, 8.00 percent are small land holders and 6.00 % are semi-medium holders. 48 percent of farmers who purchased their land own marginal land size, 34 % small holders and 18 % semi-medium. 95 % of the farmers who are rented land are marginal farmers and remaining 5.00 % small holders.

Table 3.2.14: Type of agricultural production engaged by the farmers.

Variables	Frequency	Percent
Shifting agriculture	179	42.6
Plantation agriculture	107	25.5
Terrace agriculture	134	31.9
Total	420	100

Source: Author calculation

The above table presents the type of agricultural production practiced by 420 respondents. A large proportion (42.6%) of the respondents practice shifting agriculture, since shifting agriculture is linked to traditional farming practices in the state, 25.5% of the respondents are engaged in plantation agriculture, 31.96% of the respondents engage in terrace farming.

Table 3.2.16: Agricultural production and farm size distribution of the farmers

In what type of agricultural production are you engaged?	Variables	Area owned for farming						Total
		size 1 hectare or less	%Age	Size 1 to 2 hectares	%Age	Size 2 hectare or above	%Age	
	Shifting agricultural	162	91%	11	6%	6	3%	179
	Plantation agricultural	52	49%	30	28%	25	23%	107
	Terrace agricultural	127	95%	7	5%	0	0%	134
Total		341	81%	48	11%	31	7%	420

Source: Author calculation

Table no. 3.2.16 reveal that 91 % of the farmers who are engaged in shifting agriculture holds an area less than 1 hectare, 6 % of the farmers holds size 1 to 2 hectares and 3 % above 2 hectares. 49 % of farmers who are engaged in plantation holds 1 hectares of land, 28 % between 1 to 2 hectares and 23 % above 2 hectares. 95 % of farmers who are engaged in terrace agriculture holds a land size less than 1 hectare and 5.00 % of the farmers holds 1 to 2 hectares of land.

3.3 Rank, Descriptive statistic, ANOVA for Socio economics status of farmers in Nagaland.

The analysis of agricultural credit's impact on the socio-economic development of Nagaland's farmers was conducted through rank analysis to determine priorities, descriptive statistics to summarize data, and ANOVA to test for significant differences across the mean groups.

Table no:3.3.1. Prioritization of Economic Factors Based on Respondent Rankings

Economic factor	Mean	Rank
Increase in income of farmers	4.04	1
Increase in employment opportunities	2.82	4
Increase in assets holding	3.99	2
Increase in household facilities	3.97	3

Source: Author calculation

The economic factors, increasing income was perceived as the most important economic outcome, with mean score of 4.04. This is closely followed by the goals of increasing asset holdings (rank 2, mean 3.99) and improving household facilities (rank 3, mean 3.97), indicating that wealth accumulation and enhancing living standards are top economic priorities. Increasing employment opportunities, while still important, is the lowest economic priority (rank 4, mean 2.82), suggesting that stable income and assets may be more valued than the creation of jobs themselves.

Table no:3.3.2. Prioritization of social Factors Based on Respondent Rankings

Social factor	Mean	Rank
Improve the status in the society	1.64	3
Improve in skilled labourer	3.73	1
Improve in children education	3.33	2

Source: Author calculation

In case of social factors, improving skilled labour is the highest priority rank 1 with mean 3.73, closely followed by improving children's education with a mean score of 3.33. Improving personal social status rank third mean with mean value of 1.64, suggesting it is a significantly lower concern compared to tangible investments in human capital.

Table 3.3.3. Descriptive statistics on Economic Status and its Association with Marital Status

Marital status	Increase in income of farmers		Improve in employment opportunity		Increase in assets holdings		Increase in household facilities	
	Mean	Sd	Mean	Sd	Mean	Sd	Mean	Sd
Married	4.05	0.403	2.87	1.088	3.99	0.435	3.97	0.401
Unmarried	3.97	0.503	2.54	1.006	3.96	0.592	3.97	0.474
Divorced	4.10	0.568	2.60	1.265	4.00	0.471	4.00	0.471
Widowed	4.00	0.471	3.40	1.075	4.30	0.483	4.00	0.471

Source: Author calculation

The findings from table 3.3.3. shows that people in different marital status categories have different ideas about how their economy is getting better. All groups strongly agree that agricultural credit has improved their income, assets, and household facilities.

But people have quite different ideas about employment opportunity. Most groups here are indifferent or only marginally agree (mean between 2.54 and 2.87), which implies that agricultural loan did not improve the employment opportunity. Widowed

people are the only group that strongly agrees with mean value 3.40 that employment got better, making them the main beneficiaries in this group. Widowed people also had the most positive attitudes overall, as they are the only group that strongly agrees with mean score of 4.30 with improvements in asset holdings, making them the most positively affected group.

Table 3.3.4. Descriptive statistics on social factor and its Association with Marital Status.

Marital status	Improve in children education		Improve the status in the society		Improved in skilled labour	
	Mean	Sd	Mean	Sd	Mean	Sd
Married	3.35	1.051	1.63	0.598	3.72	0.649
Unmarried	3.19	1.043	1.68	0.601	3.76	0.617
Divorced	3.30	1.160	1.90	0.316	3.80	0.850
Widowed	3.70	0.949	1.50	0.707	3.50	0.850

Source: Author calculation

The data demonstrates that irrespective of marital statuses generally agree that agricultural credit made the education of children and skilled labour better with average mean score of 3.39 and 3.70, respectively. But there is a big difference in social position. Irrespective of groups, the respondents disagrees strongly that the credit improved their standing in society. This shows that this was a social advantage that everyone failed to acquire. Widowed persons indicated the most significant enhancement in children's schooling, whereas divorced folks recognized the minimal adverse effect on social position.

Table no: 3.3.5: ANOVA test result for marital status and social economic status of farmers in Nagaland.

Economic factor	F	Sig
Increase in income of farmers	0.750	0.523
Increase in employment opportunities	2.925	0.034
Increase in assets holding	1.579	0.194
Increase in household facilities	0.043	0.988
Social factor		
Improve the status in the society	0.996	0.395
Improve in skilled labour	0.534	0.659
Improve in children education	0.871	0.456

Source: Author calculation

H_0 : The mean perception of socio-economic status is equal across all categories of marital status.

Based on the ANOVA results, the null hypothesis (H_0) that the mean perception of socio-economic status is equal across marital status categories is rejected for one key factor, increase in employment opportunities. This indicates a statistically significant difference in how different marital groups perceive the impact on employment. Based on the mean scores from table 3.3.3, the significant difference in perceptions of employment opportunities is primarily driven by the widowed group, who reported a much more positive experience with mean 3.40 compared to the other marital status groups. The unmarried group reported the lowest perception of improvement with mean of 2.54, married group reported with mean of 2.87 and divorced category given the perception with mean of 2.60 groups falling in between. This substantial gap, particularly the high score of the widowed group, is the key reason for the statistically significant result, indicating that the benefit of employment opportunities was not felt equally across all marital categories.

For all other economic and social factors including income, assets, household facilities, social status, skilled labor, and children's education the p-values are greater

than 0.05. This means the researcher accept the null hypothesis for these factors, suggesting that perceptions are statistically similar across all marital status groups.

Table no:3.3.6. Descriptive statistics on Economic Characteristics of Respondents by Age Group

Age	Increase in income of farmers		Improve employment opportunity in		Increase in assets holdings		Increase in household facilities	
	Mean	Sd	Mean	Sd	Mean	Sd	Mean	Sd
less than 30	4.07	0.502	3.00	1.078	3.91	0.550	3.97	0.519
31-40	4.02	0.469	2.68	1.099	4.04	0.474	3.94	0.420
41& above	4.03	0.323	2.88	1.064	3.98	0.418	4.00	0.342

Source: Author calculation

The data shows that people of different ages have quite different ideas about how economic conditions is getting better. All age groups strongly agree that agricultural credit improved their income, assets, and household facilities, demonstrating that it had a beneficial effect in these areas.

But there is considerable disagreement about how people see job chances. The 31-40 age group has the lowest level of agreement which means they are least satisfied with advances in their jobs. Farmers under 30 and over 41 both say they are moderately more satisfied.

Table no: 3.3.7: Descriptive statistics on Social Characteristics of Respondents by Age Group

Age	Improve in children education		Improved in skilled labour		Improve the status in the society	
	Mean	Sd	Mean	Sd	Mean	Sd
less than 30	2.92	1.217	3.65	0.707	1.73	0.622
31-40	3.24	1.072	3.77	0.623	1.68	0.588
41& above	3.60	0.862	3.72	0.645	1.55	0.585

Source: Author calculation

The data shows that there is a strong pattern of social progress across all age groups. The older farmers 41 and above believe the most that children's education has been better, while the younger farmers under 30 agree the least with Mean score of 2.92. All groups agree strongly and in the same way that skilled labor has improved. In contrast to this, all age groups strongly disagree that their place in society has gotten better. This shows that the agricultural credit helped with education and skills, but it did not make farmers of any age feel like their status were improved in the society.

Table no: 3.3.8: ANOVA result for Age of farmers and social economic status of farmers in Nagaland

Economic factor	F	Sig
Increase in income of farmers	2.287	0.078
Increase in employment opportunities	1.608	0.187
Increase in assets holding	3.113	0.026
Increase in household facilities	3.246	0.022
Social factor		
Improve the status in the society	2.170	0.091
Improve in skilled labour	0.757	0.519
Improve in children education	8.396	0.000

Source: Author calculation.

H₀: The mean perception for socio-economic status is equal across all age groups.

The ANOVA results show that the age category of farmers in Nagaland has a statistically significant impact on some aspects of their socio-economic status. Specifically, age significantly influence the opinion about the crediton increases in asset holdings, household facilities, and improvements in children's, meaning that differences across age groups explain variation in these factors. For increase in assets holding significant difference is likely driven by the age group 31 to 40 years old. This group reported a higher mean score with 4.04 indicating that the farmers strongly agree while farmers age below 30 and above 41 shows mean score below 4.00 as shown in table 3.3.6. For increase in household facility p-value shows 0.02, the significant

difference resulted due to farmers above the age of 40 reported the highest mean score, indicating that they agree strongly that household facility has improved, as compared to the younger groups. For improve in children education the difference is clearly driven by the 41 and above age group. Their mean score (3.60) is substantially higher than the 31-40 group (3.24) and the youngest less than 30 age group (2.92). Older farmers perceived a much greater improvement in children's education. However, age does not have a significant influence on the opinion related to agricultural credit on increases in income, employment opportunities, social status or skilled labour as indicated by their higher p-values.

Table no: 3.3.9: Descriptive statistics on Economic Perceptions by Farmers' Education Level

Educational qualification	Increase in income of farmers		Improve in employment opportunity		Increase in assets holdings		Increase in household facilities	
	Mean	Sd	Mean	Sd	Mean	Sd	Mean	Sd
'No schooling	3.99	0.299	2.96	1.079	4.01	0.375	4.03	0.276
Secondary	4.05	0.399	2.90	1.149	3.94	0.504	3.93	0.405
HSLC	4.08	0.378	2.63	1.021	4.06	0.351	3.93	0.583
HSSLC	4.08	0.447	2.97	1.069	3.97	0.59	4.05	0.278
Graduate & above	3.97	0.590	2.61	1.033	4	0.504	3.95	0.375

Source: Author calculation

The data shows that farmers of all education levels consistently report big positive effects on their income, assets, and household facilities with mean value mostly above 4.0, which suggests that everyone sees these benefits. But there is a definite trend when it comes to job prospects, which is the lowest-rated aspect for all groups. Farmers with an HSLC education and those with a Graduate degree or higher report the least improvement in employment. This implies that although the socio-economic program effectively improved financial and domestic circumstances irrespective of educational attainment, its efficacy in job creation was regarded as least effective, especially among individuals with middle to higher levels of formal education.

Table 3.3.10: Descriptive Analysis of Socio factors by Educational Qualification

Educational qualification	Improve the status in the society		Improved in skilled labour		Improve in children education	
	Mean	Sd	Mean	Sd	Mean	Sd
No schooling	1.65	0.641	3.77	0.576	3.7	0.822
Secondary	1.62	0.534	3.72	0.667	3.36	1.035
HSLC	1.63	0.553	3.75	0.592	3.26	1.067
HSSLC	1.59	0.583	3.66	0.718	3.41	1.019
Graduate & above	1.72	0.723	3.72	0.701	2.86	1.167

Source: Author calculation

The data shows a big difference in how people see social variables based on their education level. For better social status, all educational categories strongly disagree. All groups also agree that skilled labour got better, which shows that the effect was always favourable. The most notable variation is shown in children's education, revealing a distinct negative correlation with education level. Farmers lacking formal education opinion indicate that the greatest improvement, whereas graduates exhibit the least. While education makes farms more productive, farmers with a high level of education often have higher hopes for their children's education and chances outside of farming (Lockheed et al., 1980).

Table no: 3.3.11: ANOVA result for education qualification of farmers on social economic status of farmers in Nagaland

Economic factor	F	Sig
Increase in income of farmers	1.091	0.361
Increase in employment opportunities	2.124	0.077
Increase in assets holding	0.949	0.436
Increase in household facilities	1.47	0.210
Social factor		
Improve the status in the society	0.410	0.801
Improve in skilled labour	0.319	0.865
Improve in children education	6.112	0.000

Source: Author calculation.

H₀: There is no significant difference in the mean scores of socio-economic status among farmers with different educational qualifications.

According to the ANOVA results, improvement in children's education shows p value 0.000 where the researcher rejects the null hypothesis (H₀) that education level has a significant impact on their opinion socioeconomic status. This suggests that farmers from various educational backgrounds have statistically significant differing opinions about the agricultural credit influence on their kids' education. Based on the mean scores, the significant difference in perceptions of children's education is driven by farmers with 'No schooling', who reported the highest improvement, compared to 'Graduate & above' farmers, who reported the lowest. This indicates an inverse relationship where higher formal education correlates with lower perceived improvement in children's schooling.

For all other economic and social factors including income, employment, assets, household facilities, social status, and skilled labour the p-values are greater than 0.05. This means the researchers accept the null hypothesis for these factors, suggesting that perceptions of these outcomes are statistically similar across all educational qualification levels. The program's impact in these areas was perceived consistently, regardless of a farmer's education.

Table no: 3.3.12: Descriptive Statistics of Economic factors by Farm Size.

variables	Increase in income of farmers		Improve employment opportunity in		Increase in assets holdings		Increase in household facilities	
	Mean	Sd	Mean	Sd	Mean	Sd	Mean	Sd
Size 1 hectare or less (marginal)	4.03	0.405	2.85	1.093	3.99	.488	3.95	.424
Size 1 to 2 hectares (small holdings)	4.10	.371	2.67	1.078	3.98	.252	4.02	.385
Size 2 hectare and above	4.00	.632	2.74	1.032	4.00	.516	4.06	.250

Source: Author calculation

The data shows that farmers of different landholding sizes report considerable positive effects on their income, assets, and household facilities with mean value above 3.92. This suggests that these benefits are seen by everyone, no matter how big or small their farm is. But the chance of attaining a job is still the weakest area for all categories. Small land holders see the biggest increase in income (mean=4.10) but the smallest increase in jobs (mean=2.67). Farmers with bigger farms size 2 hectare and above see the biggest improvement in household activities (mean=4.06). This means that although while the economic benefits are the same for farms of all sizes, creating jobs is still hard, especially for smallholders. Smallholders are good at exploiting family labor, but they have a lot of trouble creating good job prospects for other people. Their limited land and capital make it hard for them to grow their businesses and hire additional workers(Wiggins et al., 2010).

Table no: 3.3.13: Descriptive Statistics of socio factors by Farm Size

variables	Improve the status in the society		Improve in children education		Improved in skilled labour	
	Mean	Sd	Mean	Sd	Mean	Sd
Size 1 hectare or less (marginal)	1.67	.599	3.24	1.095	3.73	.644
Size 1 to 2 hectares (small holdings)	1.69	.552	3.67	.781	3.58	.767
Size 2 hectare and above	1.26	.514	3.87	.499	3.90	.396

Source: Author calculation

The data shows a direct link between the size of a landholding and how much social impact it is thought to have. Farmers with larger holdings of 2 hectare and above report the most favourable outcomes across all social factors, exhibiting the highest agreement for gains in children's education and skilled labor, while also being the least negative about social status improvement. On the other hand, marginal farmers less than 1 hectare state that development are getting better in some ways, especially when it comes to children's education (Mean=3.24). This pattern implies that the agricultural program had far bigger social benefits for larger landowners than for smaller farmers, who had the least social benefits. Larger landowners have more money, better access

to information, and more political power, which makes it easier for them to use new programs(change, 2002).

3.3.14: ANOVA result for area owned by farmers on social economic status of farmers in Nagaland

Economic factor	F	Sig
Increase in income of farmers	1.551	0.187
Increase in employment opportunities	1.191	0.314
Increase in assets holding	1.409	0.245
Increase in household facilities	0.889	0.412
Social factor		
Improve the status in the society	3.903	0.004
Improve in skilled labour	1.314	0.264
Improve in children education	1.914	0.149

Source: Author calculation

H₀: Landholding size has no significant effect on the mean scores of farmers' socio-economic status.

The ANOVA results show that the null hypothesis (H₀) fails to be true for social factor improving the position in society with p value 0.004. This shows that there is a statistically significant variation among farmers with different amounts of land holders. Farmers with greater landholdings 2 hectares and above are the ones who are causing the mean difference. They said that their thought towards social position hasn't improved significantly with mean value of 1.26 compared to marginal landowner with Mean 1.67 and smallholders Mean 1.69. This indicates that larger landowners experienced a markedly greater elevation in their social status.

For all other economic and social factors including income, employment, assets, household facilities, skilled labor, and children's education the p-values exceed 0.05. This means the researcher accept the null hypothesis for these factors, indicating that perceptions of these outcomes were statistically similar across all landholding sizes.

Table 3.3.15. Descriptive Statistics of Agricultural types and their Economic factor on Farmers' Socio-Economic Status in Nagaland

Variables	Increase in income of farmers		Increase in assets holdings		Improve employment opportunity in		Increase in household facilities	
	Mean	Sd	Mean	Sd	Mean	Sd	Mean	Sd
Type of agriculture								
Shifting agriculture	4.06	0.452	4.01	0.41	2.81	1.116	3.94	0.433
Plantation agricultural	4.07	0.500	4	0.514	2.67	1.071	3.99	0.376
Terrace agricultural	3.98	0.287	3.96	0.504	2.95	1.050	3.99	0.406

Source: Author calculation

The result shows that farmers in Nagaland who practice shifting, planting, and terrace farming have reasonably high average scores for increasing income about 4.0 and asset holdings around 4.0, with low standard deviations. This means that the favourable outcomes are consistent across groups. The mean for job creation is lower and the variation is higher, which suggests that the advantages of job creation are less consistent. The average improvement in household facilities is close to 4.0 for all categories, which shows that there are big and persistent societal benefits. Overall, all three methods of farming increase farmers' economic status, although income and asset growth are the most consistent improvements.

Table 3.3.16. Descriptive Statistics of Agricultural types and their Social Impact on Farmers' Socio-Economic Status in Nagaland.

Variables	Improve in children education		Improve the status in the society		Improved in skilled labour	
	Mean	Sd	Mean	Sd	Mean	Sd
Type of agriculture						
Shifting agriculture	3.34	1.075	1.72	0.654	3.68	0.682
Plantation agricultural	3.41	0.941	1.57	0.551	3.79	0.579
Terrace agricultural	3.27	1.098	1.58	0.539	3.73	0.651

Source: Author calculation

The data shows that plantation agriculture has the highest average for improving skilled labor (3.79), which means agricultural credit helps people learn new skills the

most. Shifting agriculture ranks a little lower (3.68), but it has the greatest mean for boosting children's education (3.34), which means it has higher educational advantages. Terrace farming always has the lowest means for all variables, which suggests it has less of an effect on education, social standing, and skilled labor. Plantation agriculture appear to be the best way to improve skills, whereas shifting agriculture seems to be the best way to improve education. Historically, plantations that grew things like rubber and spices have created a lot of jobs and helped develop areas that were hard to reach. Even though a lot of work on plantations is informal and often unskilled, the high need for workers in this field has led to migration and settlement of workers who gradually learn new skills, especially in tasks that are specialized to crops, such tapping rubber. It also says that plantations are important for jobs and making a living, even though working conditions might be hard. The research stresses how important plantations are for creating jobs, which over time helps people learn new skills(Rajasenan, 2010)

3.3.17: ANOVA result for type of agriculture on social economic status of farmers in Nagaland.

Economic factor	F	Sig
Increase in income of farmers	1.880	0.154
Increase in employment opportunities	1.924	0.147
Increase in assets holding	0.575	0.563
Increase in household facilities	0.579	0.561
Social factor		
Improve the status in the society	3.032	0.049
Improve in skilled labour	1.024	0.360
Improve in children education	0.548	0.578

Source: Author calculation

H₀: There is no significant difference in the mean scores of perceived socio-economic status among farmers practicing different types of agriculture in Nagaland.

The analysis reveals no significant disparity in the mean scores of all the economic factors associated with socio-economic status among farmers engaged in various types

of agriculture in Nagaland, as displayed by p-values exceeding 0.05 for income increase, employment opportunities, asset holdings, and household facilities. However, for the social factor "improvement in societal status," shows a statistical significant difference, Sig=0.049, indicating that the type of agriculture practiced influences perceived social status.

Based on the mean scores from table 3.3.15 for perceived improvement in social status, the Shifting agriculture group shows a notable difference. With a mean of 1.72, these farmers reported a higher perception of social status improvement compared to the Plantation with mean score 1.57 and Terrace mean value 1.58.

Other socioeconomic determinants, including enhancement of skilled labor and children's education do not exhibit significant variations among agricultural types. This shows that the economic benefits of different types of agriculture are about the same, but the way people see them, especially their social status, changes based on the sort of agriculture that farmers in Nagaland do.

Table no:3.3.18: Descriptive statistics for loan sanctioned on economic status of farmers in Nagaland

Variables	Increase in income of farmers		Increase in assets holdings		Improve employment opportunity		Increase household facilities	
	Mean	SD	Mean	Sd	Mean	SD	Mean	Sd
Amount of loan sanctioned								
Less than 1,00,000	4.43	0.535	3.86	0.378	2.43	1.134	4	0.577
1,00,000-1,50,000	4.04	0.442	3.97	0.491	2.87	1.097	3.95	0.41
150,000 – 200,000	4.00	0.397	4.08	0.48	2.54	0.969	4.08	0.27
Above 200,000	4.00	0.299	4.06	0.34	2.79	1.087	3.97	0.456

Source: Author calculation

Table 3.3.18 shows that there is a definite link between the quantity of the loan and how it appears to impact the economy factors like "Increase in income" and "Increase in household activities" were consistently evaluated highly with mean score 4.0 and above across all loan categories. This shows that these are major benefits for all

borrowers. Farmers with the smallest debts less than 1,00,000 said they saw the biggest rise in their income Mean value of 4.43 For "Increase in assets holdings," perceptions got a little better with bigger loans. On the other hand, the variable "Improve in employment opportunity" got the lowest scores from all groups means ranging between 2.43 and 2.87. This suggests that loans are not seen as a main way to create new jobs, no matter how much money is given.

Table no:3.3.19: Descriptive statistics for loan sanctioned on socio economic status of farmers in Nagaland

variables	Improve in children education		Improve the status in the society		Improved in skilled labour	
	Mean	Sd	Mean	SD	Mean	SD
Amount of loan sanctioned						
Less than 1,00,000	1.71	0.488	2	1.291	3.14	1.069
1,00,000- 1,50,000	3.36	1.041	1.71	0.577	3.73	0.65
150,000 – 200,000	3.49	0.97	1.46	0.555	3.82	0.506
Above 200,000	3.29	0.128	1.4	0.522	3.74	0.638

Source: Author calculation

The data shows a clear correlation between the amount of loan approved and increases in socio-economic position. There is a clear positive link between loans for children's education and skilled labor. Farmers who get bigger loans more than ₹1,00,000 have mean scores that are much higher more than 3.3 and 3.7, respectively, than those who get the small amount of loans. On the other hand, the idea that getting a loan will boost one's social status stays low across all loan types. The average scores fall down a little as the loan amounts grow up. This means that even if bigger loans are highly linked to improvements in human capital development such as education and skills, they don't seem to have much of an effect on improving a farmer's social status or position within the community.

Table no: 3.3.20: ANOVA result for loan sanctioned for social economic status of farmers in Nagaland.

Economic factor	F	Sig
Increase in income of farmers	2.311	0.076
Increase in employment opportunities	1.403	0.241
Increase in assets holding	1.367	0.252
Increase in household facilities	1.044	0.373
Social factor		
Improve the status in the society	7.339	0.000
Improve in skilled labour	2.195	0.088
Improve in children education	6.148	0.000

Source: Author calculation

H₀: The mean perception scores for improvement in children's education, social status, and skilled labour are equal across all categories of loan amounts sanctioned to farmers in Nagaland.

The ANOVA results show that the loan amount has a different effect on the perception of economic and social factors. The p-values are larger than 0.05 for all the economic parameters, such as income, employment, assets, and home facilities, show that there was no statistically significant variation based on the loan amount. This means that the perceived benefits were the same for all loan groups. Hence the researcher accepts the null hypothesis.

On the other hand, two social factors reveal a significant difference "Improve the status in the society" and "Improve in children's education" ($p = 0.000$). This suggests that the size of the loan had a clear and measurable effect on how farmers thought their social status and their children's education were getting better. The data shown in table 3.3.17 reveal that the lowest loan category less than ₹1,00,000 is what causes the significant differences in socio status and education. For social status, farmers with less than 1,00,000 loan group had a markedly higher mean indicating that it disagrees, while all higher loan groups reported similarly low mean. Conversely, for children's education, the farmers with less than 1,00,000 group had a very low mean value of

1.71 suggesting that agricultural credit has not improved their children education, whereas farmers receiving larger loans above 1,00,000 reported with higher mean showing that it has improved their children education.

For The "Improve in skilled labor" component was not statistically significant ($p = 0.088$), which means that the size of the loan did not change this impression between group.

Table 3.3.21: Influence of Annual Agricultural Income on the Perceived economic factors among Farmers in Nagaland

variables	Increase in income of farmers		Increase in assets holdings		Improve in employment opportunity		Increase in household facilities	
Annual Income from Agricultural activity?	Mean	SD	Mean	Sd	Mean	SD	Mean	Sd
Less than 1,00,000	4.07	0.403	3.92	0.476	3.22	1.079	3.94	0.49
1,00,000-1,50,000	4.04	0.340	4.1	0.414	2.77	1.031	4.01	0.197
150,000 – 200,000	4.00	0.403	3.97	0.559	2.67	1.031	3.94	0.491
Above 200,000	4.03	.482	4.00	0.422	2.64	1.085	3.98	0.379

Source: Author calculation

The above result shows that annual agricultural income has a small effect on how farmers perceive the economy is progressing. Mean scores for significant factors including rising income, assets, and household facilities remain high about 4.0 across all income levels. This shows that these benefits can be recognised by the farmers, no matter how much money they make. But there is a big variation in job opportunities, the lowest income group less than ₹1,00,000 has a far higher perception mean 3.22 than all the other income groups. The data for "Increase in household facilities" demonstrates that people in all income levels constantly think highly of it, with mean ratings that are very close to each other, between 3.94 and 4.01. This shows that people of all economic levels see improvements in residential facilities as a major and universal benefit of the agricultural intervention.

Table 3.3.22: Influence of Annual Agricultural Income on the Perceived social factors among Farmers in Nagaland

variables	Improve in children education		Improve the status in the society		Improved in skilled labour	
	Mean	Sd	Mean	SD	Mean	SD
Annual Income from Agricultural activity?						
Less than 1,00,000	3.06	1.191	1.68	0.653	3.7	0.673
1,00,000- 1,50,000	3.31	1.048	1.67	0.55	3.78	0.573
150,000 – 200,000	3.49	0.951	1.68	0.517	3.8	0.587
Above 200,000	3.46	0.960	1.57	0.619	3.67	0.696

Source: Author calculation

Table 3.3.22 shows that annual income from agriculture has a clear effect on social factors. There is an increase in children's education, as income rises, the perceived improvement rises as well, from a mean of 3.06 in the lowest income group to a top of 3.49 in the middle-income group. On the other hand, the perception that one's social status has increased stays low across all income levels, with means around 1.67, which suggests that there is no significant change, highlighting that the farmers disagree that agricultural credit has improved their status in society. Likewise, all groups had high views of better skilled labor, with means around 3.75. This shows that all farmers, no matter how much money they make, agree that this benefit exists.

Table no: 3.3.23: ANOVA result for annual income from agricultural activity for social economic status of farmers in Nagaland.

Economic factor	F	Sig
Increase in income of farmers	0.525	0.665
Increase in employment opportunities	7.235	0.000
Increase in assets holding	2.511	0.058
Increase in household facilities	0.577	0.631
Social factor		
Improve the status in the society	0.948	0.418
Improve in skilled labour	1.078	0.358
Improve in children education	3.970	0.008

Source: Author calculation

H₀: There is no significant difference in the mean scores of perceived socio-economic status indicators among farmers based on their annual income from agricultural activities in Nagaland.

Based on the findings of the ANOVA test, most economic and social characteristics don't exhibit any big variations between income groups as shown by their strong p-values more than 0.05. However, "Increase in employment opportunities" indicates a very significant difference ($p=0.000$). From table 3.3.20 it suggests that the lowest income group agree that agricultural credit has improved in employment opportunity whereas farmers with above 1,00,000 annual income disagree with the statement. For "Improve in children education" it reveals a big difference ($p=0.008$). Farmers with higher incomes often say that education has gotten better. This shows that yearly income does affect how people think about job advantages and school outcomes, but it doesn't change other social and economic elements like social standing, skilled labor, or most economic considerations.

Table no.3.3.24: Influence of Bank Type on Perceived Economic Benefits among Farmers in Nagaland

variables	Increase in income of farmers		Increase in assets holdings		Improve in employment opportunity		Increase in household facilities	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
State bank of India	4.00	.461	3.99	0.469	2.99	1.026	3.95	0.366
Nagaland state co-operative bank	4.07	.346	3.95	0.542	2.82	1.120	3.97	0.389
Nagaland Rural Bank	4.04	.454	4.03	0.377	2.66	1.088	3.98	0.47

Source: Author calculation.

The data shows that farmers of all types usually agree that their income, assets, and household activities have increased because the means of credit are between 3.95 and 4.07, which suggests that the answer was somewhere between "Agree" and "Strongly Agree". But people are more reasonable when it comes to how they feel about job opportunity. For this reason, farmers' answers are more neutral or slightly concur with this point of view. Borrowers from the State Bank of India (SBI) are the most likely

to agree that the loans helped improved in employment opportunity with Mean 2.99, falling under "Neutral". This is a lot higher than the borrowers from Nagaland Rural Bank Mean=2.66, who are the least likely to agree that the loans helped in job opportunity. This means that people think all banks are good at helping people with their finances directly, but SBI is thought to be a little better at creating jobs. SBI have the money and capacity to issue more types of loans. This lets them pay for more than simply seasonal inputs, they can even pay for bigger things like irrigation pumps, modest processing units, and vehicles for transporting goods. These bigger investments are the kind that create jobs because they need hired workers to run and manage them (Maitra et al., 2017).

Table no.3.3.25: Influence of Bank Type on Perceived social Benefits among Farmers in Nagaland.

variables	Improve in children education		Improve the status in the society		Improved in skilled labour	
	Mean	Sd	Mean	SD	Mean	SD
State bank of India	3.11	1.133	1.68	0.558	3.7	0.674
Nagaland state co-operative bank	3.42	0.967	1.55	0.526	3.81	0.542
Nagaland Rural Bank	3.45	1.025	1.7	0.686	3.67	0.714

Source: Author calculation

The data shows that farmers gained loan from different banks have diverse ideas about the social benefits. Farmers from all institutions disagree that a beneficial improvement resulted for better social standing mean ranging between 1.55 and 1.70, which shows that this is a benefit that hasn't been addressed by anyone.

On the other hand, everyone agrees that skilled workers are getting better. The average scores around 3.67 to 3.81 are between "Neutral" and "Agree," which means that most farmers think their skills became better, no matter who they borrowed from.

For improve in education farmers who borrow from the Nagaland State Co-operative Bank (3.42) and the Nagaland Rural Bank (3.45) agree more than people who borrow from the State Bank of India (3.11). This shows that people think the local banks have a bigger beneficial effect on children education than the national bank.

Table no: 3.3.26: ANOVA result for sources for availing loan for social economic status of farmers in Nagaland.

Economic factor	F	Sig
Increase in income of farmers	0.918	0.400
Increase in employment opportunities	3.251	0.040
Increase in assets holding	0.953	0.386
Increase in household facilities	0.123	0.884
Social factor		
Improve the status in the society	2.610	0.075
Improve in skilled labour	1.892	0.152
Improve in children education	4.413	0.013

Source: Author calculation

H₀: There is no significant difference in the mean scores of perceived socio-economic status indicators among farmers based on their source for availing loans in Nagaland

The ANOVA findings show that the insignificant p-values for most economic and social characteristics, such as income, assets, home facilities, social status, and skilled labor, show that the loan source does not make a big difference.

There are, however, two exceptions variables. "Improve in children education" reveals a big difference $p=0.013$, which means that the source of the loan does alter how people think about the educational benefits. The State Bank of India has a lower mean score (3.11) than the Nagaland State Co-operative Bank (3.42) and the Nagaland Rural Bank (3.45) as shown in table no 3.3.23, which makes a big difference in how much education has improved. This shows that farmers think local banks are better than SBI. Studies show that local banks are better at promoting social outcomes because they are part of community networks, know the area better, and can establish trust (Burgess et al., 2005). This gives them greater power than bigger, formal banks to control how people use loans, directing resources toward long-term investments in human capital like education.

"Increase in employment opportunities" is equally significant ($p=0.040$) for economic reasons, which means that the type of bank affects how farmers see job creation. According to the data, the State Bank of India (SBI) is the main reason for the big variation in job opportunities. It has a mean score of 2.99, which is much higher than the Nagaland State Co-operative Bank (2.82) and the Nagaland Rural Bank (2.66). This shows that farmers think SBI is better than local banks at creating jobs through agricultural credit.

3.4: T Test for social impact and personal impact

Hypothesis testing

Table no: 3.4.1: T-Test for economic factors

Variables	Districts	Std. Deviation	Mean	t	sig
Increase in income of farmers	Kohima	0.308	4.03	-0.347	0.729
	Wokha	0.511	4.04		
Increase in employment opportunities	Kohima	1.087	2.98	2.993	0.003
	Wokha	1.065	2.66		
Increase in assets holding	Kohima	0.492	3.96	-1.46	0.145
	Wokha	0.442	4.02		
Increase in household facilities	Kohima	0.44	3.95	-1.07	0.285
	Wokha	0.379	3.99		

Source: Author calculation

T-test was applied to test the Hypothesis "There is no significant impact of agricultural credit on socio economic conditions of farmers in Kohima and Wokha districts".

The t-test results compare the means of economic characteristics to show how agricultural credit influences farmers' socio-economic outcomes in Kohima and Wokha districts. The null hypothesis (H_0) that agricultural credit has no significant

impact on economic factors is rejected for three of the four economic factors, increase in income p value 0.729, increase in assets holding p value 0.145, and increase in household facilities $p=0.285$ has no statistically significant differences exist between districts, as all significance values exceed the 0.05 threshold. This indicates that agricultural credit does not show a significant impact on most socio-economic factors between Kohima and Wokha

However, a statistically significant difference was found for increase in employment opportunities where p is 0.00. Farmers in Kohima district reported a notably higher mean score (2.98) compared to Wokha (2.66), suggesting that agricultural credit has been more effective in creating employment opportunities in Kohima.

The significant difference in job creation between Kohima and Wokha districts aligns with accepted geographic economic theory. Research by Ranjan and Lanjouw & Shariff shows that rural areas closer to urban areas see faster commercialization of agriculture (Ranjan, 2006) and more opportunities rather than farming because they have better access to markets, infrastructure, and demand linkages (Lanjouw & Shariff, 2002). Kohima, the state capital, is a growth pole that helps agricultural finance boost labour-intensive, high-value agriculture and related businesses, the high demand for diverse food products transforms agricultural credit from a tool for basic farming into capital for job-creating enterprises. In contrast, Wokha's more remote location as compared to Kohima (Ezung & Jamir, 2016), result in a weaker perceived impact on employment from similar financial interventions. Without the same market pull, credit remains a tool for improving existing farming, which has a much lower impact on employment.

Table no: 3.4.2: T-Test for social factors

variables	Districts	Std. Deviation	Mean	t	Sig
Improve the status in the society	Kohima	0.559	1.62	-0.491	0.624
	Wokha	0.633	1.65		
Improve in skilled labour	Kohima	0.593	3.77	1.283	0.200
	Wokha	0.696	3.69		
Improve in children education	Kohima	1.103	3.18	-3.101	0.002
	Wokha	0.97	3.49		

Source: Author calculation

The above analysis shows that agricultural credit has not created any significant difference between Kohima and Wokha in terms of social status and skilled labor where $p=0.624$ and 0.200 , respectively. Hence, the researcher accepts the null hypothesis. This means that people in both districts see these social benefits in the same way.

There is a statistically significant difference were found in children's education $p=0.002$. Farmers in Wokha district report a mean score of 3.49 for educational advancement, which is much higher than the score of 3.18 for farmers in Kohima. This indicates that agricultural financing has been more successful in generating perceived educational advantages in Wokha compared to the capital area, revealing a significant geographic disparity in this particular social result.

The discovery that agricultural credit led to a more significant perceived enhancement in children's schooling in Wokha compared to Kohima corresponds with existing literature on the diverse effects of credit. Research reveals that the marginal advantage of credit is most pronounced in credit-constrained, agriculturally dependent regions, where it is predominantly utilized for consumption smoothing and human capital investment (Osabohien et al., 2020). In many situations, lending directly removes

financial barriers to education. In contrast, urban places with more diverse economies, like Kohima, households have alternative financial buffers and investment opportunities to invest, which makes the direct effect of credit on educational results less clear. So, Wokha's higher ratings show that it relies more on agricultural loans to pay for schooling than other places do, not because it has better educational performance.

3.5. Conclusion

Agricultural credit has significantly enhanced farmer welfare in Nagaland by driving economic stability and human capital development. It consistently boosted incomes, assets, and household well-being across all farmer groups, providing a foundation for long-term financial security. Crucially, it served as a transformative tool for educating children and developing skills, creating pathways out of intergenerational poverty. However, impacts varied geographically Kohima saw better employment outcomes, while Wokha experienced stronger educational benefits. The intervention successfully evolved from mere financial support into a holistic instrument for socio-economic advancement, though it showed limited effect on improving social status and uneven job creation across regions.

Chapter 4

Utilization pattern and repayment of Agricultural credit in Kohima and Wokha Districts

4.1. Introduction

Agricultural credit serves as a means for farmers to obtain the necessary funds to invest in inputs such as seeds, fertilizers, pesticides, and farm machineries. Those loans can also provide financial support during time of distress, enabling farmers to cope with emergencies or unforeseen circumstances (Rengarajan et al., 2024). Understanding the factors that influence loan utilization pattern and repayment behaviour is essential for designing effective agricultural credit policies and programmes. Since the transaction to commercialization in agricultural sector increases the need for capital (Kambale et al., 2015).

Agricultural credit is important source for the growth of the State economy, agricultural modernization and loan recovery is a vital issue, as most of the banks face problems in getting repayment on time because of improper credit utilization by the farmers provided (Pradhan, 2013). Hence, it can be noted that credit utilization is more important than the availability of credit. If the credit sanctioned is diversified and used for unproductive purpose, then it does not increase the income and reduce the repayment capacity of the farmers.

The farmers of both the districts i.e., Kohima and Wokha have been depending upon formal and informal sources of credit for their agricultural activities, as most of them in this district are small and marginal farmers. The variables that influenced repayment in both the districts are farmers income, banking facilities, amount of loan disbursed and production. This chapter covers the objectives 3 and 4 i.e., To examine the factors which affects the farmers choice of credit sources and utilization pattern and Repayment of Agricultural credit in Kohima and Wokha districts.

This chapter also present the results of the two hypotheses i.e., hypothesis 2 and 3:

2. There is no significant association between the category of borrower's and their utilization pattern of agricultural credit.
3. There is no significant association between the categories of borrower's and their repayment of agricultural credit.

4.2. Factors affecting the farmer's choice of credit sources based on financial and institution problems

To fulfil the objective no.3, To examine the factors which affects the farmers choice of credit sources, the study used simple descriptive analysis and based on the mean score, the author identified the major factors which affects the farmers choice of credit sources. The variables utilized to analyse the factors influencing the farmer's choice of credit sources based on financial problems are

1. High cost of borrowing,
2. Insistence on opening an account
3. Inadequacy of the mortgage

and the institutional problems are lack of corporation from bank staff, complex formalities, and lack of awareness about farm credit package. Only the top three variables from rank analysis were chosen for ANOVA analysis shown in the table below in 4.2.1 and 4.2.18.

The choice of agricultural credit is affected by several socio-demographic factors, such as the effect of education has high impact, the higher the education level the higher the probability of having loans from institutional sources (Anjani Kumar, 2007). Niyaz and Ujwala (2022) in their study finds out that farmers marital status, education level, farm size and farm status have impacted on the amount of agricultural loan they borrow. Household head with religious education are more likely to avoid formal credit (Masaoood Moahid, 2020).

Table 4.2.1 Identification of factors influencing farmers choice of credit

statements	Mean	Rank
Financial problems		
Insistence of Opening an Account	4.09	1
Insufficient mortgage	3.96	2
High Cost of borrowings	3.93	3
High rate of interest	3.85	4
Default in Repayment	2.65	5

Source: Author calculation

The table no. 4.2.1 presents the mean scores and ranking of five financial problems. From the above table the mean score of insistence of opening an account shows mean value of 4.09, ranking 1. Mandatory accounts mostly lock customers into a specific bank. One of the Basic problems for receiving finance is difficulties in opening bank (Dhakshana et al., 2018). Followed by insufficient mortgage with mean score of 3.96. High cost of borrowings shows a mean score of 3.93 rank third, High rate of interest rank fourth with a mean score of 3.85. One study suggest that Interest rate charged on agriculture credit by the banks should be normalised (Shobha & Siji, 2018). Default in repayment has the lowest mean score with 2.65 as compared to other financial barriers. Researcher used only the top three variables from the ranking to focus the ANOVA on the most significant barriers and to avoid statistical errors from testing too many factors.

4.3. Descriptive statistic and ANOVA for factors affecting the farmer's choice of credit sources

Table no: 4.3.1: Descriptive table showing age of respondents on factors affecting farmers choice of credit.

Variables	High cost of borrowing		Insistence of opening an account		Insufficient mortgage	
	Mean	SD	Mean	SD	Mean	SD
less than 30	3.95	0.462	4.15	0.356	4.03	0.328
31-40	3.91	0.468	4.09	0.291	3.95	0.362
41 & above	3.95	0.475	4.07	0.255	3.94	0.354

Source: Author calculation

Table no 4.3.1 reveal that high cost of borrowings are nearly identical and falls firmly between the agree range. Indicating that regardless of age, farmers uniformly perceive high borrowing costs to be a significant barrier.

The Minimum value is 3 for every group and the Maximum value of 5 across all groups shows that many individuals in every age category feel most strongly. The mean score for insistence of Opening an Account for all the group shows above 4 suggesting that all age groups strongly agree, with the youngest group below 30 feeling most strongly. The minimum score of 4 and maximum of 5 proves that not a single respondent disagreed, indicating complete consensus that insisting on opening an account is a problem. All age groups agree that insufficient mortgage is a barrier, with the under 30 group agreeing most strongly. The minimum score of 3 in all groups shows that no one strongly disagreed, while the maximum of 5 confirms others viewed it as a critical obstacle.

Table no: 4.3.2. ANOVA analysis for factors affecting the farmer's choice of credit sources based on Age categories

Variables	F	sig
High Cost of borrowing	0.268	0.765
Insistence of Opening an Account	1.836	0.161
Insufficient mortgage	1.667	0.190

Source: Author calculation

H₀: There is no mean difference in the perceived barrier of high borrowing costs across different age categories of farmers

H₀: There is no mean difference in the perceived barrier of the insistence on opening an account across different age categories of farmers.

H₀: There is no mean difference in the perceived barrier of insufficient mortgage across different age categories of farmers.

From table no 4.3.2 the results indicate that for all three variables, no statistical significant differences were found between the age groups. The p-value is substantially higher than the standard alpha level of 0.05 used to determine statistical significance.

Consequently, the researcher accepts the null hypothesis, which states that all group means are equal. This finding provides strong evidence that there is no meaningful difference between the groups in their perception of borrowing costs, opening account and insufficient mortgage.

Table no: 4.3.3 Descriptive table showing Education qualification of respondents on factors affecting farmers choice of credit.

variables	High Cost of borrowing		Insistence of Opening an Account		Insufficient mortgage	
	Mean	SD	Mean	SD	Mean	SD
no schooling	3.94	0.434	4.06	0.245	3.94	0.403
secondary	3.92	0.485	4.08	0.272	3.94	0.376
HSLC	3.93	0.498	4.13	0.333	3.97	0.237
HSSLC	4.00	0.436	4.06	0.244	4.00	0.356
Graduate & above	3.89	0.475	4.14	0.350	3.98	0.378

Source: Author calculation

Descriptive table no 4.3.3 finds that the perception of high borrowing costs as a barrier is consistently high across all education levels, with all group mean are near to 4.0. The universal minimum score of 3 confirms that no respondent from any educational background dismissed this issue by staying neutral, while the maximum of 5 shows strong agreement exists in all groups.

The similar standard deviations indicate that the strength of agreement and the spread of opinions are nearly identical, regardless of a person's education. For insistence to open an account all the education levels strongly agree that it is a barrier with mean score ranging between 4.06 to 4.14. The minimum and maximum shows 4 and 5 confirming strong agreement with low SD indicating very little variation within the group.

The mean score for insufficient mortgage in all the education group shows between 3.94 to 4.00 indicating that all the farmers agree that insufficient mortgage is a barrier. The minimum score of 3 shows no one strongly disagreed, while the maximum of 5

confirms strong concern exists. Low standard deviations indicate consistent agreement within all education levels.

Table no: 4.3.4: ANOVA analysis showing Education qualification of respondents on factors affecting farmers choice of credit

variables	f	sig
High Cost of borrowing	0.480	0.750
Insistence of Opening an Account	1.143	0.336
Insufficient mortgage	0.515	0.725

Source: Author calculation

H₀: There is no significant mean difference in the perceived barrier of high borrowing costs across different education categories of farmers

H₀: There is no significant mean difference in the perceived barrier of the insistence on opening an account across different education categories of farmers.

H₀: There is no significant mean difference in the perceived barrier of insufficient mortgage across different education categories of farmers.

The ANOVA test results show that for all three variables High Cost of borrowing, Insistence of Opening an Account, and Insufficient mortgage the p-values are significantly greater than 0.05. This means there are no statistically significant differences in how the different education qualification perceive in terms of financial barriers.

Table no: 4.3.5 Descriptive table showing area owned by farmers on factors affecting farmers choice of credit.

Variables	High cost of borrowing		Insistence of opening an account		Insufficient mortgage	
	Mean	SD	Mean	SD	Mean	SD
size 1 hectare or less	3.92	0.460	4.09	0.284	3.98	0.351
Size 1 to 2 hectares	4.04	0.544	4.13	0.334	3.88	0.393
Size 2 hectare above	3.87	0.428	4.10	0.301	3.90	0.301

Source: Author calculation

The above table 4.3.5 shows that all the group with different land holding size perceive high cost of borrowings as a significant barrier, with mean score ranging between 3.84 to 4.04. The minimum score of 3 across all groups confirms that no farmer, regardless of land size, dismissed this issue, the most critical still rated it neutral. The maximum score of 5 shows strong agreement exists in all categories.

Farmers of all land sizes strongly agree (means 4.09 to 4.13) that account insistence is a barrier. The minimum score of 4 proves no dissenting views exist all farmers at least agree. Maximum scores of 5 show strong consensus, and low standard deviations confirm very little opinion variation within groups. All farmer groups agree insufficient mortgage is a barrier with means values between 3.88 to 3.98. The minimum score of 3 shows no strong disagreement, while the maximum of 5 confirms strong concern. Farmers holding above 2 hectares show slightly tighter consensus (lower SD), but all groups share similar perceptions.

Table no: 4.3.6: ANOVA table showing area owned by farmers on factors affecting farmers choice of credit.

Variables	f	sig
High Cost of borrowing	1.631	0.197
Insistence of Opening an Account	0.344	0.709
Insufficient mortgage	2.174	0.115

Source: Author calculation

H₀: There is no significant mean difference in the perceived barrier of high borrowing costs across different area owned by farmers

H₀: There is no significant mean difference in the perceived barrier of the insistence on opening an account across different area owned by farmers.

H₀: There is no significant mean difference in the perceived barrier of insufficient mortgage across different area owned by farmers.

Based on the ANOVA results provided, in the above table 4.3.6 confirms that there are no statistically significant differences in perceptions across groups for any of the three barriers measured. So, the researcher accepts the null hypothesis and concludes that education level does not have a statistically significant effect on how people perceive the factors effecting choice of credit.

Table no: 4.3.7 Descriptive table showing type of ownership and factors affecting farmers choice of credit.

Variables	High cost of borrowing		Insistence of Opening an Account		Insufficient mortgage	
Ownership	Mean	SD	Mean	SD	Mean	SD
Ancestral	3.92	0.467	4.10	0.300	3.97	0.343
Purchased	4.00	0.444	4.05	0.216	3.90	0.433
Rented	3.95	0.524	4.11	0.315	3.97	0.287

Source: Author calculation

The above table 4.7.7 reveals that farmers with all types of land ownership strongly agree that high borrowing costs are a barrier, with mean scores consistently near 4.0. The minimum score of 3 confirms that no farmer, regardless of how they acquired their land, dismissed this issue, and viewed it neutrally. The maximum score of 5 shows strong agreement exists in all groups. The mean score for insistence of opening an account range between 4.05 to 4.11 highlighting that all the farmers strongly agree that insisting on opening an account is a barrier. The minimum score of 4 shows not a single farmers disagree regardless of land ownership type the maximum score of 5 confirms strong consensus exists in all groups. Low standard deviations show very little opinion variation within each ownership category, indicating solid internal agreement. All land ownership groups agree insufficient mortgage is a barrier. The minimum score of 3 shows no strong disagreement exists in any group. The maximum score of 5 confirms some farmers view it as a critical obstacle and more varied opinions, but all groups share broadly similar perceptions.

Table no: 4.3.8: ANOVA table showing type of ownership and factors affecting farmers choice of credit.

Variables	f	sig
High Cost of borrowing	0.789	0.455
Insistence of Opening an Account	0.865	0.422
Insufficient mortgage	0.925	0.397

Source: Author calculation

H₀: The type of ownership does not significantly influence the mean perception of High Cost of Borrowing as a factor affecting the farmers' choice of credit.

H₀: The type of ownership does not significantly influence the mean perception of the Insistence of Opening an Account as a factor affecting the farmers' choice of credit.

H₀: The type of ownership does not significantly influence the mean perception of Insufficient Mortgage as a factor affecting the farmers' choice of credit

Since all p values are greater than the standard significance level of 0.05, the researcher accepts the null hypothesis. This means there is no statistically significant difference in how farmers of different landholding sizes perceive these barriers.

Table no: 4.3.9 Descriptive table showing type of farming's and factors affecting farmers choice of credit.

Variables	High cost of borrowing		Insistence of opening an account		Insufficient mortgage	
Type of farming	Mean	SD	Mean	SD	Mean	SD
Shifting agricultural	3.84	0.484	4.11	0.309	3.98	0.351
Plantation agricultural	4.02	0.475	4.07	0.248	3.93	0.381
Terrace agricultural	3.99	0.425	4.10	0.297	3.96	0.334

Source: Author calculation

The descriptive table 4.3.9 highlight that all farming types agree high borrowing costs are a barrier, but plantation and terrace farmers show stronger agreement than shifting agriculturists. The minimum score of 3 confirms that no farmer completely dismissed this issue, the most critical in each group still viewed it neutrally. The maximum score of 5 shows strong concern exists in all farming systems. The similar standard deviations indicate a consistent spread of opinions within each group. The mean score for insisting an account shows strongly agree among the farmers. The universal minimum score of 4 is indicate not a single farmer disagreed, regardless of farming method. The maximum score of 5 confirms strong consensus exists in all groups. The very low standard deviations show extremely low variation within each group, with opinions clustered tightly around the high mean. All farming types agree insufficient mortgage is a barrier. The minimum score of 3 in all groups confirms that no farmer

strongly disagreed, while the maximum of 5 shows strongly agree. The low standard deviations indicate strong consensus within each farming type.

Table no: 4.3.10: ANOVA table showing type of farming's and factors affecting farmers choice of credit.

variables	f	sig
High Cost of borrowing	6.008	0.003
Insistence of Opening an Account	0.677	0.509
Insufficient mortgage	0.744	0.476

Source: Author calculation

H₀: The type of farming does not significantly influence the mean perception of High Cost of Borrowing as a factor affecting the farmers' choice of credit.

H₀: The type of farming does not significantly influence the mean perception of the Insistence of Opening an Account as a factor affecting the farmers' choice of credit.

H₀: The type of farming does not significantly influence the mean perception of Insufficient Mortgage as a factor affecting the farmers' choice of credit

The ANOVA result in table 4.3.10 shows that the p value for Insistence of Opening an Account & Insufficient mortgage are greater than 0.05. This indicates no statistically significant difference between land ownership groups for these two barriers. So, the researcher accepts the null hypothesis. But in case of high cost of borrowings the p-value is less than 0.05. This indicates a statistically significant difference in how different land ownership groups perceive this barrier. The mean score for high cost of borrowing shows that shifting agricultural report the lowest level of agreement with mean 3.84. plantation and Terrace agricultural farmers report higher levels of agreement where means is 4.02 and 3.99, respectively placing their perception closer to "Strongly Agree"

Table no: 4.3.11 Descriptive table showing amount of loan sanctioned and factors affecting farmers choice of credit.

variables	High Cost of borrowing		Insistence of Opening an Account		Insufficient mortgage	
Loan sanctioned	mean	SD	mean	SD	mean	SD
Less than 1,50,000	3.92	0.454	4.10	0.304	3.97	0.354
150,000 – 200,000	3.90	0.436	4.10	0.300	3.83	0.381
Above 200,000	4.03	0.546	4.04	0.207	3.99	0.323

Source: Author calculation

Table no 4.3.11 shows that all income groups agree that high borrowing costs has a barrier. Higher-income farmers, express the strongest concern, while lower and middle-income groups show slightly lower agreement. The minimum score of 3 confirms that no farmer dismissed this issue, viewed it neutrally. The maximum score of 5 shows strong agreement exists in all groups. The mean scores show that all income groups strongly agree that the insistence on opening an account is a barrier. The minimum score of 4 across all group shows universal agreement as not a single respondent in any income category dismissed this practice. The maximum score of 5 confirms that the strongest level of concern is present in all groups. The low standard deviations, particularly in the highest-income group indicate very tight consensus and minimal disagreement within each income category.

Table no: 4.3.12: ANOVA table showing amount of loan sanctioned and factors affecting farmers choice of credit

variables	f	sig
High Cost of borrowing	1.725	0.179
Insistence of Opening an Account	1.148	0.318
Insufficient mortgage	3.165	0.043

Source: Author calculation

H₀: Amount of loan sanctioned does not significantly influence the mean perception of High Cost of Borrowing as a factor affecting farmers' choice of credit.

H₀: Amount of loan sanctioned does not significantly influence the mean perception of the Insistence of Opening an Account as a factor affecting farmers' choice of credit.

H₀: Amount of loan sanctioned does not significantly influence the mean perception of Insufficient Mortgage as a factor affecting farmers' choice of credit.

From the ANOVA table 4.3.12 shows that there is a significant mean difference were found on the perception among different group of loan sanctioned towards the variable insufficient mortgage. The mean value shows that farmers middle-income group shows noticeably lower concern with mean value 3.83, creating a significant gap with higher-income farmers and lower income farmers.

The minimum score of 3 in all groups confirms no one strongly dismissed the issue, while the maximum of 5 shows strong concern exists, especially among lower and higher-income earners. For high cost of borrowings and insistence of opening an account the significant value shows above 0.05 resulting that there is no significant mean among the group.

Table no: 4.3.13 Descriptive table showing annual income and factors affecting farmers choice of credit.

variables	High Cost of borrowing		Insistence of Opening an Account		Insufficient mortgage	
Annual income	mean	SD	mean	SD	mean	SD
Less than 1,00,000	4.03	0.442	4.06	0.247	4.02	0.410
1,00,000-1,50,000	3.94	0.437	4.14	0.350	3.91	0.288
150,000 – 200,000	3.85	0.471	4.08	0.274	3.98	0.340
Above 200,000	3.91	0.496	4.10	0.295	3.93	0.344

Source: Author calculation

Table no 4.3.13 highlight that farmers with smaller annual income feel most strongly that high borrowing costs are a barrier while concern decreases as income increases to the ₹1.5-2L. The minimum score of 3 confirms that no farmer, regardless of income level, dismissed this issue. The maximum score of 5 shows strong agreement exists in all groups. The consistent standard deviations indicate a similar spread of opinions within each debt category. All debt groups strongly agree that account insistence is a barrier, with mid-range income group showing the highest concern. The universal minimum score of 4 proves no farmer disagreed, demonstrating absolute consensus on this issue. The maximum score of 5 confirms strong agreement exists across all income levels, with low standard deviations showing consistent opinions within each group. Farmers with the lowest income levels express the greatest anxiety, with all debt groups agreeing that an inadequate mortgage is a barrier. While maximum values of 4-5 indicate significant concern across groups, the minimum score of 3 demonstrates the absence of strong opposition. Holders of mid-level income have somewhat tighter consensus and less score fluctuation.

Table no: 4.7.14: ANOVA table showing annual income and factors affecting farmers choice of credit.

variables	f	sig
High Cost of borrowing	2.496	0.059
Insistence of Opening an Account	1.107	0.346
Insufficient mortgage	1.890	0.131

Source: Author calculation

H_0 : Annual income of farmers does not significantly influence the mean perception of High Cost of Borrowing as a factor affecting the farmers' choice of credit.

H_0 : Annual income of farmers does not significantly influence the mean perception of the Insistence of Opening an Account as a factor affecting the farmers' choice of credit.

H_0 : Annual income of farmers does not significantly influence the mean perception of Insufficient Mortgage as a factor affecting the farmers' choice of credit

The ANOVA result from table 4.3.14 for all three variables, the p-values are greater than the standard significance level of 0.05. This means there are no statistically significant differences in how the different income groups perceive these barriers. The null hypothesis, which states that there is no significant mean difference based on high cost of borrowings, insistence of opening an account and insufficient mortgage.

Table no: 4.3.15 Descriptive table showing source of availing credit and factors affecting farmers choice of credit.

variables	High Cost of borrowing		Insistence of Opening an Account		Insufficient mortgage	
Source	mean	SD	mean	SD	mean	SD
state bank of India	3.92	0.461	4.13	0.335	4.02	0.325
Nagaland state co-operative bank	3.95	0.516	4.07	0.253	3.92	0.373
Nagaland Rural Bank	3.93	0.425	4.09	0.280	3.94	0.354

Source: Author calculation

The descriptive table 4.3.15 indicate that Customers of all three banks strongly agree that high borrowing costs are a barrier, with nearly identical mean scores. The minimum score of 3 shows no one dismissed this issue, while the maximum of 5 confirms strong concern exists. Perceptions are consistent across all banks. The mean scores show strong agreement across all banks that account insistence is a barrier. The minimum score of 4 proves no customer disagreed, demonstrating absolute consensus. Maximum scores of 5 confirm strong concern exists in all groups, with low standard deviations showing highly consistent opinions within each bank. The mean scores show that customers of all three banks agree insufficient mortgage is a barrier, with State Bank of India clients expressing slightly stronger concern (4.02) than customers of the cooperative (3.92) and rural banks (3.94). The universal minimum score of 3 confirms that no customer from any institution completely dismissed this issue, while the maximum score of 5 demonstrates that strong agreement exists across all client bases. The low standard deviations indicate consistent opinions within each bank's customer group, with SBI showing the tightest consensus. This pattern suggests that while all the three banks customers face this challenge, SBI customers perceive marginally greater constraints regarding mortgage requirements.

Table no: 4.3.16: ANOVA table showing source of availing credit and factors affecting farmers choice of credit.

variables	f	sig
High Cost of borrowing	0.199	0.819
Insistence of Opening an Account	1.530	0.218
Insufficient mortgage	2.520	0.082

Source: Author calculation

H₀: Source of credit availed does not significantly influence the mean perception of High Cost of Borrowing as a factor affecting the farmers' choice of credit.

H₀: Source of credit availed does not significantly influence the mean perception of the Insistence of Opening an Account as a factor affecting the farmers' choice of credit.

H₀: Source of credit availed does not significantly influence the mean perception of Insufficient Mortgage as a factor affecting the farmers' choice of credit

The ANOVA table reveals that the p-values are greater than the standard significance level of 0.05. This means there are no statistically significant differences in how farmers from different banks perceive these barriers. Hence the researcher accepts the null hypothesis.

Table 4.3.17 Rank analysis of factors affecting the farmers choice of credit based on institutional problems.

Institutional problem		
statement	mean	rank
Lack of cooperation from bank staff	4.10	1
Complex formalities and documentation	4.01	2
Lack of awareness about farm credit package	3.98	3
Delay in getting credit	3.95	4
Complicated loan procedures	3.93	5
Uneasy Instalment	3.91	6
No banks in vicinity	3.65	7
Demanding more security	2.60	8

Source: Author calculation

The table represent the institutional problems faced by the farmers when dealing with banks. Lack of corporation from bank staff rank first indicating that poor customer service is the major barriers to accessing financial service. Followed by complex formalities and documentation, lack of awareness about farm credit package. Only the top three variables from rank analysis were chosen for ANOVA analysis. Based on the mean rankings.

Table no 4.3.18 Descriptive table showing age of farmers and factors affecting farmers choice of credit.

Age	Lack of cooperation from bank staff		Complex formalities and documentation		Lack of awareness about farm credit package	
	Mean	SD	Mean	SD	Mean	SD
Less than 30	4.12	0.327	4.01	0.707	3.97	0.519
31-40	4.13	0.341	3.98	0.628	3.99	0.444
41 & above	4.05	0.211	4.05	0.570	3.97	0.417

Source: Author calculation

The descriptive table from 4.3.18 reveal that all age groups strongly agree that a lack of bank staff cooperation is a problem with mean score between 4.05 to 4.13 with very little variation in their responses.

The mean scores show that all age groups strongly agree that complex formalities and documentation are a significant barrier. The maximum score of 5 confirms strong agreement exists in all age groups, with some respondents viewing complex formalities as a critical barrier. Conversely, the minimum score of 2 reveals notable dissent, as some respondents in every age group actively disagreed that documentation poses a problem. This wider range (2 and 5) highlights significantly more divergent views on this issue compared to other barriers.

The SD shows that younger respondents have more varied opinions on this issue than older respondents. All age groups agree lack of awareness is a barrier with the minimum score of 2 shows some actively disagree, while the maximum of 5 confirms strong concern. Moderate standard deviations indicate mixed opinions within groups.

Table no: 4.3.19: ANOVA table showing age of farmers and factors affecting farmers choice of credit.

Variables	f	sig
Lack of cooperation from bank staff	4.115	0.017
Complex formalities and documentation	0.543	0.581
Lack of awareness about farm credit package	0.119	0.888

Source: Author calculation

H_0 : Age category does not have a significant influence on the mean perception of Lack of cooperation from bank staff

H_0 : Age category does not have a significant influence on the mean perception of Complex formalities and documentation

H_0 : Age category does not have a significant influence on the mean perception of Lack of awareness about farm credit package

Based on the ANOVA results given in table 4.3.19, there is statistically significant difference among groups in their perception on lack of cooperation from bank staff. The mean value indicates that the farmers who age are above 40 shows noticeably lower average perception of this problem compared to the two younger groups.

However, no significant differences were found in the perceptions of complex formalities & documentation and lack of awareness about the farm credit package, indicating group means are similar for these two variables

Table no 4.3.20 Descriptive table showing Education qualification of farmers and factor affecting farmers choice of credit.

Edu qualificati on	Lack of cooperation from bank staff		Complex formalities and documentation		Lack of awareness about farm credit package	
	Mean	SD	Mean	SD	Mean	SD
No schooling	4.10	0.304	4.05	0.529	4.01	0.493
Secondary	4.10	0.306	4.07	0.556	4.00	0.359
HSLC	4.10	0.305	3.97	0.669	3.93	0.475
HSSLC	4.08	0.270	3.91	0.750	3.95	0.415
Graduate & above	4.08	0.270	4.02	0.630	3.97	0.534

Source: Author calculation

The descriptive data from table 4.3.20 describes that the mean scores show strong agreement across all education levels that uncooperative bank staff is a barrier. The universal minimum score of 4 proves no respondent disagreed, indicating absolute consensus on this issue. The maximum score of 5 confirms intense frustration exists in all groups. Extremely low standard deviations reveal nearly identical opinions within each education category, showing remarkable consistency in this negative banking experience. The mean scores show all education levels agree bureaucratic documentation is a barrier, though less-educated groups express slightly stronger frustration. The critical minimum score of 2 across all groups reveals active dissent, with some respondents rejecting this as a problem. The maximum score of 5 confirms others view it as a severe obstacle. High standard deviations especially among high school and graduates indicate major disagreement within education groups.

All education levels agree lack of awareness is a barrier. The minimum score of 2 in every group shows some respondents actively disagree, while the maximum of 5 confirms strong concern exists. Moderate standard deviations indicate mixed opinions

within all education groups, with least-educated respondents showing slightly more varied views.

Table no 4.3.21: ANOVA table showing Education qualification of farmers and factor affecting farmers choice of credit.

Variables	f	sig
Lack of cooperation from bank staff	0.156	0.960
Complex formalities and documentation	0.957	0.431
Lack of awareness about farm credit package	0.481	0.749

Source: Author calculation

H₀: The mean perception of lack of cooperation from bank staff is equal across all education categories

H₀: The mean perception of Complex formalities and documentation is equal across all education categories

H₀: The mean perception of Lack of awareness about farm credit package is equal across all education categories

From table 4.3.21 the ANOVA result shows that no significant differences exist between age groups in perceiving bank staff cooperation, documentation complexity, or awareness of credit packages all age groups share similar concerns equally. With p value more than 0.05.

Table no 4.3.22 Descriptive table showing area owned for farming of farmers and factor affecting farmers choice of credit.

Area	Lack of cooperation from bank staff		Complex formalities and documentation		Lack of awareness about farm credit package	
	Mean	SD	Mean	SD	Mean	SD
size 1 hectare or less	4.10	0.296	4.02	0.625	3.97	0.443
Size 1 to 2 hectares	4.08	0.279	3.98	0.601	4.00	0.505
Size 2 and above	4.10	0.301	3.97	0.605	3.97	0.407

Source: Author calculation

The descriptive data shows unanimous strong agreement across all farm sizes that uncooperative bank staff is a barrier with mean value ranging 4.08 to 4.10. The minimum score of 4 proves no farmer disagreed, indicating absolute consensus. The maximum score of 5 confirms intense frustration exists in all groups. Very low standard deviations reveal nearly identical opinions within each farm-size category, showing remarkable consistency in this negative experience regardless of landholding size.

All farm sizes agree that documentation is a barrier. The minimum score of 2 reveals some farmers actively deny this has a problem, while the maximum of 5 shows others finds it critical. High standard deviations indicate major disagreement within all farm-size groups, reflecting highly polarized views on bureaucratic complexity.

The mean scores show all farm-size groups agree lack of awareness is a barrier. The minimum score of 2 in every group reveals some farmers actively reject this as an issue, while the maximum of 5 confirms strong concern exists. Moderate standard deviations indicate mixed opinions within all landholding categories, with smallholders showing slightly more divergent view.

Table no 4.3.23: ANOVA table showing area owned for farming of farmers and factor affecting farmers choice of credit

Variables	f	sig
Lack of cooperation from bank staff	0.044	0.957
Complex formalities and documentation	0.178	0.837
Lack of awareness about farm credit package	0.079	0.924

Source: Author calculation

H₀: Land holding size category has no significant effect on the mean perception of Lack of cooperation from bank staff.

H₀: Land holding size category has no significant effect on the mean perception of Complex formalities and documentation.

H₀: Land holding size category has no significant effect on the mean perception of Lack of awareness about farm credit package.

From the ANOVA result given in table 4.3.23 it reveals that no significant differences exist between different size of land holding by farmers for any of the three barriers. Perceptions of uncooperative staff, complex paperwork, and lack of awareness are consistent across all land holding size. So, the researcher accepts the null hypothesis.

Table no 4.3.24 Descriptive table showing type of farming and factor affecting farmers choice of credit.

Type of farming	Lack of cooperation from bank staff		Complex formalities and documentation		Lack of awareness about farm credit package	
	Mean	SD	Mean	SD	Mean	SD
Shifting agricultural	4.11	0.316	3.96	0.682	4.01	0.431
Plantation agricultural	4.11	0.317	4.05	0.573	3.93	0.537
Terrace agricultural	4.06	0.238	4.05	0.566	3.97	0.387

Source: Author calculation

The descriptive table 4.3.24 highlight the mean scores, all farming types strongly agreed that uncooperative staff is a barrier. The minimum score of 4 proves agreement, with no farmers dismissing this issue. The maximum score of 5 confirms intense frustration exists among the farmers. Low standard deviations reveal tight consensus within groups, especially terrace farmers showing highly consistent negative experiences across agricultural methods.

The mean scores show all farming types agree bureaucratic documentation is a barrier. The minimum score of 2 reveals active dissent in all groups, with some farmers rejecting this as a problem. The maximum score of 5 confirms others view it as critical. High standard deviations indicate high deviation among the group.

All farming types agree lack of awareness is a barrier with mean value between 3.93 to 4.01. The minimum score of 2 shows some farmers actively deny this issue, while the maximum of 5 confirms strong concern. Moderate standard deviations indicate divided opinions within groups, with plantation farmers showing the most varied views.

Table no 4.3.25: ANOVA table showing type of farming and factor affecting farmers choice of credit.

Variables	f	sig
Lack of cooperation from bank staff	1.442	0.238
Complex formalities and documentation	1.059	0.348
Lack of awareness about farm credit package	0.862	0.423

Source: Author calculation

H₀: There is no significant difference in the mean perception of Lack of cooperation from bank staff across different types of farming.

H₀: There is no significant difference in the mean perception of Complex formalities and documentation across different types of farming.

H₀: There is no significant difference in the mean perception of Lack of awareness about farm credit package across different types of farming.

The ANOVA results show no statistically significant differences in how the farmers of various type of farming perceive these three barriers. All p-values are greater than 0.05.

Table no 4.3.26 Descriptive table showing type of ownership and factor affecting farmers choice of credit.

Ownership	Lack of cooperation from bank staff		Complex formalities and documentation		Lack of awareness about farm credit package	
	Mean	SD	Mean	SD	Mean	SD
Ancestral	4.10	0.304	4.01	0.620	4.00	0.375
Purchased	4.10	0.298	3.98	0.614	3.92	0.635
Rented	4.03	0.164	4.08	0.640	3.84	0.602

Source: Author calculation

Based on table 4.3.26 reveal that all land ownership types strongly agree that uncooperative staff is a barrier with means value 4.03 to 4.10. The minimum score of 4 proves universal agreement, with no farmers dismissing this issue. The maximum score of 5 confirms intense frustration exists. Very low standard deviations, especially for rented land, show extremely tight consensus within each group, indicating highly consistent negative experiences across all ownership types. All land ownership types agree that documentation is a barrier. The minimum score of 2 reveals active dissent in all groups, with some farmers rejecting this as a problem. The maximum score of 5 confirms others view it as critical. The mean scores show all land ownership types agree that lack of awareness is a barrier, though rented land farmers express noticeably

lower concern (3.84) than ancestral landowners (4.00). The minimum score of 2 in all groups reveals some farmers actively deny this issue exists, while the maximum of 5 confirms others view it as critical.

Table no 4.3.27: ANOVA table showing type of ownership and factor affecting farmers choice of credit.

Variables	f	sig
Lack of cooperation from bank staff	1.104	0.332
Complex formalities and documentation	0.296	0.744
Lack of awareness about farm credit package	2.880	0.057

Source: Author calculation

H₀: The type of ownership has no significant effect on the mean perception of Lack of cooperation from bank staff.

H₀: The type of ownership has no significant effect on the mean perception Complex formalities and documentation.

H₀: The type of ownership has no significant effect on the mean perception of Lack of awareness about farm credit package.

The ANOVA results from table 4.3.27 show no statistically significant differences in how the different type of ownership perceive these barriers. The p-values for Lack of cooperation from bank staff (0.332) and Complex formalities and documentation (0.744) are clearly above 0.05, indicating no significant differences. For Lack of awareness about farm credit package, the p-value is 0.057. This is very close to, but still above, the standard 0.05 significance threshold. So, the researcher accepts all the null hypothesis.

Table no 4.3.28 Descriptive table showing amount of loan sanctioned and factor affecting farmers choice of credit.

Loan sanctioned	Lack of cooperation from bank staff		Complex formalities and documentation		Lack of awareness about farm credit package	
	Mean	SD	Mean	SD	Mean	SD
Less than 1,50,000	4.10	0.296	4.01	0.632	3.96	0.435
150,000 – 200,000	4.15	0.358	4.02	0.570	4.05	0.444
Above 200,000	4.06	0.237	4.00	0.599	3.99	0.503

Source: Author calculation

In the above descriptive table, no 4.3.28, the mean value indicate a consistently high perception that a lack of cooperation from bank staff is a problem, regardless of loan size. All average ratings fall between 4.06 and 4.15 on a 5-point scale, showing strong agreement across all categories of borrower. The fact that the maximum rating is 5 and the minimum is 4 across all categories means that not a single respondent disagreed; every farmer surveyed agreed or strongly agreed that lack of cooperation from bank staff was a problem.

The mean scores reveal a consistent and strong perception across all loan categories that complex formalities and documentation is a significant problem. The presence of a minimum rating of 2 and a maximum of 5 across all groups shows that, unlike other issues, there was some modest dissent or variation in experience, with a few farmers moderately disagreeing that complex formalities were a problem while others strongly agreed.

The mean scores indicate a strong overall perception that a lack of awareness about farm credit packages is a problem, with average ratings consistently near 4.0 across all loan size categories. The standard deviations are moderate and relatively uniform, suggesting a similar level of consensus among borrowers, though the presence of minimum ratings of 2 in all groups shows that a small number of farmers disagreed

with this view. Despite this minor dissent, the high maximum ratings of 5 confirm that many farmers strongly feel that lack of awareness is a significant institutional issue.

Table no 4.3.29: ANOVA table showing amount of loan sanctioned and factor affecting farmers choice of credit.

Variables	f	sig
Lack of cooperation from bank staff	1.145	0.319
Complex formalities and documentation	0.021	0.979
Lack of awareness about farm credit package	0.657	0.519

Source: Author calculation

H₀: There is no significant difference in the mean perception of Lack of cooperation from bank staff on different level of amount sanctioned.

H₀: There is no significant difference in the mean perception of Complex formalities and documentation on different level of amount sanctioned.

H₀: There is no significant difference in the mean perception of Lack of awareness about farm credit package on different level of amount sanctioned.

In table 2.3.29 The analysis of variance test was conducted to determine if the average loan amount sanctioned to farmers differs significantly based on their perceptions of various institutional credit problems. The results show that for all three factors lack cooperation from bank staff, complex formalities and documentation, and lack of awareness about farm credit packages has the p-values as greater than 5% significance level. Therefore, the researcher concludes that there is no statistically significant evidence that a farmer's choice of credit based on these specific institutional problems affects the amount of loan they receive from banks. So, the null hypothesis is accepted

Table no 4.3.30. Descriptive table showing annual income and factor affecting farmers choice of credit.

Annual income	Lack of cooperation from bank staff		Complex formalities and documentation		Lack of awareness about farm credit package	
	Mean	SD	Mean	SD	Mean	SD
Less than1,00,000	4.12	0.327	4.02	0.596	3.95	0.372
1,00,000- 1,50,000	4.06	0.247	3.97	0.720	4.03	0.359
150,000 – 200,000	4.07	0.255	3.90	0.665	3.92	0.554
Above 200,000	4.11	0.313	4.10	0.541	4.00	0.468

Source: Author calculation

Based on the data provided in table 4.3.30, the mean perception of a lack of cooperation from bank staff is consistently high across all annual income groups, with average scores ranging narrowly from 4.06 to 4.12 on a 5-point scale. The very low standard deviations, all below 0.33, indicate that responses were tightly clustered around these high means, showing strong consensus among farmers. Notably, the minimum and maximum values reveal that every single respondent, regardless of income level, rated this issue as either a 4 or a 5, meaning no farmer rated the problem below "agree." This demonstrates unanimous and strong agreement across all income brackets that lack of bank staff cooperation is a significant institutional barrier.

The mean perception of complex formalities and documentation as a problem is consistently high across all income groups, with average scores ranging from 3.90 to 4.10 on a 5-point scale, indicating strong overall agreement. However, the higher standard deviations (0.541 to 0.720) reveal significant variation in responses within each group, suggesting farmers' experiences with this issue differ widely. The minimum rating of 2 and maximum of 5 in all categories confirm that while most farmers agree bureaucratic complexity is a barrier, a small number farmers moderately disagree.

The mean perception of lack of awareness about farm credit packages as a problem is consistently high across all income groups, with average scores ranging from 3.92 to

4.03 on a 5-point scale, indicating strong overall agreement. Moderate standard deviations (0.359 to 0.554) suggest some variability in farmers' opinions, though responses generally cluster near the mean. The presence of minimum ratings of 2 in all groups shows that a small number of farmers disagree that lack of awareness is an issue, while maximum ratings of 5 confirm that others feel this is a severe barrier.

Table no 4.3.31: ANOVA table showing annual income and factor affecting farmers choice of credit.

Variables	f	sig
Lack of cooperation from bank staff	0.891	0.446
Complex formalities and documentation	2.004	0.113
Lack of awareness about farm credit package	1.014	0.386

Source: Author calculation

H_0 : Annual income category has no significant difference on the mean perception on Lack of cooperation from bank staff

H_0 : Annual income category has no significant difference on the mean perception on Complex formalities and documentation

H_0 : Annual income category has no significant difference on the mean perception on Lack of awareness about farm credit package

Table 4.3.31 presents ANOVA results used to check if there any significant differences in annual income based on farmers' perceptions of institutional credit problems. For all three variables, lack of cooperation from bank staff, complex formalities and documentation, and lack of awareness about farm credit packages the recorded significance values are greater than the standard alpha level of 0.05. Therefore, the researcher accepts the null hypothesis (H_0) and conclude that there is no statistically significant difference in these specific institutional problems, irrespective of their annual income.

Table no 4.3.32. Descriptive table showing source of credit and factor affecting farmers choice of credit.

Sources	Lack of cooperation from bank staff		Complex formalities and documentation		Lack of awareness about farm credit package	
	Mean	SD	Mean	SD	Mean	SD
State bank of India	4.08	0.265	4.02	0.499	4.00	0.477
Nagaland state co-operative bank	4.12	0.330	4.02	0.690	3.97	0.446
Nagaland Rural Bank	4.09	0.280	3.99	0.649	3.96	0.421

Source: Author calculation

Descriptive table no 4.3.32 shows that the mean perception of lack of cooperation from bank staff is consistently high across all credit sources, with average scores ranging narrowly from 4.08 to 4.12 on a 5-point scale, indicating strong agreement that this is a problem. The low standard deviations (0.265 to 0.330) reveal very little variation in responses. Critically, the minimum and maximum values (4 and 5) confirm that every farmer surveyed agreed or strongly agreed that lack of cooperation is a barrier, regardless of their credit source.

Farmers consistently rated complex formalities and documentation as a significant problem, with nearly identical mean scores around 4.0 across all banks, reflecting strong overall agreement. However, standard deviations indicate noticeable response variation, meaning experiences with bureaucracy differed among individuals. The full range of ratings (2 to 5) confirms that while most viewed this as a major barrier, a small minority disagreed moderately, and some felt extremely strongly about its severity.

Farmers across all banking institutions strongly agree that lack of awareness about farm credit packages is a problem, with mean scores consistently near 4.0 on a 5-point

scale. The relatively low standard deviations indicate consensus within each group, though the presence of minimum ratings of 2 shows that a few farmers moderately disagree, while maximum ratings of 5 confirm that others view this as an extremely severe barrier.

Table no 4.3.33: ANOVA table showing source of credit and factor affecting farmers choice of credit.

Variables	f	sig
Lack of cooperation from bank staff	1.059	0.348
Complex formalities and documentation	0.100	0.905
Lack of awareness about farm credit package	0.275	0.760

Source: Author calculation

H₀: The source of credit has no significant difference on the mean perception of Lack of cooperation from bank staff

H₀: The source of credit has no significant difference on the mean perception of Complex formalities and documentation.

H₀: The source of credit has no significant difference on the mean perception of Lack of awareness about farm credit package

Table 4.3.33 presents ANOVA results confirms whether the source of availing credit influences farmers' perceptions of institutional problems. For all three variables lack cooperation from bank staff, complex formalities and documentation, and lack of awareness about farm credit packages the significance values exceed the 0.05 threshold. This indicates no statistically significant difference in how farmers perceive these institutional barriers based on their source of credit. Consequently, the researcher accepts null hypothesis (H₀), concluding that the choice of credit source does not meaningfully affect farmers' experiences with these specific institutional challenges.

4.4. Utilization pattern of Agricultural credit in Kohima and Wokha Districts.

Roy (2021) categorised agricultural loan utilisation into three types: productivity enhancing investments (irrigation, machinery), expansion-oriented investments (land, livestock) and supportive investments (farms buildings, perennial crops), with small farm prioritizing efficiency and large farms focusing on scale. Irrigation emerged as the top priority across all farm sizes. (Ray et al., 2023) categorised group loan utilization into productivity (e.g., seeds, livestock, labour) and unproductive (e.g., debt repayment, household expenses) categories, analysing both crop and allied agricultural loans across marginal, small, and medium farmers

To analyse the utilization pattern of the farmers i.e., objective no. 4, rank analysis and a chi-square test were used.

Table no: 4.4.1 Top Utilization Priorities for Agricultural Credit

Amount utilisation	Frequency	Percentage	Rank
Purchase of agricultural equipment	87	20.7	2
Irrigation expense	76	18.1	3
Storage Cost	33	7.9	5
Land preparation expense	47	11.2	4
Transportation cost	24	5.7	7
Labour Charges	123	29.3	1
Cost of fertilizer and seeds	26	6.2	6
Cost of insecticides and pesticides	4	1.0	8
Total	420	100.0	

Source: Author calculation

Classification of beneficiaries according to the utilization of credit was distributed as capital expenses, direct operating expenses, and indirect operating expenses. Expenses incurred from labour charges, the cost of fertilizers and seeds, and the cost of insecticides and pesticides were treated as direct operating expenses. From the data collected, out of 276 respondents 123 (29.3%) of them availed credit for labour charges. Which shows that farmers mostly spend the agricultural credit for their direct operating expenses. The purchase of agricultural equipment follows as the second-

largest expense at 20.7%, highlighting a strategic move toward long-term capital investment in mechanization to boost efficiency and reduce dependence on manual labor. Irrigation expenses, ranking third at 18.1%, emerge as a critical expenditure for risk mitigation, emphasizing the importance of water security in the face of unpredictable weather. Land preparation costs, though essential, occupy the fourth rank at 11.2%, representing a foundational but recurring operational cost. Lower-ranked uses include storage (5th), fertilizers and seeds (6th), transportation (7th), and insecticides (8th)

Based on the existing research frameworks agricultural loan usage can be categorized into three groups such as direct operating expenses which includes labour charges, irrigation expenses, land preparation, cost of fertilizers and seeds and cost of insecticides and pesticides), indirect operating expenses (storage cost, transportation cost) and capital expenses (purchase of agricultural equipment's) (ARGHIR et al., 2022).

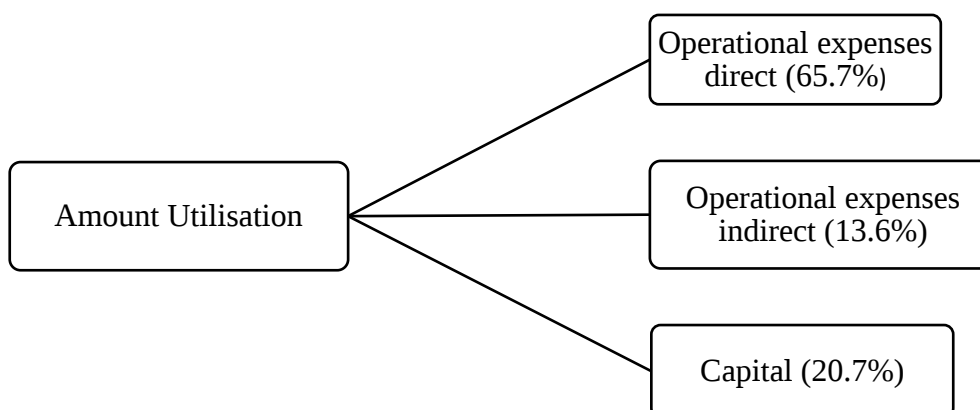
Table no 4.4.2: Agricultural Credit Deployment Across Key Financial Variables

Variables	Frequency	Percentage	Rank
Capital	87	20.7	2
Operational expenses direct	276	65.7	1
Operational expenses indirect	57	13.6	3
Total	420	100	

Source: Author calculation

From table 4.4.2 it interprets the main purpose for which the respondents have availed agricultural loan. Among all the expenses, operational expenses direct are the most dominant with 65.7%, ranking first. Majority of the operational direct expenses occur due to labour charges with 29.3%. Capital expenditure represent 20.7% placing in second, which implies that investment in long term assets is less frequent. Operational expenses indirect like transportation and storage cost make up the smallest share with only 13.6%, ranking third.

Figure: 4.4.1 categorised variables for agricultural credit utilisation



To study the objective no. 4 **Hypothesis testing of “There is no significant association between the category of borrower’s and their utilization pattern of agricultural credit”** several sub hypotheses were created based on the variables.

Table no: 4.4.3 Age of respondents and utilisation pattern of agricultural credit.

Age of the respondents	Utilization of agricultural credit			Total
	Capital	Operational expenses direct	Operational expenses indirect	
Less than 30				
Frequency	15	51	9	75
%Count	4%	12%	2%	18%
Age 31-40				
Frequency	36	115	22	173
%Count	8.57%	27.38%	5.24%	41.19%
Age 41 & above				
Frequency	36	110	26	172
%Count	8.57%	26.19%	6.19%	40.95%
Total frequency	87	276	57	420
Total %Count	20.7%	65.7%	13.6%	100%

Source: Author calculation

Table no: 4.4.4 Chi-Square Test statistics (Based on the Age of respondents)

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	0.711	4	0.950

Source: Author calculation

H₀: There is no significant association between age of the farmers and their utilization pattern of agricultural credit.

The table no 4.4.3 examine the association between farmers' age group and their utilization pattern of agricultural credit. Direct operating cost dominate the utilization pattern across all age categories, followed by capital investments. Farmers below the age of 30 prioritize direct operating expenses due to limited land holdings and capital access. Farmers above 30 years of age utilize the credit slightly more than younger farmers due to family and labour dependencies.

From the above cross tabulation, it shows that all expected frequencies are above 5, which satisfy the Chi- square assumption. Since none of the expected frequencies fall below 5, the data is appropriate for Chi- Square test.

Pearson chi-square test was applied to test the hypothesis regarding the association between farmers' age and their utilization pattern of agricultural credit. The result shows p-value of 0.950, which is not significant. Therefore, the null hypothesis is accepted, and it can be stated that "Age of the farmers' does not significantly influence the utilization pattern of agricultural credit.

Table no: 4.4.5 Education qualification and Utilization pattern of agricultural credit

Education qualification	Utilization of agricultural credit			Total
	Capital	Operational expenses direct	Operational expenses indirect	
No schooling				
Frequency	15	54	10	79
%Count	3.57%	12.86%	2.38%	18.81%
Secondary				
Frequency	24	84	17	125
%Count	5.71%	20.00%	4.05%	29.76%
HSLC				
Frequency	24	54	10	88
%Count	5.71%	12.86%	2.38%	20.95%
HSSLC				
Frequency	11	42	11	64
%Count	2.62%	10.00%	2.62%	15.24%
Graduate & above				
Frequency	13	42	9	64
%Count	3.10%	10.00%	2.14%	15.24%
Total Frequency	87	276	57	420
Total %Count	20.71%	65.71%	13.57%	100%

Source: Author calculation

Table no: 4.4.6 Chi-Square Test statistics (based on Education qualification).

Pearson Chi-Square	Value	Df	Asymp. Sig. (2-sided)
	3.841	8	0.871

Source: Author calculation

H₀: There is no significant association between farmers' education qualification and their utilization pattern of agricultural credit.

The table 4.4.5 highlights the utilization pattern of credit across different education levels. The data shows that farmers with secondary education account for the highest

credit uptake at 29.76%, while both HSSLC and college graduates are less in numbers in term of agri-activity. Farmers with less formal education depend more heavily on credit for direct operating expenses, whereas those with higher education tend to use agricultural credit primarily for capital investments. Across all groups, direct operational expenses dominate credit usage, representing 65.71% of total loans.

The cross-tabulation results confirm that all expected frequencies exceed 5. This satisfies the key assumption for conducting Pearson's chi square test.

Chi-square test was conducted to examine the association between farmers' education qualifications and their utilization pattern of agricultural credit. Since the p-value is higher than 1% level of significance level, the researcher accepts the null hypothesis. This shows that there is no statistically significant association between farmers' education level and their utilization pattern of agricultural credit.

Table 4.4.7 Area owned for farming and Utilization pattern of agricultural credit

Area owned for farming	Utilization of agricultural credit			Total
	Capital expenses	Operational expenses direct	Operational expenses indirect	
Less than 1 hectare				
Frequency	69	227	45	341
%Count	16.4%	54%	10.7%	81.2%
Size 1 to 2 hectares				
Frequency	7	34	7	48
%Count	1.7%	8.1%	1.7%	11.4%
Size 2 to 4 hectares				
Frequency	11	15	5	31
%Count	2.6%	3.6%	1.2%	7.4%
Total Frequency	87	276	57	420
Total %Count	20.7%	65.7%	13.6%	100%

Source: Author calculation

Table no: 4.4.8 Chi-Square Test statistics (based on Area owned)

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.04	4	0.196

Source: Author calculation

H₀: There is no statistically significant association between the area of land owned by the farmers and their utilization pattern of agricultural credit.

Table no: 4.4.7 reveals that farmers with smallest land holding tends to use majority of the total loans with 81.2%, primarily using the credit for direct operating expenses. As the farm size increases credit usage decreases with medium farm take 11.4% of loans, while large farmers account only 7.4%. Most of the group prioritize direct operating expenses while large farmers invest towards capital investments. Smallholders' farmers face greater financial pressure for agricultural operating expenses as compared to larger farmers.

The above analysis confirms that the data meets the necessary assumption for performing Pearson's chi-square test, as all expected cell frequencies are above 5.

Table no 4.4.8 results indicate that there is no statistical significant association between the area owned by farmers and their utilization pattern of agricultural credit. So, the researcher accepts the null hypothesis. Suggesting that area owned does not appear to influence utilization pattern of agricultural credit, whether for capital expenses, direct operating expenses or for indirect operating expenses.

Table no: 4.4.9 Type of farming and Utilization pattern of agricultural credit

Type of farming	Utilization of agricultural credit			Total
	Capital	Operational expenses direct	Operational expenses indirect	
Shifting agricultural				
Frequency	38	109	32	179
%Count	9.05%	25.95%	7.62%)	42.62%
Plantation agricultural				
Frequency	32	62	13	107
%Count	7.62%	14.76%	3.10%	25.48%
Terrace agricultural				
Frequency	17	105	12	134
%Count	4.05%	25%	2.86%	31.90%
Total Frequency	87	276	57	420
Total %Count	20.71%	65.71%	13.57%	100%

Source: Author calculation

Table 4.4.10 Chi-Square Test statistics (based on type of farming)

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	18.141	4	0.001

Source: Author calculation

H₀: There is no statistically significant association between types of farming and their utilization pattern of agricultural credit.

The cross tabulation no 4.4.9 reveals the credit usage across different farming type. Majority of the farmers use loans for direct operational expenses for purchasing of fertilizers and seeds, labour charges and cost of insecticides. Plantation agriculture demonstrate more balanced credit use between capital and operational expenses. Farmers adopted terrace farming shows minimal use of agricultural credit for capital borrowings. The labour-intensive nature of maintaining terrace field drives more labour cost, while traditional methods for farming reduce equipment's needs. All the agricultural type shows limited credit use for indirect expenses like transportation cost

and storage cost, since the small farmers typically sell their produce to local traders minimizing the storage cost. Their sales often occur within short distance which reduce their transportation requirements as well as most of the terrace and shifting cultivators sells their product to local traders where the transportation is organised by the trader themselves.

From the above cross tabulation, it shows that all expected frequencies are above 5, which satisfy the Chi- square assumption. Since none of the expected frequencies fall below 5, the data is appropriate for Chi- Square test.

The above chi square (table no 4.4.10) indicates a statistically significant association between the type of agricultural farming and their utilization pattern of agricultural credit. The credit usage patterns differ significantly among the farmer in shifting and terrace agriculture as most of the farmer in this two-category use credit for direct operational expenses, while plantation agriculture shows different patterns as these farming depends less on seasonal loans compared to shifting and terrace farming. Since the p-value is significant at 1% level, hence the null hypothesis is rejected.

Farmers in subsistence-oriented, high-risk systems, such as shifting and terrace agriculture, are rationally driven to utilize credit for short-term operating needs to limit risk and ensure survival. Farmers in commercial, capital-intensive systems (like plantation agriculture), on the other hand, use loans for long-term investments since their production cycles and risk-return profiles are different (Rosenzweig & Binswanger, 1993).

Table no: 4.4.11 Amount of loan sanctioned and Utilization pattern of agricultural credit.

Amount of loan sanctioned	Utilization of agricultural credit			Total
	Capital	Operational expenses direct	Operational expenses indirect	
Less than 1,50,000				
Frequency	61	209	41	311
%Count	14.52%	49.76%	9.76%	74.05%
150,000 – 200,000				
Frequency	9	26	6	41
%Count	2.14%	6.19%	1.43%	9.76%
Above 200,000				
Frequency	17	41	10	68
%Count	4.05%	9.76%	2.38%	16.19%
Total Frequency	87	276	57	420
Total %Count	20.71%	65.71%	13.57%	100%

Source: Author calculation

Table 4.4.12 Chi-Square Test statistics (based on loan sanctioned)

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.390	4	0.846

Source: Author calculation

H_0 : There is no statistically significant association between amount of loan sanctioned and their utilization pattern of agricultural credit.

Table (4.4.11) shows the amount of loan disbursed and utilization pattern of agricultural credit. Mostly loans taken by the respondents falls below 1 lakh, and they use mainly for direct operational expenses. Larger loans are less common but follow a similar trend, with direct and indirect operational expenses being the primary need. Regardless of loan size the farmers prioritize operational needs over capital investment as most of the farmers in Nagaland practice traditional farming and rely on manual labour which does not require heavy machinery and reducing the need for capital investments.

From the above cross tabulation, it shows that all expected frequencies are above 5, which satisfy the Chi- square assumption. Since none of the expected frequencies fall below 5, the data is appropriate for Chi- Square test.

The Chi-square test as shown in table no 4.4.12 shows no significant link between amount sanctioned and their utilization pattern of agricultural credit. With p-value 0.846, which is higher than 0.05, the researcher states that loan size does not affects how borrowers use their funds. Whether Small, medium, or large loans are used mostly for immediate operational needs such as labour expenses, expenditure on seeds and fertilizers.

Table no 4.4.13 Annual income from agricultural activity and Utilization pattern of agricultural credit.

Annual income from agricultural activity.	Utilization of agricultural credit			Total
	Capital	Operational expenses direct	Operational expenses indirect	
Less than1,00,000				
Frequency	16	82	10	108
%Count	3.81%	19.52%	2.38%	25.71%
1,00,000- 1,50,000				
Frequency	15	52	11	78
%Count	3.57%	12.38%	2.62%	18.57%
150,000 – 2,00,000				
Frequency	17	60	10	87
%Count	4.05%	14.29%	2.38%	20.71%
Above 2,00,000				
Frequency	39	82	26	147
%Count	9.29%	19.52%	6.19%	35%
Total Frequency	87	276	57	420
Total %Count	20.71%	65.71%	13.57%	100%

Source: Author calculation

Table 4.4.14 Chi-Square Test statistics (based on annual income)

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	12.034	6	0.061

Source: Author calculation

H₀: There is no statistically significant association between income from agricultural activity and their utilization pattern of agricultural credit.

The above cross tabulation 4.4.13 reveal that lower income farmers predominantly use agricultural loans for direct operational expenses, reflecting their immediate need to sustain basic agricultural activities. As income rise a gradual shift towards capital expenses increase, though direct operational cost remains the primary focus across all groups. Farmers with above 2 lakhs of income tend to use more indirect operating expenses as compared to lower income farmers, it shows a relatively stable expenses but smaller portion of credit usage across all income levels.

From the above cross tabulation, it shows that all expected frequencies are above 5, which satisfy the Chi- square assumption. Since none of the expected frequencies fall below 5, the data is appropriate for Chi- Square test.

The Pearson chi square test (table no 4.4.14) examines the relationship between categorical variables to determine if there is a statistically significant association. The result suggests that there is no significant relationship between annual income by farmers and their utilization pattern of agricultural credit. Since the p value is greater than 0.05, the researcher accepts the null hypothesis, indicating that the variables are independent of each other.

Table no: 4.4.15 Source of loan and Utilization pattern of agricultural credit.

Source of loan was received	Utilization of agricultural credit			Total
	Capital	Operational expenses direct	Operational expenses indirect	
State bank of India				
Frequency	24	93	16	133
%Count	5.71%	22.14%	3.81%	31.67%
Nagaland state co-operative bank				
Frequency	36	89	21	146
%Count	8.57%	21.19%	5%	34.76%
Nagaland Rural Bank				
Frequency	27	94	20	141
%Count	6.43%	22.38%	4.76%	33.57%
Total Frequency	87	276	57	420
Total %Count	20.71%	65.71%	13.57%	100%

Source: Author calculation

Table no: 4.4.16 Chi-Square Test statistics (based on sources of loan availed)

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.944	4	0.567

Source: Author calculation

H₀: There is no statistically significant association between source from loan availed and their utilization pattern of agricultural credit.

The cross tabulation 4.4.15 shows that Nagaland State co-operative bank had the highest share of loan issued among the respondents, which is due to its localized approach, followed by Nagaland Rural Bank and State Bank of India. Most of the loan issued were directed towards direct operational expenses on fertilizers, seeds, and labour charges. Farmers who availed loans from Nagaland Rural bank has the highest proportion for direct operational expenses with 22.38%. Farmers availing credit from Nagaland State Co-Operative bank lead with capital expenses (8.57%) as compared to NRB and SBI.

From the above cross tabulation, it shows that all expected frequencies are above 5, which satisfy the Chi- square assumption. Since none of the expected frequencies fall below 5, the data is appropriate for Chi- Square test.

The chi square result (4.4.16) shows p value 0.567 indicating that no significant association between sources of loan availed and their utilization pattern of agricultural credit. The researcher accepts the null hypothesis, and conclude that SBI, NSCB or NRB does not affect whether farmers borrow for capital, direct or indirect operating expenses.

The chi-square test results from table 4.4.4 to 4.4.16 disclose that most of the farmers characteristics, including age, education level, land holding size, loan amount, annual income and sources of loan do not show a statistically significant association with how agricultural loan was utilised. In all these cases, the p value was all above 0.05, suggesting that these factors do not influence whether farmers allocated credit towards capital expenses, direct operating expenses or indirect operating expenses.

Thus, the hypothesis "There is no significant association between the category of borrowers and their utilization pattern of agricultural credit" is valid for most borrowers' categories, except for the type of farming, the researcher reject the null hypothesis as it significantly influences credit utilization patterns.

4.5. Repayment performance of the farmers

Repayment performance is a critical metric that reflects the health and sustainability of agricultural credit systems. It fundamentally measures the borrower's ability to honour debt obligations according to the original loan terms, encompassing both the timeliness and completeness of payments. Strong repayment performance is typically driven by successful farm outcomes, such as good yields and favourable market prices, alongside prudent financial management by the farmer. However, this performance is highly vulnerable to the inherent risks of agriculture, including climatic shocks, pest outbreaks, and price volatility, which can disrupt income flows and lead to delays or

defaults. For lending institutions, consistent repayment is essential for portfolio viability and the recycling of funds to new borrowers. Conversely, widespread poor performance can trigger credit tightening, reduced access to finance, and a cycle of indebtedness. Therefore, enhancing repayment performance often requires synergistic strategies beyond mere lending, such as integrating credit with crop insurance, offering post-harvest loan grace periods, ensuring market linkages for produce, and providing financial literacy education to build resilience among farming communities.

Hypothesis testing of “There is no significant association between the categories of borrower’s and their repayment of agricultural credit”.

Table no: 4.5.1 Age of respondents and ability to pay off debt.

Age of respondents	Are you able to pay off your debt on time?		Total
	Yes	No	
Less than 30			
Frequency	70	5	75
%Count	16.67%	1.19%	17.86%
Age 31-40			
Frequency	146	27	173
%Count	34.76%	6.43%	41.19%
41 & above			
Frequency	135	37	172
%Count	32.14%	8.81%	40.95%
Total Frequency	351	69	420
Total %Count	83.57%	16.43%	100%

Source: Author calculation

Table no: 4.5.2 Chi-square test statistic (based on Age of farmers)

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.528	2	0.014

Source: Author calculation

H₀: There is no significant association between age group of the farmers and the ability to pay off debt on time

From the above cross tabulation 4.5.1, it can be observed that farmers under the age of 30 demonstrate the strongest repayment performance, with most of the farmers managing to pay off their debt on time. Farmers age between 31 to 40 show slightly more difficult but still perform relatively well. However, farmers above 41 struggles to pay off their debt as compared to other age groups. Out of 420 respondents only 16.43% of the farmers were unable to pay off their debt on time.

The chi-square goodness of fit test (table 4.5.2) reveals that p value is significant at 0.01 level of significance. Thus, it can be stated that age of the farmers influences the repayment of credit. From the above cross tabulation, it shows that farmers above the age of 41 struggle more with repayment performance as compared to younger farmers.

Older farmers frequently have less physical strength and are less willing to use new technologies, which makes their farms less productive and lowers their income(Issues, 1987). This made them less able to handle financial fluctuations, and with possible health-related costs at this stage of life, it directly affected their ability to make a steady surplus for loan payback. This is the reason why the data identified a statistically significant effect of age on repayment performance.

Table no: 4.5.3 Type of agricultural farming and ability to pay off debt.

Type of Farming	Are you able to pay off your debt on time?		Total
	Yes	No	
Shifting agricultural			
Frequency	164	15	179
%Count	39.05%	3.57%	42.62%
Plantation agricultural			
Frequency	67	40	107
%Count	15.95%	9.52%	25.48%
Terrace agricultural			
Frequency	120	14	134
%Count	28.57%	3.33%	31.90%
Total Frequency	351	69	420
Total %Count	83.57%	16.43%	100%

Source: Author calculation

Table no: 4.5.4 chi-square test statistics (based on type of farming)

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	46.157	2	0.000

Source: Author calculation

H₀: There is no significant association between type of farming and the ability to pay off debt on time

The above table 4.5.3 reveal that farmers engaged in shifting agriculture demonstrate strong repayment performance, with most of the farmers managing to pay off their debt on time. Out of 179 farmers from shifting farming only 8.38% of farmers were unable to pay off their debt on time. In terrace farming out of 134 farmers only 10.45% fails to pay off their debt whereas in plantation farming it shows higher repayment difficulties as the nature of plantation farming takes longer production cycle which hinder the debt repayment. Out of 107 plantation farmers 37.38% fails to pay off their debt.

Pearson chi-square test table no 4.5.4 reveal that there is a significant association between type of agricultural production engaged and repayment of debt. The analysis reveal that farmers engaged in plantation agriculture face more challenging in paying off their debt compared to those practicing shifting or terrace agriculture. This indicates that the nature of the farming system plays a crucial role in financial repayment capacity. Hence, the author rejects the null hypothesis at 0.01 level of significance.

The plantation type structure makes farmers especially at risk for debt distress. This is because it requires a lot of money up front, takes a long time to start making money, and is quite sensitive to changes in international commodity prices(Rizvi et al., 2019). This is different from shifting and terrace farming, which may not be as profitable but has lower capital expenses and shorter crop cycles, making it easier to handle debt. This demonstrates that the type of agricultural system is a big factor in how financially stable a farm is.

Table no: 4.5.5 Annual income from agriculture and ability to pay off debt.

Annual income from agricultural activity	Are you able to pay off your debt on time?		Total
	Yes	No	
Less than1,00,000			
Frequency	101	7	108
%Count	24.05%	1.67%	25.71%
1,00,000- 1,50,000			
Frequency	72	6	78
%Count	17.14%	1.43%	18.57%
150,000 – 200,000			
Frequency	69	18	87
%Count	16.43%	4.29%	20.71%
Above 200,000			
Frequency	109	38	147
%Count	25.95%	9.05%	35%
Total Frequency	351	69	420
Total %Count	83.57%	16.43%	100%

Source: Author calculation

Table no: 4.5.6 Chi- square test statistic (based on annual income from agriculture)

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	22.774	3	0.000

Source: Author calculation

H_0 : There is no association between annual income from agricultural activity and the ability to pay off debt on time.

The cross tabulation 4.5.5 shows that higher income farmers earning above 2 lakhs face difficulties in repayment of their debt. Around 1/4th of the farmers responses out of 147 who are earning agricultural income of above 2 lakhs, fails to pay off their debt on time. Farmers earning between 1.50 lakh to 2 lakh display mixed results. Farmers whose agricultural income is less than 1 lakhs performs better in repayment of debt as compared to other groups.

The Pearson chi- square test (table no. 4.5.6) confirms a statistically significant association between farmers annual income and their ability to repay their debt. The researcher rejects the null hypothesis at 0.01 significance level. From the above cross tabulation, it shows that farmers earning above 2 lakhs face greater repayment challenges as compared to lower income groups, while farmers earning below 1 lakh show the strongest repayment performance, indicating that higher income does not guarantee better repayment capacity.

Farmers generally take on a lot of debt to pay for their farming operations, which means that increased income often means higher borrowing costs. This means that they are more likely to experience income shocks, which turns their better earning potential into a higher debt burden (areas, 2014). On the other hand, the fact that the lowest-income farmers are better at paying back their loans is probably because they borrow less money for things they can afford, which keeps their debt-to-income ratio stable. Based on the chi-square test result from above table 4.5.1 to 4.5.6, the statistical evidence shows a clear relationship between category of borrower's and repayment

performance of agricultural credit, so the researcher rejects the null hypothesis as the data confirms that the age, farming type and income of farmers do affect repayment behaviour.

4.6. Default in repayment of agricultural credit

Several key factors contributing to the delays or defaults in agricultural loan repayments including a high interest rate, rising prices of inputs, delays in disbursement, insufficient loan amounts, distance from bank branches, and adverse climate conditions(Mehmood et al., 2012). Crop failure and monsoon failure are the primary reason for default in repayment, followed by exceptional loan waivers, low yields, and floods(Subramanian & Shivananjappa, 2017).

Six key factors affecting loan repayment, such as agricultural losses, economic problems, family issues, political interference, loan diversion and institutional problems(Alexpandi & Development, 2014)

In order to analyse the default in repayment performance of agricultural credit, the variables used were banking expenses, agricultural loss, and family problems. Under banking expenses, the factors included were interest rate and expensive procedures. For agricultural loss, low yield or income from agricultural activity and rising cultivation expenses. And for family problems, the factors include high family expenses and repaying old debts.

Based on this collective evidence, the causes of repayment default can be categorised into three main groups: banking expenses, Agri loss and family problem. This classification is illustrated in figure 4.6.1

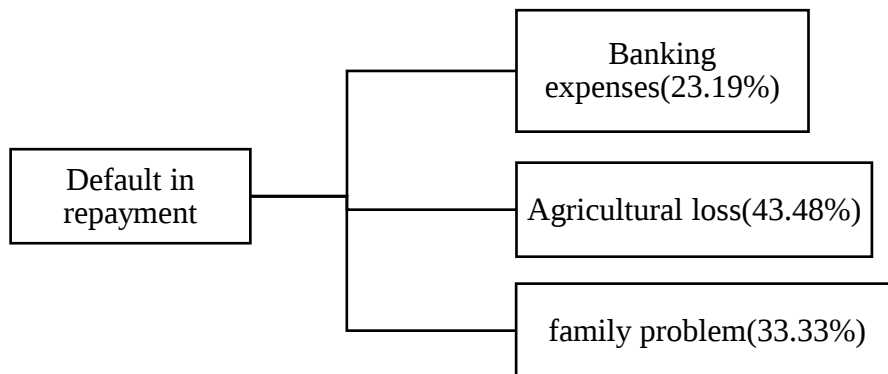
Table no 4.6.1 Rank analysis for default of Repayment for agricultural credit

Grouping variables	Reason for Default in repayment	Frequency	Percentage	Rank
Banking expenses	High rate of interest	5	7.2	5
	Expensive procedure	11	15.9	3
Agricultural loss	Low Yield or Income from Agriculture	23	33.3	1
	Increase in Cultivation Expense	7	10.1	4
Family problem	Huge Family Expense	11	15.9	3
	Repaying old debt	12	17.4	2
Total		69	100.0	

Source: Author calculation

Based on the rank analysis, agricultural losses specifically low yield or income from agriculture are the primary reason for default in agricultural credit repayment (Rank 1), accounting for 33.3% of responses. Following this, repaying old debt (Rank 2) and expensive banking procedures tied with huge family expenses (both Rank 3) are significant contributing factors. High interest rates (Rank 5) and increased cultivation expenses (Rank 4) were considered less dominant, though still relevant, reasons for default.

Figure 4.6.1: Classification of Default in Repayment of agricultural credit.



4.6.2: Classification of Default in Repayment of agricultural credit

Variables	Frequency	Percentage	Rank
Banking expenses	16	23.19	3
Agricultural loss	30	43.48	1
Family problems	23	33.33	2
Total	69	100	

Source: Author calculation

The above table no 4.6.1 shows out of 420 respondents 69 respondents fails to repay their debts. Most of the farmers face difficulty in repayment of loans due to agricultural loss ranking in top, 33.33% of the respondents out of 69 has low yield from agriculture which lead to default in repayment and 10.1% fail to repay due to increase in cultivation expenses. Family problems rank 2 as 15.9% of the 69 respondents has high family expenses and 17.4% still pay their old debt. Banking expenses rank 3 with 7.2% of the 69 farmers fail to repay due to high interest rates and 15.9% of farmers fail due to expensive procedures.

Table no: 4.6.3 Cross tabulation for Age of respondent and reason for default in payment

Age of respondents		Reason for default in payment			Total
		Banking expenses	Agricultural loss	Family problems	
Less than 30	Frequency	2	1	2	5
	%Count	2.90%	1.40%	2.90%	7.20%
31-40	Frequency	5	15	7	27
	%Count	7.20%	21.70%	10.10%	39.10%
41 & above	Frequency	9	14	14	37
	%Count	13%	20.30%	20.30%	53.60%
Total	Frequency	16	30	23	69
	%Count	23.20%	43.50%	33.30%	100%

Source: Author calculation

The above table no. 4.6.3 analyses the association between age of the respondents and their reasons for default in repayment. The data reveals that majority of the farmers whose age falls above the age of 41 fail to repay their debt in time. Followed by those

age between 31 to 40, while the farmers below 30 years shows the least among the group. Agricultural loss is one of the most common reasons for default overall with 43.5%, particularly among the age group of 41 to 40. Family problems become increasingly significant with age, representing 37.8% of default among respondents above the age of 41. Banking expenses shows only 23.20% which is relatively less, peaking at 24.3% among the oldest respondents. These findings reveal that age influence financial distress patterns, where younger farmers are more balanced with repayment performance as age increase the likelihood of defaulting in payment also rises.

Table no: 4.6.4: Cross tabulation for type of Farming and Reason for default in payment

Type of farming	Reason for default in payment				Total
	Banking expenses		Agricultural loss	Family problems	
Shifting agricultural	Frequency	1	6	8	15
	%Count	1.40%	8.70%	11.60%	21.70%
Plantation agricultural	Frequency	12	18	10	40
	%Count	17.40%	26.10%	14.50%	58%
Terrace agricultural	Frequency	3	6	5	14
	%Count	4.30%	8.70%	7.20%	20.30%
Total	Frequency	16	30	23	69
	%Count	23.20%	43.50%	33.30%	100%

Source: Author calculation

The cross-tabulation no. 4.6.4 explores the relationship between different types of farming and the reason behind default in repayment. In shifting agriculture, family problems emerge as the predominant reason for default in repayment, whereas in plantation farming Agricultural loss is the leading cause of default, closely followed by banking expenses and family problems substantially. For terrace farming agricultural loss being the most cited reason for default, followed by family problems and then banking expenses. The data highlights that farming significantly shapes the reason behind default in repayment. Shifting agriculture is heavily influenced by family related issues, plantation by agricultural loss like production or low yield and terrace farming shows a balanced distribution.

Table no: 4.6.5: Cross tabulation for Annual income from agricultural activity and Reason for default in payment

Annual Income from Agricultural activity?		Reason for default in payment			Total
		Banking expenses	Agricultural loss	Family problems	
Less than 1,00,000	Frequency	1	4	2	7
	%Count	1.40%	5.80%	2.90%	10.10%
1,00,000- 1,50,000	Frequency	0	1	5	6
	%Count	0.00%	1.40%	7.20%	8.70%
150,000 – 200,000	Frequency	3	7	8	18
	%Count	4.30%	10.10%	11.60%	26.10%
Above 200,000	Frequency	12	18	8	38
	%Count	17.40%	26.10%	11.60%	55.10%
Total	Frequency	16	30	23	69
	%Count	23.20%	43.50%	33.30%	100%

Source: Author calculation

Table 4.6.5 highlight the relationship between annual income from agriculture and reason for default in repayment. Farmers below the income of 1lakhs fail to repay the debt mostly due to agricultural loss with 57.10%. While those farmers between the range of 1 lakh to 1.5 lakhs cite family problem as the leading cause with 83.30%, those farmers with annual income of 1.5 lakhs to 2 lakhs shows a balanced distribution with family problem slightly dominating. Farmers with above 2 lakhs annual earning face default in repayment mostly due to agricultural loss then followed by banking expenses.

4.7 Source of repayment

Farmers rely on a diverse portfolio of sources to repay agricultural credit, which is essential for managing the inherent risks and cyclical nature of farming. The primary and most sustainable source is the income generated from the sale of farm produce for which the credit was often originally utilized. However, given the uncertainties of weather, pests, and market prices, this income can be volatile. To mitigate this, farmers frequently depend on income from subsidiary occupations or off-farm enterprises,

which provides a crucial buffer and a more stable cash flow. Additionally, support from family networks either through direct financial contributions or in-kind support serves as a vital informal safety net. In times of acute shortage, farmers may resort to borrowing from informal sources like money lenders or taking new loans from formal institutions to service old debt, a strategy that can lead to debt traps. Ultimately, a farmer's repayment capacity is a function of this complex interplay between farm profitability, livelihood diversification, social capital, and access to contingency financing.

Table no:4.7 Repayment Sources for Farm Credit

Variables	Frequency	Percentage	Rank
Return from farm income	296	70.5	1
Source from subsidiary income	37	8.81	3
Borrowing from money lender	29	6.90	4
Income from family members	58	13.8	2
Total	420	100	

Source: Author calculation

Table 4.7.1 present the percentage and ranks of four different sources of repayment. The data highlight that farm income is the primary source of repayment with the highest percentage of 70.5%. Followed by income from family members indicating that family support also plays a notable role in financial stability. Subsidy income ranks third 8.81% showing that while government or institutional subsidies contribute to income, their impact is relatively modest compared to farm earnings and family support. Lastly, borrowing from money lenders has the lowest percentage of 6.90%.

Figure 4.7.1: Classification of Source of agricultural credit repayment.

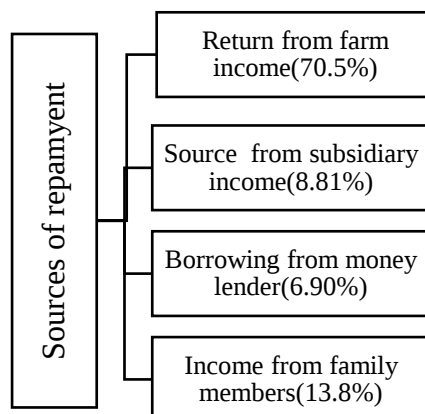


Table no: 4.7.2 Sources of Agricultural Credit Repayment by Age of Farmer

Age of respondent		Sources of repayment				Total
		Return from farm income	Income from subsidiary occupation	Borrowings from money lenders	Income from family members	
Less than 30	Frequency	49	7	7	12	75
	%Count	11.70%	1.70%	1.70%	2.90%	17.90%
31-40	Frequency	135	10	9	19	173
	%Count	32.10%	2.40%	2.10%	4.50%	41.20%
41 & above	Frequency	112	20	13	27	172
	%Count	26.70%	4.80%	3.10%	6.40%	41%
Total	Frequency	296	37	29	58	420
	%Count	70.50%	8.80%	6.90%	13.80%	100%

Source: Author calculation

From table no 4.7.2 exhibits how farmers from different age group repay their loans based on various sources of income. The most common method of repayment is income generated from farming activities with 70.50%. Respondent whose age is below 30 shows a strong preference from farm income, and 16% rely on family income. Farmers age between 31 to 40 rely most heavily on farms income with 78%, with very less dependent on other means. Respondents aged above 41 depends on farm income, this group shows a more varied approach as compared to other age group.

Table no: 4.7.3 Sources of Credit Repayment by Agricultural Farming System

Type of farming		Sources of Repayment				Total
		Return from farm Income	Income from subsidiary occupation	Borrowings from money lenders	Income from family members	
Shifting agricultural	Frequency	144	9	4	22	179
	%Count	34.30%	2.10%	1%	5.20%	42.60%
Plantation agricultural	Frequency	73	18	8	8	107
	%Count	17.40%	4.30%	1.90%	1.90%	25.50%
Terrace agricultural	Frequency	79	10	17	28	134
	%Count	18.80%	2.40%	4%	6.70%	31.90%
Total	Frequency	296	37	29	58	420
	%Count	70.50%	8.80%	6.90%	13.80%	100%

Source: Author calculation

From the above cross tabulation 4.7.3, presents that those farmers engaged in shifting agriculture depend mostly on their farm returns with 80.4% followed by income incurred from family members, with minimal reliance on other sources. Plantation farmers use primarily farm income but a comparatively higher use of earning from subsidiary occupations. Terrace farmers, shows a more diverse pattern of repayment. Overall, farm income is the dominant source across all groups.

Table no: 4.7.4 Sources of Agricultural Credit Repayment by Annual Farm Income Group

Annual Income from Agricultural activity?		Sources of Repayment				Total
		Return from farm Income	Income from subsidiary occupation	Borrowings from money lenders	Income from family members	
Less than 1,00,000	Frequency	61	6	10	31	108
	%Count	14.50%	1.40%	2.40%	7.40%	25.70%
1,00,000-1,50,000	Frequency	57	5	2	14	78
	%Count	13.60%	1.20%	0.50%	3.30%	18.60%
150,000 – 200,000	Frequency	65	8	7	7	87
	%Count	15.50%	1.90%	1.70%	1.70%	20.70%
Above 200,000	Frequency	113	18	10	6	147
	%Count	26.90%	4.30%	2.40%	1.40%	35%
Total	Frequency	296	37	29	58	420
	%Count	70.50%	8.80%	6.90%	13.80%	100%

Source: Author calculation

The cross-tabulation table no 4.7.4 highlight that as income increases, dependency on farm income grows significantly. Farmers with annual income of less than 1 lakh rely most on farm income and family income. Their repayment structure shows the highest dependency on family contribution and money lenders indicating weaker self-sufficiency in agricultural earnings as compared to other groups. Those farmers earning between 1 lakh to 1.5 lakh range still use family contribution but borrowing from money lenders drops. Farmers with 1.5 to 2 lakh shows financial stability among the groups with farm income covering more than half of the repayments needs. Farmers with above 2 lakhs use the highest amount from subsidiary occupations, indicating that while farm income is sufficient to cover most needs, the farmers still rely on subsidiary income.

4.8 Conclusion

This chapter brings out the factors that affect the farmers' choice of credit sources. Factors like the farmers' income, their farming types, loan utilization patterns, Repayment performance, and sources of credit plays an important role. Since most of the farmers in Kohima and Wokha districts primarily rely on credit for direct operating expenses like labour charges, seeds, and fertilizers, they prefer short-term credit that supports immediate agricultural needs rather than long-term investments. Most farmers prioritize formal credit from co-operative banks, as they are more localized as compared to Regional Rural Banks and the State Bank of India. Although SBI and NRB are major credit providers, their long procedures might discourage some farmers. This study also finds that repayment challenges vary by farming type. Plantation farmers, despite their high incomes, struggle to repay due to longer production cycles, while shifting and terrace farming show better repayment rates, as farmers engaged in these types of farming depend on seasonal yields. This indicates that farmers prefer credit sources with flexible repayment terms aligned with their production cycle.

Chapter 5

Challenges and Prospects of Farmers in Kohima and Wokha Districts

5.1 Introduction

Credit facilitates farmers to purchase and enable them to attain modern technologies for their farm production (Etonihu et al., 2013) .In Nagaland, most of the farmers depend on the credit facility provided by the banks to sustain their farming business. Yet the farmers are facing challenges to obtain credit facilities from the banks due to various factors. Because of poor credit facilities farmers are unable to store their perishable items, which reduce their profit(Dhakshana et al., 2018). This chapter will address the last objective i.e., “To examine the challenges faced by the farmers in Nagaland”.

5.2 Challenges faced by farmers in Nagaland

The agricultural sector in Nagaland is confronting with many challenges in the form of shortage of storage facilities, lack of proper documentation of land to avail agricultural credit, marketing shied, rising price of inputs like seeds, pesticides(T. Singh et al., 2021). Rank analysis was carried out among various problems and challenges faced by the farmers, to find the most critical problems.

Table no: 5.2.1. Farmer Constraints: Perception Analysis and Ranking

statements	Minimum	Maximum	Mean	Rank
Market prices of crops are not sufficient	4	5	4.10	1
Insistence of Opening an Account	4	5	4.09	2
Delay in getting credit	2	5	3.95	3
No banks in vicinity	1	4	3.65	4
Default in Repayment	1	5	2.65	5

Demanding more security	1	5	2.60	6
Decrease in production due to landslide	1	5	2.30	7
Decrease in production due to storm	1	5	2.18	8
Sizes of fields are small	1	4	1.99	9
Decrease in production due to Drought	1	4	1.95	10
Crop failure	1	5	1.93	11
Commodities like pesticides, quality seeds are not provided on subsidy	1	3	1.90	12
Failure of monsoon	1	3	1.90	13
Agricultural tools harvesters, Tractors, supply on subsidy basis are not sufficient	1	2	1.90	14
Flood increased in input cost	1	2	1.89	15
Small farmers are not given special attention by Govt.	1	2	1.88	16
Non-waiving of loan	1	3	1.88	17
Lower value for the produced product	1	2	1.84	18

Source: Author calculation

The ranking shows that low pricing for their crops are their major problem. Smallholder farmers work in markets where they don't have much authority to negotiate, which means they don't make much revenue and claim prices are too low (Little & Watts, 1994).

Followed by the need to register a bank account and delays in getting credit. The process of formalization is meant to make things clear, but it often makes things harder and more expensive for farmers who can't read or write (B. P. Singh et al., 2021). The need for proper verification, dealing with complicated paperwork, and keeping minimal balances might be difficult and causes for people for non-participating. This often led to self-exclusion or inactive accounts, as demonstrated in large-scale inclusion programs.

On the other hand, problems with production, such as crop failure, drought, and not having enough subsidized tools, are seen as less serious and are ranked at the bottom. This means that farmers see market prices and access to financing as bigger problems for their

livelihoods than climate and input subsidies. Barriers related to market access (such as low pricing, elevated transaction costs, and insufficient market knowledge) have a more significant negative impact on farmer income and food security than limits that relate to production capability. To conclude that increasing market linkages is typically a better way to reduce poverty than just trying to increase yields (Omiti et al., 2009).

5.3. Factor analysis

Field states that factor analysis is a statistical method that groups observed variables into unobservable categories, or factors, to find correlations between them (Field & Field, 2018). It is frequently employed in exploratory research to indicate hidden scope through connected variables. It assists researchers in simplifying complex data, revealing deeper patterns, and identifying the fundamental factors that generate the associations (Gupta et al., 2024).

To assess the difficulties faced by farmers in Nagaland, the author used factor analysis to simplify a large number of observed variables into a smaller, more manageable set of factors. This method reduced 18 distinct issues into five main categories, providing farmers with a clear, structured understanding of their key challenges. This study used a “Principal Component Analysis” (PCA) approach to extract factors. In order to arranging the data points in a chosen coordinate system (Maćkiewicz & Ratajczak, 1993) PCA was used. By consolidating related variables into broader factors, this technique simplified the research problem, reduced the number of variables, and mitigated the confusion caused by overlapping measures.

5.3.1. Validity and reliability testing

Before extracting the factors, multiple tests must be conducted to evaluate the appropriateness of the respondent data for factor analysis. These tests include the Kaiser-Meyer-Olkin (KMO) (H. Kaiser et al., 1974) Measure of Sampling Adequacy and Bartlett's Test of Sphericity (psychology, 1950)

In terms of validity, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy assesses whether the value distribution is sufficient for factor analysis.

The Kaiser-Meyer-Olkin (KMO) measure of sample adequacy was employed to assess the quality of the data regarding their suitability for factor analysis. The values of this index, which goes from 0 to 1, indicate more appropriateness. Over 0.9 is regarded as wonderful, over 0.8 as meritorious, over 0.7 as moderate, over 0.6 as mediocre, over 0.5 as awful, and below 0.5 as unsatisfactory (H. F. Kaiser, 1974) with a total KMO value of 0.823, this study is in the superb category. Since the significant degree of common variation among variables guarantees that separate and trustworthy factors can be identified, this suggests that the sample size and data structure were more than suitable for performing factor analysis.

Data reliability analysis

Table no: 5.3.1.1. Cronbach's Alpha Analysis

Reliability Statistics	
Cronbach's Alpha	N of Items
0.837	18

Source: Author calculation

Table 5.3.1.1 details the results of a reliability analysis for an 18-item scale, reporting a Cronbach's Alpha value of 0.837. This value demonstrates a high level of internal consistency, confirming that the items within the scale are strongly interrelated and cohesively measure the same underlying construct. Consequently, the scale can be considered a statistically reliable and effective instrument for data collection.

5.4 sampling adequacy

The KMO and Bartlett's Test results as displayed in Table 5.4.1 shows that the data can be used for Factor Analysis. The KMO value of 0.823 is "Meritorious", (H. F. Kaiser, 1974) which means that the items are closely related. Also, Bartlett's Test of Sphericity is

significant with p value 0.000, Furthermore, the Chi-square value of 3119.15 obtained from Bartlett's Test of Sphericity is highly significant at the 1% level of significance which shows that the correlation matrix is not an identity matrix and that the variables are related enough for factor analysis(Williams et al., 2010)

Table 5.4.1.KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.823
Bartlett's Test of Sphericity	Approx. Chi-Square	3119.15
	df	153
	Sig.	0.00

Source: Author calculation

5.5 Communalities

Communality is the percentage of variance in each observable variable that the factors can explain. In many social scientific contexts (Hair, 2009) Values between 0.25 and 4.0 are acceptable, although values above 0.6 are the most effective(Zeynivandnezhad et al., 2019),

Table 5.5.1 Communalities

statements	Initial	Extraction
Insistence of Opening an Account	1.000	0.232
Default in Repayment	1.000	0.470
Delay in getting credit	1.000	0.509
No banks in vicinity	1.000	0.309
Demanding more security	1.000	0.697
Market prices of crops are not sufficient	1.000	0.456
Sizes of fields are small	1.000	0.467

Commodities like pesticides, quality seeds are not provided on subsidy	1.000	0.789
Small farmers are not given special attention by Govt.	1.000	0.815
Agricultural tools harvesters, Tractors, supply on subsidy basis are not sufficient	1.000	0.802
Decrease in production due to Drought	1.000	0.651
Decrease in production due to landslide	1.000	0.659
Decrease in production due to storm	1.000	0.698
Crop failure	1.000	0.394
Failure of monsoon	1.000	0.788
Non-waiving of loan	1.000	0.799
Flood increased in input cost	1.000	0.839
Lower value for the produced product	1.000	0.743

Extraction Method: Principal Component Analysis.
Source: Author calculation

The factor analysis in table 5.5.1 shows that most of the variables have an adequate to strong explanatory power based on the given communality values. The criteria say that all the communalities that were found are above the minimum permitted level of 0.25, meaning that they are acceptable and are well-explained by the extracted factors. As a result, all 18 statements were considered appropriate for further analysis.

There are a lot of excellent communalities above 0.6 for several variables, such "Flood increased in input cost" (0.839), "Small farmers are not given special attention" (0.815), and "non-waiving of loan" (0.799). This means that the extracted components carry out an adequate job of capturing a lot of their variance.

5.6 Rotated Component Matrix

Pallant (2020) highlight that first, the factor analysis is done with Varimax and rotation because it has been stated that this makes the results simpler to understand. The Varimax rotation is used to make sure that each predictor variable (item) has the highest factor loading on each component. Thompson (2004) originally came up with the orthogonal Varimax rotation, which is the most frequent way to rotate factors in factor analysis. The main use of principal component analysis using Varimax rotation is to put a group of components in order.

Table 5.6.1: Rotated compound matrix

Problems and challenges	Component				
	Debt repayment issue	Barriers to agricultural productivity	Credit risk	External risk factor	Barriers to Credit Access
Insistence of Opening an Account				.323	
Default in Repayment			-.622		
Delay in getting credit					.698
No banks in vicinity					-.462
Demanding more security			.826		
Market prices of crops are not sufficient					.675
Sizes of fields are small		.660			
Commodities like pesticides, quality		.825			

seeds are not provided on subsidy					
Small farmers are not given special attention by Govt.		.833			
Agricultural tools harvesters, Tractors, supply on subsidy basis are not sufficient		.840			
Decrease in production due to Drought				.655	
Decrease in production due to landslide			.566		
Decrease in production due to storm				.797	
Crop failure	.549				
Failure of monsoon	.852				
Non-waiving of loan	.864				
Flood increased in input cost	.876				
Lower value for the produced product	.807				

Extraction Method: Principal Component Analysis
Rotation Method: Varimax with Kaiser Normalization.
Source: Author calculation

The extraction method used was Principal Component Analysis (PCA), wherein the initial numbers are simplified into a set of groups representing the linear combination of variances (Pallant,2020). Implemented the Varimax rotation method of principal component analysis to get the themes from each question. This rotating component matrix shows the results of a factor analysis of the challenges that farmers have with agricultural loans and production. Each item loads into one or more factors, which show patterns or

groups of problems that tend to happen together. According to Table 5.6.1, the 18 statements were reduced to five primary factors, and these statements are grouped within these factors.

Component 1: Debt Repayment Issues

The key problems include non-waiving of loan, Flood increased in input cost, Lower value for the produced product and Failure of monsoon Crop failure. The "Debt Repayment Issues" part shows a key cycle of farmer misery. It is defined by the heavy financial load that comes from crop failure and rising costs during the events like floods and monsoon failure happen. These things, along with decreased market prices for their crops, make it hard for farmers to pay back their debts and show how vulnerable they are to changes in the weather. Things like monsoon failures or floods that affect crops and raise costs put families in debt (Reddy et al., 2020). This debt becomes impossible to pay back since the very shock that caused it also destroys the means of repayment, which leads to long-term bankruptcy (L. Singh et al., 2019)

Component 2: Barriers to Agricultural Productivity

Key Problems comprises of Agricultural tools are not sufficient, small farmers are not given special attention by Govt. Commodities like pesticides, quality seeds not provided on subsidy and sizes of fields are small. The "Barriers to Agricultural Productivity" points out important problems with the structure and government. It shows that farmers' production is very low since they don't have enough subsidized tools, seeds, and pesticides. There isn't enough policy attention for smallholders, and tiny field sizes make things harder. This mix of insufficient help from the government and structural problems makes it hard for agriculture to reach its full potential from the scratch to beginning. Agricultural expansion is important for reducing poverty, but this can only happen if the government plays a big role in it (Lio et al., 2008). It immediately backs up the concept

that not having government backing is a big problem for productivity (Christiaensen et al., 2011).

Component 3: Credit Risk

Problems such as Demanding more security, decrease in production due to landslide and default in repayment are part of credit risk. The "Credit Risk" part shows how the lender sees things, focusing on how they handle risk in reaction to perceived threats. One way to show that, they are asking borrowers for additional security, which is a direct response to risk factors like production drops caused by landslides. Even with a negative loading, the fact that there is a default firmly places this aspect in the realm of credit risk, showing how difficult it is for lenders to conduct business. In high-risk agricultural contexts, lenders can't readily hike interest rates. Instead, they reduce risk by making non-price terms, for additional collateral or security (Stiglitz et al., 1981).

Component 4: External Risk Factor

The external risk comprises of problems such as Decrease in production due to storm, decrease in production due to Drought, Insistence of Opening an Account. This "External Risk Factor" part shows the main environmental risks that farmers deal with. It is described as losses in productivity that are directly caused by natural disasters that are hard to foresee and can't be controlled, such as storms, drought. They are the main shocks that might start the bigger cycle of financial trouble seen in other parts, like problems with paying back debt. The weaker association with the 'insistence of opening an account' may indicate that farmers also perceive rigid institutional requirements as an external, unpredictable hurdle. Similar to natural disasters, these procedural hurdles are perceived as external events beyond their control that create barriers to financial access (Agrekon, 1990)

Component 5: Barriers to Credit Access

Key Challenges Loading on this Factor includes Delay in getting credit, Market prices of crops are not sufficient, No banks in vicinity. "Barriers to Credit Access" talks about the specific and procedural problems that make it hard to get a loan in the first place. This theme isn't about financial risk; it's more about the logistical struggle, which includes long processing times, the fact that there aren't any banks nearby, and administrative tasks like creating an account. Even the problem of low crop prices is seen here as a barrier that makes a farmer less creditworthy before the process even starts.

5.7. Hypothesis testing

To analyse how agricultural challenges are perceived across different farmer profiles, this study employs Analysis of Variance (ANOVA). The five component scores derived from the factor analysis Debt Repayment, Productivity Barriers, Credit Risk, External Risk, and Credit Access will serve as dependent variables. These will be systematically tested against key demographic and socioeconomic independent variables including age, landholding size, ownership, amount sanctioned and type of farming's. This analysis will identify which groups are disproportionately affected by specific types of challenges. The following hypotheses were formulated to study the difference between each of the components:

- There is no significant difference in the mean challenge scores across different age groups of farmers.
- The mean perception of agricultural challenges does not differ significantly among farmers of different land holding size.
- The mean perception of agricultural challenges does not differ significantly among farmers with different types of ownership.

- The mean perception of agricultural challenges does not differ significantly among farmers grouped by different levels of sanctioned loan amount.
- There is no significant difference in the mean challenge scores across different type of farming.

Table.5.7.1 Descriptive statistics of Agricultural Challenge Factors by Age Group

Age	Debt repayment issue		Barriers to agricultural productivity		Credit risk		External risk factor		Barriers to Credit Access	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Less than 30	1.93	0.50	1.96	0.45	3.21	0.90	3.69	0.77	3.97	0.59
31-40	1.94	0.46	2.02	0.53	3.12	0.95	3.43	0.71	3.92	0.60
41 & above	1.92	0.32	2.04	0.62	2.91	1.02	3.35	0.68	4.01	0.53

Source: Author calculation

Based on the descriptive statistics, different age groups have different ideas about what makes farming challenging. Farmers under 30 years old indicated they have the most credit risk and external risk concerns. On the other hand, older farmers 41 and above think that credit risk and external risk are not as significant. But people of all ages had a very comparable and high view of the obstacles to getting credit, with the oldest group finding it the hardest. People of all ages still think that problems with paying off debt and delays to productivity are limited and stable.

Table 5.7.2 ANOVA analysis for agricultural Challenge factors by Age Group

variables	F	Sig.
Debt repayment issue	0.037	0.964
Barriers to agricultural productivity	0.555	0.574
Credit risk	3.232	0.004
External risk factor	6.012	0.003
Barriers to Credit Access	1.132	0.323

Source: Author calculation

H_0 : There is no significant difference in the mean challenge scores across different age groups of farmers.

The ANOVA findings show that there are no statistically significant variations among age groups for three challenges like Debt repayment, Barriers to agricultural productivity, and Barriers to loan access as their significance values exceed 0.05.

However, for Credit risk and External risk factor there is a significant mean difference among the age group. This means that farmers' views on these two specific problems are greatly affected by their age group.

The descriptive statistics from table no. 5.7.1 results show that younger farmers, particularly those under 30, agree more strongly that Credit Risk and External Risk factors are major challenges. In contrast, farmers aged 41 and above demonstrate significantly weaker agreement with the severity of these two specific issues. This shows that elderly farmers clearly do not agree as much with how serious these problems are.

Table.5.7.3 Descriptive statistics of Agricultural Challenge Factors by land holding size

Land holding size	Debt repayment issue		Barriers to agricultural productivity		Credit risk		External risk factor		Barriers to credit access	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
size 1 hectare or less	1.95	0.43	2.04	0.58	3.14	0.97	3.46	0.71	3.94	0.57
Size 1 to 2 hectares	1.94	0.24	2.00	0.36	2.44	0.85	3.48	0.68	4.17	0.60
Size 2 hectare and above	1.74	0.44	1.87	0.50	3.03	0.98	3.23	0.84	3.97	0.55

Source: Author calculation

Table 5.7.3 presents descriptive statistics for key agricultural challenge factors, segmented by land holding size. The data reveal distinct patterns across farm sizes. Smaller farms (1 hectare or less) and the largest farms (2 hectares and above) report the highest mean levels of Credit Risk and External Risk Factors, suggesting these groups perceive significant financial and environmental uncertainties. Conversely, Barriers to Credit Access are rated most severe by mid-sized farms (1 to 2 hectares), who show the highest mean score (4.17) for this challenge. For Debt Repayment Issues and Barriers to Agricultural Productivity, mean scores are generally lower and show less variation, with the largest farm size category reporting the lowest perceived challenges in these areas. Overall, the perception of risks and barriers varies systematically with operational scale, indicating that farm size is a critical differentiator in farmers' experiences of agricultural challenges.

Table.5.7.4 ANOVA analysis of Agricultural Challenge Factors by land holding size

variables	F	Sig.
Debt repayment issue	3.484	0.032
Barriers to agricultural productivity	1.270	0.282
Credit risk	11.425	0.000
External risk factor	1.613	0.200
Barriers to Credit Access	3.377	0.035

Source: Author calculation

H₀:The mean perception of agricultural challenges does not differ significantly among farmers of different land holding size

Based on the ANOVA results, there are statistically significant differences in farmers' perceptions based on landholding size for three key challenges Debt Repayment Issues, Credit Risk, and Barriers to Credit Access.

As shown in table no 5.7.3 For Credit Risk, the defining group is mid-sized farmers 1-2 hectares, who stand out by reporting a neutral perception with mean score of 2.44. This score is significantly lower than the moderate to high concern shown by smallholders 3.14 and largest farmers 3.03. This unique position suggests mid-sized farmers feel substantially less threatened by the risk of default compared to their peers.

For Barriers to Credit Access, the same mid-sized farmers 1-2 hectares again create the significant difference, but now by reporting the most severe challenge. Their high mean score of 4.17, approaching "Strongly Agree," indicates they face the greatest obstacles in obtaining credit, a problem they find far more pressing than the risk of the credit itself. While smaller and larger group “agree”.

For Debt Repayment Issues, the significant difference is driven by the largest farmers 2 hectares and above. With a low mean of 1.74, they are the only group that clearly "Disagrees" that debt repayment is a serious problem. This demonstrates their superior financial security and capacity to manage debt compared to the two smaller farm size categories, who both report from disagree to neutral.

However, no significant differences were found for Barriers to Agricultural Productivity and External Risk Factors, so the researcher accept the null hypothesis in these two cases.

Table.5.7.5. Descriptive statistics of Agricultural Challenge Factors by type of ownership

Type of ownership	Debt repayment issue		Barriers to agricultural productivity		Credit risk		External risk factor		Barriers to credit access	
	Mean	Sd	Mean	Sd	Mean	Sd	Mean	Sd	Mean	Sd
Ancestral	1.95	0.40	1.99	0.54	3.06	0.96	3.50	0.73	3.96	0.57
Purchased	1.84	0.49	2.19	0.74	2.94	1.10	3.16	0.63	3.90	0.56
Rented	1.95	0.47	2.00	0.24	3.16	0.96	3.49	0.69	4.11	0.57

Source: Author calculation

Based on the descriptive statistics, farmers' perceptions of agricultural challenges show notable variations based on land ownership type. Farmers with purchased land consistently report the lowest levels of concern across most challenges, particularly showing the lowest perception of Debt Repayment Issues and External Risk Factors. While farmers with rented land express the strongest concerns about Barriers to Credit Access and also report the highest level of Credit Risk. Those with ancestral land generally fall between the other two groups, showing moderate concern across all challenges. This pattern shows that land tenure stability, especially full ownership, may make people feel

less financially vulnerable. On the other hand, rental agreements seem to make people more worried about credit availability and risk.

Table.5.7.6 ANOVA analysis of Agricultural Challenge Factors by type of ownership

variables	F	Sig.
Debt repayment issue	1.783	0.169
Barriers to agricultural productivity	3.627	0.027
Credit risk	0.691	0.501
External risk factor	5.929	0.003
Barriers to Credit Access	1.519	0.220

Source: Author calculation

H₀: The mean perception of agricultural challenges does not differ significantly among farmers with different types of ownership.

The ANOVA that farmers' views on basic financial problems, such as debt repayment issues, credit risk, and barriers to credit access, are statistically similar no matter if their land is inherited, bought, or rented. This indicates that there is no significant difference. However, Farmers' opinions on Barriers to Agricultural Productivity and External Risk Factors shows significant difference.

The significant differences for Barriers to Agricultural Productivity and External Risk Factors are overwhelmingly driven by farmers who purchased land. They feel the most constrained by Barriers to Agricultural Productivity yet are the most resilient to External Risk Factors, creating a distinct profile that sets them apart from farmers with ancestral or rented land.

Table.5.7.7. Descriptive statistics of Agricultural Challenge Factors by type of farming

Types of farming	Debt repayment issue		Barriers to agricultural productivity		Credit risk		External risk factor		Barriers to Credit Access	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Shifting agricultural	1.98	0.41	1.97	0.43	3.21	0.92	3.59	0.70	3.93	0.61
Plantation agricultural	1.88	0.36	2.26	0.84	2.80	1.00	3.26	0.66	4.01	0.56
Terrace agricultural	1.91	0.47	1.89	0.32	3.04	1.00	3.40	0.75	3.99	0.53

Source: Author calculation

The descriptive statistics indicate that farmers' perceptions of agricultural obstacles differ significantly by types of farming. Farmers that practice shifting agriculture are the most worried about Debt Repayment Issues, Credit Risk, and External Risk Factors. This shows that they feel the most financially vulnerable as compared to other farming groups. On the other hand, people who work on plantations see Barriers to Agricultural Productivity as their biggest problem, while those who work on plantation agriculture see Credit Risk as their biggest problem. This suggests that their biggest problems are operational, not financial. Farmers that grow crops on terraces are only moderately worried about most things, although they do express notable Barriers to Credit Access, just like plantation farmers do.

Table.5.7.8 ANOVA analysis of Agricultural Challenge Factors by type of farming.

variables	F	Sig.
Debt repayment issue	2.138	0.119
Barriers to agricultural productivity	15.516	0.000
Credit risk	5.82	0.003
External risk factor	7.72	0.001
Barriers to Credit Access	0.786	0.456

Source: Author calculation

H₀: There is no significant difference in the mean challenge scores across different type of farming

According to the ANOVA results, there are no statistically significant changes in farmers' opinions of Debt Repayment Issues and Barriers to Credit Access across different forms of farming. So, the researcher accepts the null hypothesis.

However, barriers to agricultural productivity, credit risk, and external risk factors shows that there is a significant difference. This shows that the type of farming system has a big impact on how farmers see their production limits, financial risks, and impact from external environment.

For Barriers to Agricultural Productivity, the significant difference is primarily driven by plantation agriculture, which is the only group that tends to move with neutral stand with mean value 2.26 that productivity barriers as a major challenge. In contrast, both shifting mean 1.97 and terrace mean 1.89 agriculture groups "Disagree" that these are significant constraints.

Regarding Credit Risk, shifting agriculture shows value of 3.21 and terrace agriculture mean 3.04 are "Neutral" to slightly leaning toward "Agree" about credit risk concerns. Meanwhile, plantation agriculture means 2.80 shows clearer "Disagreement" with the severity of credit risk.

For External Risk Factors, all groups generally "Agree" about their significance, but to different degrees. Shifting agriculture shows the strongest agreement mean 3.59, followed by terrace mean 3.40, while plantation agriculture shows the weakest agreement mean 3.26 among the three groups.

Table.5.7.9. Descriptive statistics of Agricultural Challenge Factors by loan amount sanctioned.

Loan Amount sanctioned	Debt repayment issue		Barriers to agricultural productivity		Credit risk		External risk factor		Barriers to Credit Access	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Less than 1,50,000	1.95	0.45	1.91	0.34	3.2	0.94	3.47	0.75	3.94	0.57
150,000 – 2,00,000	1.93	0.26	2.41	0.87	2.54	0.98	3.44	0.67	4.07	0.57
Above 200,000	1.87	0.34	2.26	0.86	2.69	0.98	3.32	0.56	4.01	0.59

Source: Author calculation

The descriptive data indicate that farmers' perceptions of agricultural problems systematically correlate with the amount of credit granted. Farmers who get the smallest loans less than ₹150,000 say they are most worried about Credit Risk and are moderately worried about other problems. People in the middle loan range ₹150,000–200,000 have distinctive characteristics. They are the most worried about Barriers to Agricultural

Productivity and the most worried about Barriers to Credit Access, but they also report the lowest Credit Risk. Farmers with the biggest loans above ₹200,000 usually don't worry as much about most problems, especially when it comes to paying back their debts and outside risk factors. This trend indicates that medium-level borrowers encounter the most difficult problem profile, experiencing significant limitations due to productivity and credit access barriers despite a reduced perception of credit risk.

Table.5.7.10 ANOVA analysis of Agricultural Challenge Factors by amount sanctioned

Variables	F	Sig.
Debt repayment issue	0.969	0.380
Barriers to agricultural productivity	25.207	0.000
Credit risk	14.758	0.000
External risk factor	1.262	0.284
Barriers to Credit Access	1.234	0.292

Source: Author calculation

H_0 : The mean perception of agricultural challenges does not differ significantly among farmers grouped by different levels of sanctioned loan amount.

From table 5.7.10 it highlights that Barriers to Agricultural Productivity and Credit Risk differ significantly across loan categories. This means that the amount of credit they get has a big effect on how they think about these issues.

For Barriers to Agricultural Productivity the medium loan group ₹150,000–200,000 is the only one that agrees that these are important barriers to agricultural productivity with mean

value 2.41. The lowest loan group, on the other hand, strongly disagrees mean 1.91, while the highest loan group exhibits moderate disagreement with mean of 2.26.

The big disparity in Credit Risk comes from the fact that the lowest loan group is quite clear about their concerns about credit risk mean with 3.20, whereas the medium and highest loan groups don't agree with mean of 2.54 and 2.69, respectively.

The data, however, finds no significant variations for three other major issues i.e., Debt Repayment Issues, External Risk Factors, and Barriers to Credit Access. This means that farmers see these challenges in the same way no matter how much they owe. So, even while the size of the loan is important for figuring out production and credit risk perceptions, it doesn't affect how farmers think about other important financial and outside problems.

5.8. Prospects of farmers in Kohima and Wokha District

The agricultural sector is an important moment in its history because of changing economic demands, environmental problems, and new technologies (Sassenrath et al., 2008). Farmers are at the center of this change. Their prospects based on how easily they can get resources, how well they can handle risks, and how well they can come up with new ideas will decide the sector's growth and sustainability (Costea et al., 2023). Farmers across the world face a lot of problems (systems, 2002), such as not being able to get credit, being vulnerable to climate change, markets not working well, and not getting in sufficient help from institutions. These problems make it hard for farmers to do their important tasks of making sure there is enough food and helping rural economies (Dixon et al., 2001).

In order to clearly show the order of importance of the reforms that farmers want for "Prospective Agricultural Credit and Risk Management Reforms," the data has been ranked. This analytical approach was necessary to go beyond just knowing what farmers agree on and instead find a clear order of priorities that policymakers can act on.

Table: 5.8.1: Prospective Agricultural Credit and Risk Management Reforms: Farmers' Prioritized Recommendations

Statements	Mean	Rank
Simplified rural credit procedure and various agricultural schemes	4.76	1
Should reduce the rate of interest	4.38	2
Subsidized/concession loans for small farmers should be increased	4.01	3
To provide appropriate information of agricultural scheme to the farmers	3.73	4
Period of loan should be made sufficient	3.64	5
Electricity for Agriculture sector should be free	3.49	6
Farmers needed special packages in case of natural disasters such as Droughts, Floods	3.22	7
Insurance of crops also needed	3.08	8
commercial crops should be preferred	3.02	9

Source: Author calculation

From the table 5.8.1 "Prospective Agricultural Credit and Risk Management Reforms: Farmers' Prioritized Recommendations" shows a clear order of the demands that farmers have for agricultural reform. The data, which is categorized by mean scores, shows that farmers' most important need is for easier credit procedures and schemes with mean value 4.76, rank 1. Farmers don't want more programs in general, but they do want the ones that are already in place to be easier to use and less complicated (Gundgire & Dashrath, 2020).

This is closely followed by lower interest rates, with the mean value of 4.38, rank 2nd and more subsidized loans for small farmers mean 4.01, rank 3rd. This means that the most important things are being able to get money right away and being able to afford it. Delays in access (due to long procedures) make borrowing more expensive for farmers because of that they miss the best moments to buy inputs(Kumar et al., 2021).

The second and third priorities are about to make banking operations better by means of improved sharing of information (mean 3.73, ranked 4), Period of loan should be made sufficient, mean 3.64, rank 5, and free electricity mean 3.49, rank 6. These are the requirements that must be met for credit to be used effectively. Farmers said that improved information, longer loan periods, and lower costs were important for using credit well. This is in line with studies that shows these operational aspects are equally as crucial as the loan itself for making sure things go well (Addressing Credit Challenges Faced by Indian Farmers - The Hindu BusinessLine, 2019).

The items that ranked fewer such as disaster packages mean 3.22, rank 7, crop insurance mean 3.08, rank 8, and preference for commercial crops mean 3.02, rank 9 are still important, but they show that farmers think that risk management and diversification are less important than fixing basic problems with getting credit.

5.9. Concluding remark

This chapter has carefully looked at the problems and opportunities of agriculture in Kohima and Wokha districts by applying tools. Using rank analysis, factor analysis, and ANOVA has helped to gain understand of the complicated agricultural problems in the area. The study creates strong support for policy suggestions by breaking down overlapping problems into identifiable parts and using statistical methods to check the authenticity of the data. The methodology effectively summarizes the complex character

of agricultural difficulties and illustrates how farmer viewpoints may be positively assessed to guide development goals, so offering significant contributions to agricultural research methodology. The findings reveal that farmers in Kohima and Wokha districts prioritize market and institutional challenges, such as low crop prices and complex credit procedures, over production and climate risks. Their perceptions vary significantly by farm size, landholding type, and farming system. Crucially, farmers identify clear solutions, with the highest demand for simplified credit access, reduced interest rates, and increased subsidized loans, pointing to targeted financial reforms as the key pathway to improving agricultural prospects.

Chapter 6:

Summary and Conclusion

This chapter aims to present the conclusion and subsequently draw suggestions and recommendations based on the findings, analysis, and results.

6.1 Major findings:

1. Present scenario of agricultural credit sector in Nagaland:

- The agricultural sector in Nagaland is getting weaker, producing less, and getting less yield from most key crops. The only North-east state with a negative trend in crop value added.
- The state has lowest agricultural loans per account in Northeast India, which shows that there are serious problems with getting agriculture credit. The customary land ownership system, which doesn't provide people formal titles to their land which stops farmers from using it as collateral. This is the main structural barrier to getting credit.
- Kisan Credit Card (KCC) loan in Nagaland is difficult and unreliable for many farmers. Because most farmers don't have formal land titles, banks are hesitant to lend. While some banks do provide loans, the amount and number of people who get them change drastically from year to year. Some districts get much more support than others. Overall, the system is not yet stable or fair enough to meet most farmers' needs.
- Most banks are located in cities (Dimapur and Kohima), which means that people from eastern and remote areas are not getting the services. Banks in remote location are running, with very high population per bank branch ratios.
- Small and marginal farmers with small plots of land make up the majority of farmers. They use traditional jhum agriculture, which limits productivity and capital accumulation.

2. Impact on Socio-Economic status of farmers in Nagaland:

- An overwhelming majority (81%) of the respondents are marginal farmers, operating on less than 1 hectare of land.
- Most farmers (76.4%) possess land that has been passed down to them from their ancestors. This shows how important traditional inheritance and limited land markets in Nagaland.
- For economic impact farmers of all ages and backgrounds firmly agreed that credit significantly increased their income, assets, and home facilities.
- The lowest economic priority (Rank 4) was "Increase in employment opportunities." People's views on this issue change a lot depending on their marital status, annual income, bank type, and district.
- Improving skilled labour was the highest social priority (Rank 1), followed by children's education (Rank 2). Credit was perceived as highly effective in achieving both.
- "Improving status in society" was the least important social issue (Rank 3), and credit didn't seem to help any of the farming groups to achieve it.
- The size of the loan was critically important. Larger the loans amount (above ₹1,00,000) directly leads to significantly higher perceived improvements in children's education.
- Taking loan from The State Bank of India (SBI) was perceived as significantly more effective in creating employment opportunities. Loans from Local Banks like Co-operative and Rural Banks were perceived as significantly more effective in enhancing children's education.
- Farmers with larger landholdings above 2 hectares experienced a significantly greater perception on improvement in their social status compared to marginal farmers.

- T-test showed that Kohima reported that agricultural credit has a significant stronger positive impact on employment generation. While Wokha reported that agricultural credit has significant stronger positive impact on children's education.

3. Factors which affect the farmers choice of credit sources:

- The most important financial hurdle was having to open a bank account with a mean score of 4.09, followed by not having enough mortgage or collateral with a mean of 3.96 and excessive borrowing charges mean (3.93).
- The main institutional barrier was lack of cooperation from bank staff with a mean of 4.10, followed by complicated rules and paperwork with mean score 4.01 and not knowing about credit packages (mean 3.98).
- ANOVA result shows that Critical barriers like uncooperative bank staff and mandatory account opening showed remarkable consistency across all demographic groups, with no significant differences based on age, education, land size, ownership type, income, or credit source.
- Plantation farmers perceived high borrowing costs as significantly more problematic than shifting agricultural farmers. Farmers with medium-sized loans (₹150,000-200,000) found insufficient mortgage requirements less problematic than other loan-size groups. Farmers above 40 years perceived lack of bank staff cooperation as less severe than younger farmers.
- Farmers primarily seek short-term credit for immediate operational needs (labor, seeds, fertilizers) rather than long-term investments.
- There is a clear preference for localized cooperative banks over larger institutions due to better accessibility.
- Repayment capacity varies significantly by farming type, with plantation farmers struggling more due to longer production cycles compared to seasonal farmers.

4. Credit Utilization Patterns and repayment performance

- Agricultural credit is used primarily for short-term survival rather than long-term investment. An overwhelming majority of farmers (65.7%) allocate loans to direct operating expenses, with labor charges alone accounting for 29.3% of all credit usage. This focus on immediate production needs, when it comes to the expense of capital investment, with a mere 20.7% of credit directed toward long-term farm improvement assets like equipment, indicating that farmers are using credit to sustain existing operations rather than to modernize or expand them.
- Chi square test highlight that Age, education, land size, loan amount, annual income, and credit source did not have any statistically significant association on how people used the service. This indicates that the necessity to address short-term operational expenses is a common practice among many categories of farmers.
- A significant association reveals that shifting and terrace farmers focus credit almost exclusively on direct operating expenses for seasonal survival. In contrast, plantation farmers demonstrate a more balanced approach, allocating a notable share to capital expenses, a reflection of their longer-term, commercial production cycles.
- The success of repayment is heavily influenced by certain traits of the farmer. Farmers over 41 have a lot more trouble than younger farmers. Also, plantation farmers have the hardest time paying back loans because their production cycles are longer. Shifting and terrace farmers, on the other hand, do better. Farmers with the highest incomes above ₹2 lakhs have the hardest time paying back loans. On the other hand, the farmers with the lowest incomes below ₹1 lakh are the best at paying back loans, probably because their debts are easier to handle because their businesses are smaller.
- Loan defaults are primarily driven by farm economics and family pressures. The leading cause is agricultural loss, such as low yields and rising cultivation costs are accounting reason for 43.5% of defaults. This is closely followed by family problems, including high expenses and old debts, which contribute to

33.3% of repayment failures. In contrast, banking expenses like high interest rates and costly procedures are a least factor, responsible for 23.2% of defaults.

- Farm income serves as the primary source for loan repayment, with the vast majority of farmers relying on returns from their agricultural activities. Family support acts as a crucial financial safety net, being the second most important source for 13.8% of the borrowers. In contrast, reliance on money lenders for repayment is minimal at just 6.9%, indicating that farmers predominantly depend on their own internal resources and family networks to settle their debts.

5. Challenges and Prospects of farmers in Kohima and Wokha Districts

- Farmers' biggest problems are low crop prices and difficult loan procedures (like mandatory account opening), not crop failures or weather issues.
- Most farmers (65.7%) use loans for immediate needs like labor costs, with only 20.7% investing in long-term farm improvements.
- Plantation farmers and older farmers (above 41) struggle most with repayment, while surprisingly, lowest-income farmers repay without much issues.
- Farmers' top demand is simpler loan procedures, followed by lower interest rates - ranking these above disaster relief or crop insurance.
- Based on farmer feedback, the primary prospect for improving the agricultural sector in Kohima and Wokha lies in financial system reform. Farmers overwhelmingly prioritize simplifying credit procedures, reducing interest rates, and increasing subsidized loans for smallholders. Their recommendations indicate that enhancing the accessibility, affordability, and operational effectiveness of formal credit is considered more immediately critical than risk management tools like crop insurance or diversification into commercial crops.

6.2 Recommendation of the study:

For Banks

- Develop flexible loan products for jhum and terrace farming.
- Expand branches and digital services in underserved eastern districts and remote locations.
- To address the key institutional challenges of complex formalities and uncooperative staff, banks must provide specialized customer service training to equip the staff with the skills to guide clients through simplified processes.
- Offer lower rates to farmers with a good repayment history.

For Government

- Create a legal framework to make customary land acceptable as loan collateral.
- To strengthen the agricultural sector, prioritizing greater investment in infrastructure would be highly beneficial.
- In order to tackle the significant problem of "lack of awareness about farm credit packages," the State Agriculture Department may run ongoing, localized awareness campaigns through workshops, village meetings, and local media. These campaigns may unfold the benefits of KCC and other farm credit packages, explain eligibility, and inform farmers about their rights and responsibilities.

For Farmers:

- Form Farmer Producer Organizations (FPOs) to access credit collectively.
- Participate in financial literacy programs.
- Diversify into high-value crops and use credit for quality inputs.
- To avoid the stress of a large payment at once, repayment of loan taken may be done on time as well as consider setting aside a small amount from each sale of your produce. A little saving throughout the season makes repayment much easier than finding a large sum at the end.

- Consistently repaying on time is the most powerful tool, a farmer has to eventually qualify for lower interest rates from formal institutions.

For Public and Communities:

- Village councils should advocate for culturally sensitive land documentation systems.
- NGOs should facilitate group formation and help farmers access banks.
- Promote a culture of savings and using formal banking services.

6.3 Limitation of the study:

- Its findings are primarily based on data from only two districts (Kohima and Wokha), which may not be fully representative of all Nagaland.
- The study only looks at the viewpoints of farmers, leaving out the important opinions of bankers and lenders regarding the difficulties in distributing credit.
- A significant weakness of this study is its majority dependence on primary data, which may be subject to respondent biases.
- The study is based on data collected at cross-sectional. It does not track farmers over a long period to understand the long-term impact of credit on their socio-economic status, making it difficult to establish causality with certainty.
- A significant constraint of this research is the insufficiency of published literature and baseline data regarding agricultural credit in Nagaland. The absence of a solid basic research environment led to direct comparisons and comprehensive historical analysis difficult.

6.4 Scope for further research

- For a full state-level analysis, future research should look at additional districts in Nagaland. It should also use longitudinal studies that follow farmers over 5

to 10 years to see how long-term lending affects them, how their usage habits change, and how they repay their loans in a way that is sustainable throughout agricultural cycles.

- Future research should incorporate critical external variables like climate shocks, market access, price volatility, and the role of social capital through SHGs and FPOs to build a more robust model of credit access and repayment.
- Future research should encompass the institutional viewpoint by examining the problems encountered by bank officials.
- Future studies should look into how digital banking, mobile payments, and fintech may help farmers in distant Nagaland get funding more easily, even if they live in remote areas.
- Women farmers may be the main focus of future study. This looks at the specific problems they have getting formal loans, how they use credit differently, and how credit affects the well-being of female-led farming households in different ways.

6.5 Conclusion:

Agricultural finance is an essential driver of growth, allowing farmers to escape poverty by investing in better inputs, technologies, and assets, which in turn increases productivity, income, and general socio-economic well-being. The study indicates that access to formal finance in Nagaland has a real positive effect. It gives farmers the power to improve their lives, pay for their children's education, and make their homes better.

But there are still big and interrelated problems that make it hard for agricultural lending to reach its full potential. The unique traditional land ownership structure in Nagaland, which prevents individual land titling is the biggest structural problem. It makes it very hard for farmers to offer collateral and get formal loans. This is made worse by long-standing problems with institutions, such as bank staff not working together, complicated bureaucratic processes, banks being too far away, and a serious

lack of knowledge about credit programs. These things make it hard for smallholder and marginal farmers to get formal financing.

The study also shows that credit is not a cure-all. Other things, like access to markets, infrastructure, and knowledge, affect how well it works. The widespread use of loans for short-term operational costs instead of long-term capital investments, along with the high rate of default caused by losses in agriculture, shows that the agricultural system is weak and that farmers are still exposed to production and market risks. This weakness is made worse by the fact that credit flows are not always steady and even both from year to year and between districts.

In short, agricultural financing is a great way to help people grow, but just having it available in Nagaland doesn't mean it will work. For progress to happen in the future, we need to go beyond just raising the number of loans. It needs a comprehensive, multi-stakeholder approach that is open to everyone, focused, and connected. This means that we need new ways to solve the land tenure problem, changes to the banking system to make it easier for farmers to get loans, strong awareness campaigns, and the combination of credit with insurance, market links, and extension services. Only by using such a broad approach can agricultural credit really live up to its promise of improving the welfare of Nagaland's farmers in a way that is fair and long-lasting.

ANNEXURE- I

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ANNEXURE- II

Interview schedule

Dear respondent,

I Miss Emilo kikon pleased to introduce myself as a research scholar from Department of Commerce, Nagaland University. As a part of my PhD work, I am conducting a study on “Agricultural credit and farmer’s welfare in Nagaland” under the supervision of Dr. Amrendra Kumar, Assistant professor, Nagaland University. I request you to kindly help me by responding the following questions to the best of your knowledge. Your response will be voluntary, and the information provided will be used only for the academic purpose.

Thanking you.

Date of interview _____
District _____

SECTION-A

Personal information

- 1.Name : _____
- 2.Village/Address : _____
- 3.Contact number : _____
- 4.Age : ☐ Less than 30 ☐ 31-40 ☐ 41 & above
- 5.Gender : ☐ Male ☐ Female
- 6.Education qualification
☐ No schooling ☐ secondary ☐ HSLC
☐ HSSLC ☐ Graduate & above
- 7.Marital status
☐ Married ☐ unmarried ☐ widowed
☐ Divorced
- 8.Is Agriculture your main occupation?
☐ Yes ☐ No
9. Other occupation apart from Agriculture (if any)

SECTION-B

Credit availed

- 10.Area owned for farming?

☐size 1 hectare or less ☐Size 1 to 2 hectares ☐Size 2 hectares and above

11.Type of land ownership

☐Ancestral ☐Purchased ☐Rented

12.In what type of agricultural production are you engaged? (*Tick whichever is applicable*)

☐Shifting agricultural ☐Plantation agricultural ☐Terrace agricultural
☐Agri-allied sector ☐Others (please specify)_____

13.Have you or your family member taken agricultural loan

☐ Yes ☐ no

14.How many times have you taken agricultural loan during 2012-2022? _____

15.Annual year of the loan sanctioned? _____

16.Amount of loan demanded for the purpose?

☐Less than1,00,00 ☐1,00,000- 1,50,000
☐150,000 – 200,000 ☐Above 200,000

17.Amount of loan sanctioned?

☐Less than1,00,00 0 ☐1,00,000- 1,50,000
☐ 150,000 – 200,000 ☐Above 200,000

18.Annual Income from Agricultural activity?

☐Less than1,00,000 ☐1,00,000- 1,50,000
☐ 150,000 – 200,000 ☐Above 200,000

19.Annual Income from other activities?

☐Less than1,00,00 ☐1,00,000- 1,50,000
☐150,000 – 200,000 ☐Above 200,000

20. Sources from which you received loan? (*Tick whichever is applicable*)

☐state bank of India ☐Nagaland state co-operative bank
☐Nagaland Rural Bank ☐others

21.What type of agricultural financing have you availed? (*Tick whichever is applicable*)

☐Allied Agricultural term loan ☐Farm mechanization schemes
☐Horticulture loan ☐Kisan credit card (KCC)
☐Others (please mention) _____

22.Purpose for availing credit facility?

☐Purchase of agricultural equipment ☐Purchase of seeds ☐Irrigation expenses
☐Labour Charges ☐others (please specify)_____

23. How did you come to know about agricultural credit disbursed by the bank?

☐ Friends/ relatives

☐ Bank Employees.

☐ Newspapers/ Journals

☐ Other

means

(specify) _____

24. State the type of security provided by you for availing the credit. (*Tick whichever is*

applicable)

☐ Land

☐ Gold

☐ LIC Policies

☐ Employee's

Salary

Certificate

☐ Building/house

☐ No Security

☐ Others

(Specify)

25. In addition to financing institution have you availed any loan from non-financing institution

☐ yes

☐ no

(a) if yes then, sources from where credit was taken (*Tick whichever is applicable*)

☐ Not applicable

☐ Friend

☐ Landlord

☐ Neighbour

☐ Family member

☐ Others

(please

specify)

(b) Do you think availing credit from non-institutional sources is

☐ Simple procedure and easy access of credit ☐ Timely availability of credit without

delay

☐ Reasonable rate of interest

☐ Convenient repayment norms

☐ others (please specify) _____

SECTION-C

Utilisation of the credit

26. Whether the credit amount availed was adequate for the purpose or not?

☐ yes

☐ no

27. State the nature of utilisation

☐ Fully utilised for the specified purpose

☐ Partially utilised for the specified purpose and partially utilised for other purpose

☐ Fully utilised for other purpose

28. State the main purpose for which the credit amount was utilised

☐ Purchase of agricultural equipment

☐ Irrigation expense

☐ Storage

Cost

☐ Land preparation expense

☐ Transportation cost

☐ Labour

Charges

☐ Cost of fertilizer and seeds

☐ Cost of insecticides and pesticides

☐ Others (please specify) _____

29. Kindly tick the appropriate column

Parameter	Pre loan	Post loan
Investment per year	Less than 1,00,000 ☐ 1,00,000- 1,50,000 ☐ 150,000 – 200,000 ☐ Above 200,000 ☐	Less than 1,00,000 ☐ 1,00,000- 1,50,000 ☐ 150,000 – 200,000 ☐ Above 200,000 ☐
Savings per year	Less than 1,00,000 ☐ 1,00,000- 1,50,000 ☐ 150,000 – 200,000 ☐ Above 200,000 ☐	Less than 1,00,000 ☐ 1,00,000- 1,50,000 ☐ 150,000 – 200,000 ☐ Above 200,000 ☐
Income per year	Less than 1,00,000 ☐ 1,00,000- 1,50,000 ☐ 150,000 – 200,000 ☐ Above 200,000 ☐	Less than 1,00,000 ☐ 1,00,000- 1,50,000 ☐ 150,000 – 200,000 ☐ Above 200,000 ☐

SECTION-D

Repayment Performance

30. Payment of loan is done

- ☐ Yearly ☐ Half-yearly ☐ Quarterly
☐ Monthly ☐ Unable to repay

31. Rate of interest paid

- ☐ Less than 8% ☐ 9%-12% ☐ 13% & above

32. Sources of Repayment

- ☐ Return from farm Income ☐ Income from subsidiary occupation

☐ Borrowings from money lenders ☐ Income from family members

☐ Others (please specify) _____

33. Are you able to pay off your debt on time? ☐ yes ☐ No

If you are not able to pay off your debt on time state, the reason

☐ High rate of interest ☐ Expensive procedure ☐ Low Yield or Income from Agriculture

☐ Huge Family Expense ☐ Increase in Cultivation Expense

☐ Repaying old debt

☐ Others (Specify) _____

SECTION-E

Farmers welfare

34. Do you have a Warehousing facility? ☐ Yes ☐ no

35. Tick the following scheme that you are aware of

☐ Pradhan Mantri Kisan Samman Nidhi (Pm-Kisan) Scheme

☐ Pradhan Mantri Fasal Bimal Yojana

☐ Pradhan Mantri Krishi Sinchsal Yojana (Per Drop More Crop)

☐ Market Intervention Scheme and Price Support Scheme (Mis-Pss)

☐ Agriculture Infrastructure Fund

☐ Others (please specify) _____

36. Are you holder of Kisan Credit Card? ☐ Yes ☐ No

37. Have you ever taken crop insurance? ☐ Yes ☐ no

38. Tick the agricultural credit facilities that you are aware of which are provided by the bank

☐ Allied Agricultural term loan ☐ Farm mechanization schemes

☐ Horticulture loan ☐ Kisan credit card (KCC)

☐ Others (please mention) _____

SECTION-F

Productivity and social impact

(Kindly put (✓) mark on your choice for question given below)

39. Social impact on use of Agricultural credit

Variables	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Social economic impact					
Increase in income of farmers					
Improve the status in the society					
Increase in employment opportunities					
Improve in skilled labourer					
Increase in saving					
I think there is abundant availability of credit					
Personal status					
Improve in children education					
Increase in assets holding (land,machinery,car,gold etc.)					
Increase in house hold facilities (structure of house, electricity connectivity etc)					
Impact on Agricultural production					
Increase in quality of seeds					
Improve in water supply					
Increase in quality of fertilizer's					
Increase in high yielding of crops					
Develop in upgrading latest machineries					
Improved in high yielding livestock breed					
Marketing status					
Improve in storage facility					
improve in packaging quality					
Improve in delivery service					
Improve in marketing building					
Improve in quality of products					

SECTION-G

Problems faced by farmers

40.Problems faced by farmers while availing credit

Statements	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
High Cost of borrowings					
High rate of interest					
Insistence of Opening an Account					
Loss of wages					
Insufficient mortgage					
Default in Repayment					
Lack of cooperation from bank staff					
Complicated loan procedures					
Delay in getting credit					
Uneasy Instalment					
Indifferent attitude of bank staff					
No banks in vicinity					
Lack of awareness about farm credit package					
Complex formalities and documentation					
Demanding more security					

41.Agricultural problem faced by the farmers

Statements	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Market prices of crops are not sufficient					
Farmers are not dependent to decide the market value of their crops					

Water and Soil testing labs in Rural areas are not sufficiently available					
Water resources are not enough for irrigation					
Electricity supply are not enough for Agriculture sector					
Agricultural research university and institutions are not enough					
Labours are not easily available or very much expensive					
Sizes of fields are small					
Subsides provided for farmers are not available					
Commodities like pesticides, quality seeds are not provided on subsidy					
Small farmers are not given special attention by Govt.					
Agricultural tools harvesters, Tractors, supply on subsidy basis are not sufficient					
Decrease in production due to Drought					
Decrease in production due to landslide					
Decrease in production due to storm					
Crop failure					
Failure of monsoon					
Non-waiving of loan					
Flood increased in input cost					
Lower value for the produced product					
Higher rate of interest					

SECTION-H

Opinions and suggestion

42.Opinions/ suggestion for improving the Agricultural sector

Statements	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Simplified rural credit procedure and various agricultural schemes					
Should reduce the rate of interest					
Subsidized/concession loans for small farmers should be increased					
To provide appropriate information of agricultural scheme to the farmers					
Period of loan should be made sufficient					
Electricity for Agriculture sector should be free					
Farmers needed special packages in case of natural disasters such as Droughts, Floods					
Insurance of crops also needed					
commercial crops should be preferred					

Suggestions

if

any_____