# A Study on Agricultural Financing in the State of Goa

A Thesis submitted in partial fulfillment for the degree of

**DOCTOR OF PHILOSOPHY**

in

Commerce

Goa Business School


By

**Naik Deepali Gurudas**

Goa University

Taleigao-Goa

September 2021

# A Study on Agricultural Financing in the State of Goa

A Thesis submitted in partial fulfillment for the degree of

**Doctor of Philosophy**

In

Commerce

Goa Business School


By

**Naik Deepali Gurudas**

Under the guidance of
**Dr. P. Sri Ram**

Assistant Professor

Goa Business School

Goa University

Taleigao-Goa

September 2021

# DECLARATION

"I, Naik Deepali Gurudas, hereby declare that this thesis for Ph.D. Degree in Commerce titled **"A Study on Agricultural Financing in the State of Goa"** is a bonafide record of original research work which has been carried out by me under the guidance and supervision of Dr. P. Sriram, Assistant Professor in Commerce, Goa Business School, Goa University and that it has not been submitted, either in part or full, to any other University or Institution for the award of any research degree.

Naik Deepali Gurudas
Research Scholar
Goa Business School
Goa University

Date: _____

Place: Goa University

Taleigao Plateau, Goa.

# CERTIFICATE

I hereby certify that the above Declaration of the candidate, Naik Deepali Gurudas is true and the research work titled **"A Study on Agricultural Financing in the State of Goa"** was carried out under my supervision.

Dr. P. Sri Ram
Assistant Professor
Goa Business School, Goa University
Taleigao-Goa, 403 406.

Date: _____

Place: Goa University

Taleigao Plateau, Goa.

# ACKNOWLEDGEMENT

This thesis owes its presence to the help, support and required inspiration of many people. I desire to record here my extensive gratitude to my supervising teacher as well as guide Dr. P. Sri Ram, Assistant Professor in Commerce, Goa Business School, Goa University, Talieigao-Goa for his knowledgeable guidance throughout the preparations of my thesis. I will be always indebted to him for his interest which was shown during my research.

I express my sincere gratitude to Prof. M. S. Dayanand, Dean and Prof. Sudarshan P.K. Vice-Dean of Research, Goa Business School, Goa University, Talieigao-Goa for their boundless co-operation.

Also I extent my special thanks to Prof. Anjana Raju, Program Director of Ph.D (Commerce) Goa Business School, Goa University, Talieigao-Goa for her constant encouragement at all levels of my research work.

My gratitude is also due to the members of Doctoral Committee. I am immensely indebted to Dr. Pranab Mukhopadhyay, Professor, Department of Economics, Goa University, Talieigao-Goa and Dr. M. R. Patil, Professor, DMC College of Arts, Science, Commerce, Management Studies & Technology, Bardez-Goa for their sincere suggestions during the entire course of the study without whose expert advices and assistance this study wouldn’t have been a successful task.

Even I take this opportunity to hearty thanks entire faculty members and office staff of Goa Business School, Goa University, Talieigao-Goa for their co-operation and instant support.

Also I am grateful to Dr. Gopakumar, Librarian and entire staff of Goa University Library, Taleigao-Goa for the assistance I sort from them.

I place on record my heartfelt thanks to entire staff of Directorate of Agriculture, Panjim-Goa, Regional Bank offices in Goa for their valuable information to this work. Also to place on record I owe my special thanks to Bank officials of selected bank branches for allowing me to access to some of their records and also for their valuable suggestions, clarification and opinions.

I extend my sincere thanks to selected farmer respondents, group leaders of farmer clubs for helping me complete my survey smoothly as per the requirements.

I am indebted to Mr. Nevin Nathan, Statistician, for the valuable help for processing secondary and primary data and for the application of various statistical tools for my research data.

I express my indebtedness to my Principal Dr. P. M. Bhende, Vice-Principal Dr. M. Chicodikar, entire teaching and non-teaching staff of GVM's GGPR College of Commerce & Economics, Ponda-Goa for their whole heartedly support and blessings in this entire period. I had privilege of experiencing this gesture and thank them all for the support.

I am deeply thankful to the Directorate of Education for the study leave granted to me. I also express my gratitude to Goa University for providing me with the necessary facilities required for the study.

My heartfelt thanks to my friends Ms Karishma Hodavdekar, Ms Shital Jadhav, Ms Cassy Cardoso, Ms Evelyn Carvalo, Mr Ian Colaco, Dr. Prachi Kolambkar, Mr Shradhanad Naik and Ms Sanjeeta Shirodkar who were always there for their unconditional support. I am quite fortunate enough for having a set of well-wishers.

I express my genuine thanks to my late father Mr Gurudas Naik, mother Mrs Suhashini Naik, and siblings for their support during my research work. A big thank to my husband Mr Husain Mulla for being my strongest support and motivating me all my time. Also I extend my gratitude towards my in-laws, relatives, neighbours and my students who have borne much in my endeavour.

Last but not the least; I would like to thank those who have helped directly and indirectly in completion of my work.

**Ms Naik Deepali Gurudas**

# TABLE OF CONTENTS

# LIST OF TABLES

# LIST OF FIGURES

## List of Abbreviations

| | | |
|---|---|---|
| **WTO** | - | World Trade Organisation |
| **RBI** | - | Reserve bank of India |
| **RRBs** | - | Rural Regional Banks |
| **NABARD** | - | National Bank for Agriculture and Rural Development |
| **GDP** | - | Gross Domestic Product |
| **SLR** | - | Statutory Liquidity Ratio |
| **CRR** | - | Cash Reserve Ratio |
| **NPA** | - | Non-performing asset |
| **GNPA** | - | Gross Non-performing asset |
| **ARF** | - | Asset recovery fund |
| **NBFCs** | - | Non - Banking Companies |
| **DFIs** | - | Development Finance Institutions |
| **BFS** | - | Board for Financial Supervisory |
| **PSB** | - | Public Sector Banks |
| **ITR** | - | Income tax return |
| **KYC** | - | Know your customer |
| **PAN** | - | Permanent account number |
| **UPI** | - | Unified Payments Interface |
| **NSS** | - | National Sample Survey |
| **ATM** | - | Automated Teller Machine |
| **APS** | - | Agricultural Production Sub System |

**PACS** - Primary Agricultural Co-operatives

**FSS** - Farmers Service Societies

**CBs** - Commercial banks

**DCCBs** - District Central Co-operative Banks

**SCBs** - State Co-operative Banks

**HYV** - High Yielding Variety

**ADWDRS** - Agriculture Debt Waiver and Debt Relief Scheme

**OTS** - One Time Settlement

**KCCs** - Kisan Credit Cards

**NSSO** - National sample survey office

**SHGs** - Self-help groups

**MFIs** - Micro-Finance Institutions

**UCBs** - Urban Co-operative Banks

**PIB** - Press Information Bureau

**NAFIS** - National Financial Inclusions Survey

**RIDF** - Rural Infrastructure Development Fund

**CDF** - Co-operative Development Fund

**PO's** - Producer Organizations

**FPOs** - Farmers Producer Organisation

**MT** - Million Tons

**CAGR** - Compound Annual Growth Rate

**GSDP** - Gross State Domestic Product

**A.D.** - Anno Domini

**ha** - Hectare

**NCDC** - The National Co-Operative Development Corporation

**pH** - Power of Oxygen

## Abstract

Goa, India's smallest state in terms of land area, attracts a large number of tourists through Tourism. Agriculture is an important economic activity apart from tourism sector in Goa state contributing to 15 % of the state's income. The government has taken measures to develop and establish agriculture in Goa in order to make it more profitable, thereby encouraging farmers to increase their return on investment. Rice and fish are the staple foods for most people, but paddy is the most visible harvest in Goa's farming situation. Maize, ragi, bajra and jowar, in addition to paddy, produce large yields. Money crops such as mango, areca nut, jackfruit, banana pineapple, cashew nut coconut, cashew nut and coconut are also abundant. Cashew is probably Goa's most important crop. Sugarcane cultivation has been a late success story, with a sugar factory being built in Goa as well. Rural land is becoming less accessible as a result of rapid urbanization. Hence in order to understand the agricultural financing modules in Goa and farmers' attitude towards borrowing finances for cultivation, the study is undertaken.

The major objective of this research is to study the impact of Institutional Agricultural financing on socio-economic aspects of farming community in Goa. The sample considered in the study are farmers and bankers designated as managers. Secondly, the study aims at identifying the problems faced by farmers in borrowing institutional agricultural financing through banks in the state of Goa. It also identifies the difficulties among bank managers for authorizing farm loans to farmers. The inclinations of farmers for accomplishing loan for agriculture through different private and public area banks are additionally analyzed. Ultimately, it breaks down the hindrances looked by financial institutions in lending agricultural finance in the territory of Goa.

The study is quantitative in nature, based on data collected from three groups of respondents, namely farmers, bank managers, and agricultural society representatives, using a stratified sampling procedure and organized questionnaires from June 2019 to December 2019. The secondary data was collected from RBI Website, NABARD Publications, Goa Agricultural Society etc. The sample size for the primary data is 380 farmers who availed loan from banks

and 15 Bankers for perceptions of bankers who at present are designated as Managers. The reliability of the questionnaires was estimated using Cronbach alpha statistics. The Cronbach alpha for factors affecting utilization of credit facilities by banks was found to be 0.852 for 10 items used in the scale and for opinions regarding bank services was found to be 0.810 for 12 items used in the scale. To test the normality of information the tools utilized were Shapiro-wilk test, Skewness and Kurtosis test. The statistical tools used in the analysis are ANOVA, Correlation Analysis – Pearson and Spearman Correlation, Chi-square Test, Factor analysis, Friedman Test, Independent sample median tests, Jonckheere – Terpstra Test, Kruskal – Wallis test, Kendall's Concordance Test, Marginal Homogeneity Test, Chi-square test, Binary Logistic Regression, Multinomial Logistic Regression and Categorical Regression, one. Trend analysis with the help of graphs is also used in the study.

The finding reveal that there exists significant difference between term of loan and recovery of loan by bank officials through agricultural financing, loan sufficiency and recovery of loan by bank officials, types of crops cultivated and land ownership in agricultural financing, medium of sale for crops and types of crop cultivated whereas there was no significant difference between external factors such as weather conditions, inferior quality of input and causes for overdue in agricultural financing. There was enough evidence to conclude that, according to Pearson's correlation test, there is a relationship between loan monitoring and loan recovery by bank officials. The impact of bank employees' knowledge about various loan schemes and their perceptions of bank executives' behaviour on the probability of banks granting the requested loan sum was investigated. Both variables contributed to the model's important relationship. The association between the system of cultivation used and the types of farm land was found to be important in a categorical regression study.

The study of correlation using Spearman's Rank with factors such as lack of repayment subsidy and complex recovery methods have a greater association in agricultural lending, according to correlation. On the other hand, where farmers with small land holdings are given agricultural financing, there is a stronger link between small land holdings and social political influence. The Bankers data also showed that there is a correlation between time lag in loan sanctioning and loan disbursement. The Concordance test defined classes of significantly related variables, such as agricultural lending percentage achievement and agricultural lending

percentage default. When considering agricultural loans through banks, the large number of small Agri borrowers and restricted space for agricultural expansion are important considerations. In terms of the proportion of crop loans to agricultural loans, there is a shortage of funding from government agencies. Furthermore, crop deceptions and family circumstances cause farmers to participate in unsustainable ventures, reducing their willingness to invest in crops.

The research is limited to the state of Goa. As a consequence, the findings may not be relevant to other fields. The conclusion reached and the generalisations made are directed specifically at farmers in the state of Goa. This study is focused on farmers in Goa taking out bank loans for agricultural purposes. However, study satisfaction can vary over time, depending on agro-climatic, financial, technological, and socio-economic factors.

# CHAPTER 1

## INTRODUCTION OF AGRICULTURAL FINANCING

In improving the Indian economy, agriculture plays a pivotal role. It continues to be the most significant sector of the Indian economy, as more than 67 per cent of the nation's population relies either straightforwardly or roundabout on agriculture. Agriculture is likewise an enormous wellspring of income, work and fare profit. Farming, in India relies generally upon the monsoon regardless of the accessibility of the river systems. Agriculture has encountered change from conservative to commercialization and because of this the demand for capital, has additionally expanded.

Agriculture production has occurred primarily because of the large use of credit. Consequently, the institutional agricultural credit is considered to assume an essential function in the growth of agriculture. Agricultural credit allows and retains adequate advancement of information sources and this additionally expands the proficiency in farm production. It stimulates farmers to take advantage of cutting-edge developments and modern practices. Credit gives the farmers who don't have sufficient assets to abuse opportunities command over the capital and the requisite liquidity. The cornerstone of the Indian economy is agriculture, and the backbone of agricultural development is agricultural finance.

India has developed three pronged strategies for the long-term development of agricultural credit, i.e. (i) Institutional structure promotion (ii) Directing lending furthermore, (iii) Concessional or sponsored credit. In addition to this, the expansion of commercialization and globalization often needs a wider and better basis for agricultural development. In addition, the WTO Agreements include some provisions for expanding India’s share of agricultural products in world trade. Consequently, each of these elements implies that higher institutional credit is needed to accelerate the growth of agriculture. The advancement of institutional agricultural credit can be comprehensively ordered into the accompanying four distinct stages:

- 1904 to 1969-Co-operatives predominance and the creation of the Reserve Bank of India (RBI).
- 1969 to 1975-Nationalization of 14 major commercial banks and setting up of The Rural Regional Banks (RRBs).

- 1975 to 1990-The National Bank for Agriculture and Rural Advancement was established (NABARD).
- 1991 Onwards-Financial sector reforms. (Ratan et al, 2014)

**1.1 Evolution of Agriculture and Agricultural Credit**

In all respects the Indian agriculture was customary and stagnant at the hour of independence. It was defined through medieval land relationships and primitive advances that resulted in low yield efficiency. The Indian Government's main task in the prompt post-Independence period was to begin the process of growth in the agribusiness sector in this way. Agriculture modernization is needed as far as technological and institutional changes are concerned. Abrogation of intermediaries in agribusiness as was the case with Zamindars and Jaghirdars, soon after Independence.

Agriculture remains the backbone of the Indian economy, due to its focal position in job growth, irrespective of its decreasing portion of the nation's domestic product. Rural growth is also needed to well foreshadow the decline in poverty for the country. Moreover, given its importance and flexibly linked linkages with different areas, sponsored agricultural growth promotes higher financial improvements as well as provides sound design for production. Agricultural growth is therefore the key to guiding local food capacity and, therefore, improving trade balance by expanding fares and growing reliance on food imports.

Accordingly, agricultural holds a position of fundamental importance in any economic development scheme of the country. While Indian farming contrasts with rates in developed nations, some remarkable advances have occurred over the years after Independence. Enormous areas have provided irrigation from rehashed rainfall disappointments; new yields have come to possess a critical state of production and trade within the country. The nation's agricultural and industrial divisions are having an unprecedented effect on one another. Therefore, the village moneylender’s problems of rural debt and exploitative activities are largely reduced.

Despite the significance, for quite a while the agricultural sector has not been getting its proper portion of institutional credit. Until the year 1967, agriculture financing was seen as the co-operative credit establishment's sole responsibility. Anyway, with the growth of interest in

agricultural credit and related exercises due to the expansion of the focus on higher agricultural production similarly to the innovative progress made by the Indian farmers, the co-operative area's assets ended up lacking. Against this base, commercial banks were called upon for the first time in 1967 to provide finance to the agricultural sector as a question of national approach. After the nationalization of fourteen important Commercial Banks in July 1969, their position in this direction accepted impressive criticality. Again in 1980, six more Commercial Banks were nationalized and the Commercial Banks proceeded with the beat of credit conveyance. It can't over-emphasize the importance of farm credit.

### 1.2 Role of Agriculture in Indian Economy according to National Sample Survey

Agriculture has a central role within the Indian economy. It provides jobs for about 49 per cent of India's working population (68th National Sample Survey Round, 2011-12). In previous decades, the participation of the agricultural sector in the Gross Domestic Product (GDP) decelerated. The involvement has decreased from around 30% in 1990-91 to around 13% in 2012-acco13. It is important to respond to the farmers' problems with a desire to keep going. Agriculture being a state issue, the majority of the public interest in agriculture exists at the state level, and the central government supports the states as an impetus.

The First Five Year Plan (1951-56) agreed with the highest need for the agricultural segment to take care of the worrying issue of food produced by nation's partition. In each progressive system, agriculture has indicated a significant location. Cereals (predominantly rice), tea, coffee, cashew, spices, and tobacco are important export products of India. However, agriculture is the wellspring of raw material for agro-industries like textiles, tobacco, jute, sugar, paper, food handled and vanaspati. In addition, the agricultural sector supplies capital goods (tractors, pump sets, and other agricultural hardware), inputs (fertilizers, insecticides), and light consumer goods to the industry. Understanding the segment's importance, the certain target about India has contributed immense assets under various plans to advance the farming segment. The development of the agricultural division depends, for example, on electricity, petroleum, fertilizers and hardware instruments, to a great extent, on the center businesses. Consequently, agriculture and industry are interdependent.

The 68th round of the National Sample Survey revealed some interesting findings; the scale of the farmers' landholdings is as follows: (i) minimal farmers have 67% of the landholdings, (ii) small farmers have 17.9%, (iii) semi-medium farmers with 10.1%, (iv) medium farmers have 4.3% and (v) large farmers have 0.7% of the landholdings. 85% of all out-of-farmers in India have been imparted by marginal and small farmers, and they depend to a large extent on financial assistance from various sources for their cultivation. It is estimated that the agricultural sector of India accounts for just about 14 percent of the nation’s economy, and 42 percent of all out-of-employment. Gross domestic product from Agriculture in India achieved an average of INR 4231.13 billion from 2011 to 2020, touching an unrivaled peak of INR 6098.83 billion in the final quarter of 2019.

Improving the agricultural segment is a key to economic growth and development. Adequate financing for that is a panacea. The Government and RBI are currently regulating commercial banks under the priority segment to channelize an ever-increasing amount of funds to farmers in simple terms. Commercial banks, like RRBs, are growing to the highest level of institutional finance for farming. There is a murmur of relief from the dreaded hands of money-lenders for the provincial poor. NABARD is an apex organization for aberrant agriculture financing, offering assistance as a rationalist, guide and companion.

The agri-business and consolidated operation market grew by 3.6 percent annually on average during the 11th Five-Year Plan (2007-12), compared to a 4.0 percent target over the period. NABARD's success in the refinancing market is admirable. Financial inclusion is the hour-need. Commercial banks are specifically helping for evacuation of poverty in India to improve financial inclusion in rural areas. Given the fact that commercial banks 'financing of agribusiness has shown its opportunity to change farmers' economies by increasing their profits, yet the system is not released from some issues. Investment in agriculture needs government intervention, supporting strategies for agro-productivity growth, export-import and GDP commitment.

### 1.3 Reforms in Financial Sector

The financial system was represented by broad rules, guided interest rates, organized credit schemes, poor financial structure, lack of valid accounting, risk management framework and

lack of accountability in the tasks of major participants in the budgetary industry. As the Indian financial system had become largely state-claimed by the mid-1990s, reforms in the banking sector essentially followed a two-dimensional approach. For example, the degree of competition within the banking system was slowly expanded while introducing globally defined procedures in prudential guidelines and supervision tailored to Indian needs.

An effective financial framework and a well-functioning capital market, equipped to prepare the savings and direct them to beneficial uses, are essential if monetary reconstruction efforts are to be successful. While both the financial systems and capital markets have shown remarkable growth in the amount of activities. Particularly if major improvements were introduced, the pace of growth and improved competition was difficult to accomplish. For this reason, under Mr. Narasimhan Chairmanship, a committee was created who gave his report during November 1991, and subsequently began a number of steps.

Due to the weak functioning of the financial organizations, the need to continue reforms in the financial sector was felt to plug the provisions into the current rural credit system. Subsequently, numerous Committees / Working Groups / Task Forces were set up for the purpose of investigating their activities, such as,

- Elevated Level Committee on Agriculture Credit Through the Commercial Banks headed by R. V. Gupta was turned in 1998,
- Task Force, headed by Jagdish Kapoor to examine the working of the Co-operative Credit System and to recommend measures to fortify them, was detailed in 1999.
- Expert Committee on Rural Credit, headed by V. B. Vyas, for rebuilding of the strength of Primary Agriculture Credit Societies was set up in 2001.
- Working Group headed by Mr. M.V.S. Chalapathi Rao in 2002 to propose changes in The Regional Rural Banks Act, 1976 and to recommend the broadening of business of the RRBs was figured in 2001.

**1.3.1 Functions of Financial Sector Reforms -** A Financial Sector performs the following functions under the Narasimhan Committee of 1991:

- It serves as a liaison between savers and financial investors. This assists in more efficient and persuasive use of the mobilized resources of dissipated savers. It also channelizes the saving source into a gainful enterprise.
- It helps to finance the determination of the undertakings, and also occasionally audits the presentation of such undertakings.
- It provides a framework for supervising and monitoring the threat involved in the savings planning and credit allocation.
- It Advances the capital growth cycle by uniting savings supply and demand for investable assets.
- It helps to reduce transaction costs and increase returns. It lowers costs and encourages people to spare more.
- It provides the administrators / players in the market with itemized details, e.g. individuals, business houses. Governments etc.

**1.3.2 Objectives of Financial Sector Reforms -** A alarming rise of disorder in the Indian budgetary system had for quite some time demanded dire remedial steps or adjustments that were proposed in 1991.The financial sector in India is constrained by the Reserve Bank of India (RBI) and the objectives mentioned by RBI are as follows:

- Building a market-oriented, sustainable, internationally integrated, strengthened, autonomous, transparent financial sector.
- Creating the allocative value of accessible reserve funds, and advancing the real division's accelerated growth.
- Increase or achieve adequacy, financial segment professionalism and de-politicization in terms of responsibility, profitability, suitability, viability, vibrancy, adjusted development, operational economy and flexibility.
- For genuine enterprise to increase the rate of profit.
- To advance competition by building level-arguing fields and promoting institutional and market players free passage and exit.
- To ensure that the system of interest rates is legitimized, i.e. graded interest is adaptable, market-decided or market-related, and that the mechanism gives its

consumers a reasonable degree of legitimate positive interest rates. As such, the goal is to kill the interest rate mechanism that is being guided.

- To reduce the degree of preemption of assets and to enhance the adequacy of structured credit programs.
- To fabricate a financial infrastructure which identifies with audit and oversight, review, innovation and legal matters.
- Modernizing the fiscal control instruments to make them gradually suitable for conducting financial approaches in a market economy, for example, to build dependence on instruments based on indirect or market incentives, as opposed to immediate or physical monetary control instruments.

Reforms in the financial sector should be rooted in the belief that real growth in legitimate economic areas cannot be completely understood until the allocative output of the private sector has been increased. The key aim of the reforms in the financial sector was to create competent and stable financial institutions and markets, the evacuation of auxiliary bottlenecks, introduction of new players and instruments, free pricing of financial assets, unwinding of quantitative constraints, enhancement of trading, clearing and settlement rehearsals, promotion of institutional infrastructure, refinement of market micro-structures, development of liquidity, profundity, efficient value disclosure mechanism and guaranteeing technological up gradation.

### 1.4 Banking Reforms

The Bank focuses on an extraordinarily important task of developing a nation's economy. Banks have command over a significant piece of the flexibly available cash for use. While they can influence the quality and character of the nation's development, to tell the truth banks are the cornerstone of a nation's economic growth. Throughout India, banks are seen as a catalyst to achieve the ideal network of social change through their sectoral needs and other programs of social advancement. Banks are steering national savings growth. They ensure the national investments are diverted to gainful ends. It turns out to be certain that an economy has a significant situation within the financial system. Banks are seen as − Public sector values conservatives. A nation with a strong banking system has an economic turn of events secured from establishment.

It is worth determining how the financial system has behaved quantitatively in a target way. This is noteworthy given that India 's reform strategy has not been the same as most other emerging business-sector economies: it has been a deliberate, incremental, careful, and steady phase, with no numerous twists as could be seen in various nations. There are two levels of total reforms in the financial sector, especially reforms in the banking sector.

### 1.4.1 Banking Sector Reforms (Phase - I, 1991 – 1997)

In particular, the banks were brought into the financial exercise room to provide banking facilities in certain different fields that had not developed much. The monetary crisis that the government looked upon as well as the turmoil created in the national financial division had existed all the while, towards the end of the 1980s.Not just the commercial banks, but much of the Indian economy had ended up in the middle of a remarkable financial crisis. Government of India with the ultimate aim of creating economic instability went deep into the 1991 Structural Adjustment Program. Subsequently, in this context with the objective of improving the performance of the financial sector, in August 1991, under the chairmanship of M, the Government of India constituted the Narasimham Committee. The report of the Committee was tabled in the House of Parliament on December 17, 1991, which primarily handled the financial sector.

In the meantime, reforms to the banking division began in 1992, and in the first stage it gave the banking sector the necessary forum to operate on the basis of operational adaptability and functional autonomy. This came about enhancing capacity, productivity and profitability. The reforms brought about structural changes in the financial sector, encouraged external limitations in their work, provided openness in disclosing strategies, restoring and recapitalizing banks, and enlarged the main market portion. The striking characteristics of such amendments include:

- Elimination of legislative preemption — The Statutory Liquidity Ratio (SLR) requirement has been reduced from 38.5% to 25% and Cash Reserve Ratio (CRR) necessity from 7.50% to 5.75% ( 3 % effective fortnight beginning March 28, 2020, RBI sources).
- Interest deregulation.
- Capital sufficiency Ratio of 9 percent recommended with impact as of 31 March 2000.
- Other prudential Requirements-Recognition of profits, recognition of capital, and provisioning criteria has been made acceptable.
- Comprehensive amendment was made to the Debt Recovery Tribunals Act to make arbitration, compliance and restitution agreements increasingly compelling.
- Transparency in fiscal statements.

- Entry of New private sector.
- Technical Autonomy-Bank boards have been granted greater powers in operational matters, such as branch rationalization, credit conveyance and staff enrollment.
- Hiving off supervisory and administrative controls.

Numerous steps have been taken in the period 1995-96 to reduce restrictions and remove operational constraints in the banking sector so as to offer operational incentives and build a competitive spirit. Those include interest rate decontrol, advancement and precise expulsion of the Cash Reserve Ratio (CRR) specification, the prospect of setting open foreign exchange position limits and strengthened government and other confirmed securities refinancing bureau.

### 1.4.2 Banking sector reforms (Phase-II, 1997 - 2019)

Given the idealistic outlook for the growth of the banking industry as far as branch expansion, deposit mobilization, and so on, a few twists, for example, rising NPAs and old innovation crawled into the system, mainly due to the worldwide changes taking place in the world economy. In this particular situation, the Indian government appointed the second Narasimham Committee under Mr. M. Narasimham's chairmanship to review the key process of banking reforms and draw up a plan for more significant improvements to improve India's financial sector and make it competitive globally. The advisory group audited banks ' performance during the first step of banking sector reforms and summarized their report with a little more focus and new recommendations. This has taken on a significant job in further supervision and deregulation of the government. The Report indicated that: -

- Government ought to strip public sector banks of its Equity.
- Net NPA to be pegged down to 5 percent by 2000 and 3 percent within a short time.
- Recovery of NPA's - Creation of Asset recovery fund (ARF).
- The rural credit system is in a state of shambles and to create Administrative Bodies.
- Universal Banking
- Lending to corporate customers and financing of industrial, small-scale and agricultural trade.
- Functional autonomy to ensure greater flexibility in operations.

Steps designed for the development of prudential guidance and supervision, competition and steps for the enhancement of efficiency were also proposed for non-bank financial intermediaries. To this end, Non - Banking Companies (NBFCs), especially those associated with taking exercises in public deposit, have been brought under RBI's guidance. Development Finance Institutions (DFIs), especially term lending institutions, NBFCs, Urban Co-operative Banks and Primary Dealers, were all brought

under the oversight of the Board for Financial Supervisory (BFS). Similarly, prudential guidelines and compliance requirements were provided in stages for DFIs, NBFCs, and co-operative banks with the aim of administrative integration for organizations engaged in comparable exercises.

### 1.4.3 Banking Sector Reforms (Phase-III, 2019 onwards)

For Indian Economy, 2019 was the year of turn-around. In any event, in order to make the most of the banking resources and to boost the credit spur in the economy, the financing specialists have made considerable progress and have acquired the necessary modifications. These measures were accomplished to make the banking segment more consistent, secure and beneficial for the population as a whole. The major reforms in the banking sector notified by Reserve Bank of India in the year 2019 are as follows:

- **10 Public Sector Banks Merged into 4** - In September 2019, the Government of India announced the third round of the Bank Merger Plan in an attempt to improve the position of public sector banks in the economy. The Ministry chose to consolidate 10 banks in the public sector into a total of four. According to the merger, selected acquirer banks were to assume control charge over the designated Bank(s).Punjab National Bank was chosen to converge with Oriental Bank of Commerce, and the United Bank of India; Indian Bank with Allahabad Bank, Canara Bank with Syndicate Bank, and Union Bank of India with Andhra Bank and Corporation Bank. It could potentially help boost an enormous capital base for the economy by combining the PSBs, as banks would have the option of making further loans with combined capital. In addition, this might make screening a fixed number of banks easier for the authorities.
- **Reduced Loan Rates as RBI reduced Lending Rates** - RBI has made the requisite improvements by occasionally changing and reviewing its charges over the year. In 2019, by sprinkling down the repo rate (the rate at which the RBI loans reserves to banks) by 135 basis points, the RBI lowered its lending rates many times in succession, taking it to 5.15 % and the reverse repo rate (the rate at which the central bank obtains cash from commercial banks) at 4.90 %. Both the repo rate and the reverse repo rate are fundamental instruments used by RBI to control market accessibility for liquidity and credit. A lower RBI repo rate is an endeavor to spike credit growth in the economy.
- **Aadhar and PAN Card Authentication Mandatory to fill ITR** - In June 2019, the parliamentary authorities tabled the Aadhar Amendment Bill 2019. The bill permits the Aadhar card to be utilized for opening a bank balance as a substantial ID verification. After

this recognition, in every budgetary intervention, for instance, to store huge cash deposits, Aadhar became a mandatory tool. Afterwards, KYC connected to Aadhar turned into an impulse for current and new account holders in banks. By emphasizing on PAN cards linked with Aadhar as the primary valid PAN cards, Aadhar was made a fundamental document for filling ITR. With impact from April 1, 2020, any PAN Card not linked to Aadhar will be treated as invalid and individuals won't have the option to file their income tax returns.

- **Digitalization of Banking Services** - In the year 2019, the Indian Banking sector experienced an unprecedented commotion in computerized services. By incorporating artificial intelligence and analytics into their banking system, many banks, including conventional ones such as SBI, Kotak Mahindra, and Axis Bank, decided to go on board with digital services. The financial division was well motivated by computerized activities by the banks to shift into the cashless economy by admitting simplified payments. It has been fruitful for e-commerce, mobile commerce and online payments. The up-liftman of UPI (Unified Payments Interface) in 2019 is evident in the ease and comfort that customers get from digital payments. In the October 2019 period, UPI transactions exceeded approximately 1 billion exchanges. Likewise, in June 2019, the Point of Sale Terminals grew by 20.5 percent to 3.99 million compared to last June. In this way, 2019 has contributed well to digitalizing and cashless Indian Economy.
- **Revised ATM Mechanisms for Safe and Secure Transactions** - ATM cards without chips became inappropriate with effect from January 1, 2019, and the glamorous striped card centered on the chip was introduced. This altered the way ATM cards worked. The card should have been swiped once before for verification; but the card is actually lodged in the ATM system before the exchange ends. This move began in order to make ATM exchanges safe and secure.

### 1.5 Agricultural Financing

"Agricultural financing is the study of financing and liquidity services credit provides to farm borrowers. It is also considered as the study of those financial intermediaries who provide funds to agriculture and the financial markets in which these intermediaries obtain their loanable funds." Agricultural finance is largely a way of considering, examining and breaking down the financial points of view relating to agricultural exercises.

Financial viewpoints include money matters associated with and excluding agricultural development. It relates to the concerns that are concerned about the resource's requirement for agriculture, mobilization and the use of funds at the stage where we think about the budgetary perspectives of agriculture. Murray (1953) described that it's a study of the economics of farmers buying land, the organisation and operation of homestead lending offices, and the public's interest in agricultural credit. Agricultural finance, according to Tandon and Dhondyal (1962), is a component of the farm economy that manages the system and the bank administration and financial assets executives identified with individual farm units. Through the aforementioned meanings of agricultural finance, the following are inferred:

- All the essential funds should be provided to the farmers;
- Finance should stimulate and improve the efficiency of the scarce agricultural resources;
- Farm finance has an imperative and reactive agro-economic job for Farmer development.

Agricultural finance can be viewed at both large and small-scale levels. Macro-level finance handles the various wellsprings of raising funds for agriculture in the economy as a whole and is also concerned about the various agricultural foundations' loan schemes, laws, guidelines, monitoring and control methods. Accordingly, macro-level financing is related to the financing of agribusiness in the sum of the individual units of farm specialties. Despite the assumptions, the miniaturized scale level fund alludes to the financial management of the individual farm sector.

### 1.6 Need for Agricultural Financing

Because of the need for financing in the agricultural section, not many farmers would have their own money to invest resources in farming. In this way a need emerges to give credit to each of those farmers who need it. Regardless of whether one is studying the farm families' spending pattern, they have barely any contingency funds to count on. Credit thus empowers farmers to use crops, composts, water systems, equipment, and so on in a favorable manner. Farmers need to continually search for a source that provides sufficient agricultural credit. The bulk of the cultivation network is made up of small and marginal farmers.

For transforming events, these farmers need credit support from the formal institutional organizations. Credit plays a vital role in supplying the requisite liquidity to farmers who lack the cash flow value to invest in cultivation. Credit is not knowledge in and of itself; rather, it allows the farmer to gain access to resources, thus alleviating financial pressures. Credit is not

pay because cash is not capital; rather, it is a source of income. Be that as it may, caution should be taken when expanding awareness as without specific openings, it becomes wound up as an extra product, rather than money. When it is properly loaned it turns into a switch for event turning. To achieve this, credit organizations should provide wholeheartedly in order to offer incentives to the rural areas segments which are underdeveloped.

Commercial banks in 1975-76, after five years of nationalization by banks and at the hour of establishment of Regional Rural Banks, reported 24.1 per cent payment of rural credit (Rs.1677crore), which increased significantly to 35.7 per cent in 1983-84 when NABARD was set up. Its offer was 32.7 percent in 1993-94, when the Agricultural Debt Relief Scheme and the idea of Service Area Approach was implemented and changes to the Financial Sector were introduced. NABARD's offering has grown steadily since 2001-02, from 54.1 percent in 2009-10 to 79.1 percent in 2018.

Agricultural credit banks accounted for 89.83 percent of the public sector banks in 2002, decreasing to 80.51 percent in 2010 and that of banks in the private sector increased from 10.17 percent to 19.49 percent in the comparative study (NSS Report).During the Ninth Five-Year Plan (1997-2002), the credit stream to the agricultural sector expanded from ₹2,85,146 crore (240 per cent) to ₹6,85,146 crore (2002-07) during the Tenth Plan Period. Credit payment was assessed at ₹19,59,524 crore (286 per cent) during the Eleventh Program (2007-12). The 12$^{th}$ Agricultural Sector Development Plan emphasis was set at 4% with food grains advancing at around 2% and non-food grains sector (farming, animals and fishing) creating around 5-6%. Agricultural division grew by a standard 1.6% per annum in the initial four years of the 12$^{th}$ Five Year Plan (2012-17) compared to the 4% annual target because of lower production. Agricultural credit was given worth ₹11,68,000 crores in the fiscal year of 2019 – 2020.

### 1.7 Institutional Agricultural Financing in India

Finance is a precious asset, and every sector of the national economy—agriculture, manufacturing, commerce, and various organizations - requires credit to carry out routine tasks as well as to expand and develop. What's more, 'Institutional Finance' means the fund that brings constitutional strengthening to various groups from the various sectors. The

cultivators are given direct agricultural finance for farming activities and services. Two different kinds of these credits include short-term crop advances and loans to buy farm properties. Such kinds of rustic credit finance demand for agricultural production contributions i.e., Agricultural Production Sub System (APS) loans. Indirect agricultural financing is for developing agricultural infrastructure. It incorporates credit for three distinct purposes;

- It includes credit extended to private, co-operative and public sector organizations undertaking the appropriation of farm products such as seeds, manures, pesticides, machinery, power and so on;
- It incorporates credit extended to co-operatives undertaking agricultural showcasing and processing;
- It includes credit extended to Primary Agricultural Co-operatives (PACS), Farmers Service Societies (FSS), organizations in which commercial banks and State Development Corporations are active. This credit is for forward transmission to family units in the agricultural and rural areas.

The institutional structure of rural banking as it gets today in India consists of four sets of institutions, i.e., both nationalized and other Commercial banks (CBs), a three-level federal co-operative banking system for short-term and two-level federal co-operative structure for medium, finally the long-term lastly the regional rural banks (RRB's). Prior to 1982, the RBI had provided rules and support to monetary institutions in rural areas. On July 12, 1982, NABARD (National Bank for Agriculture and Rural Development) was established to provide a broad range of guidance and support by refinancing each financial institution in rural areas. NABARD is the regional apex establishment for rural finance, refinancing and assistance to primary lending foundations.

### 1.7.1 Commercial Banks

Commercial banks are not considered merely as cash traders, but also as leaders in the monetary turn of events. Not only are they the storage facilities of the riches of the country, but they are also suppliers of materials which are necessary for financial growth. They are taking on a significant job in a nation's economic growth. A well-developed banking system is

central to the economic improvement of a nation. If there should arise an occurrence of developing nations like India, commercial banks are seen as the backbone of the economy. Commercial banks may add to the monetary advancement of a country, viz. Quickening of capital arrangements, fund and credit arrangements, adaptation of the economy, innovations, implementation of money-related strategies, support for the right kind of enterprises, improving agribusiness, regional growth, promoting industrial development, fostering entrepreneurial temperance's and achieving socio-economic objectives.

### 1.7.2 Co-operative Banks

As indicated by the 1951 Reserve Bank of India's All India Credit Study Council Arrangement that co-operatives were proposed as funding agencies for agriculture, and the co-operative system was the best choice for payment of agricultural finance under the Indian situation. This prodded the central and state governments to give additional impetus to improvement of Co-operatives. The Indian government authorized all state governments to pass the co – operative Acts to promote and manage the establishment of co-operatives in their states. Indian planners regard cooperation as an instrument for deprived farmers ' economic development, especially in rural areas. In a village Panchayat, a village co-operative and a village school are seen as the trinity of the institution on which a self-reliant and just economic and social order is to be built. In India, the co-operative movement began mostly with the goal of providing farmers with funds for low-interest rates for agricultural operations and projecting them from the clutches of money lenders.

### 1.7.3 Primary Agricultural Credit Society

Primary Agricultural Credit Society emerged after the Co-operative Credit Societies Act was passed in 1904. This Act was revised in 1912 to promote multi-jurisdictional co-operatives and organize non-credit co-operatives along those lines. Primary Agricultural Credit Society are transient co-operative financial institutions and are part of a three-level rural credit co-operative system with city-level PACS unified in district-level District Central Co-operative Banks (DCCBs) and State Co-operative Banks (SCBs). PACS are DCCB individuals who, therefore, are State Co-operative Bank members. Primary agricultural credit societies are the roots of the short-term co-operative credit structure. PACs play a significant role in offering

short- and medium-term loan and carry out distribution and functions as well. The PACs progress has been quite spectacular, and they have stepped up their progress, especially towards the small and marginal farmers. The projected scope of PACS is far more prominent than any other formal financial institution on a national scale in rural areas. With over 100,000 PACS, there is an agreeable one credit for every six Indian towns with about 135 million inhabitants.

### 1.7.4 District Central Co-operative Banks

Co-operative banks functioning at regional level in various parts of India are known as District Co-operative Central Banks (DCCB). It was founded with the concept of providing financial facilities for rural livelihood, particularly in the agricultural division. In this way the divisions in the rural and semi-urban areas were practically resolved. The District Co-operative Central Bank (DCCB's) has three important funding wellsprings: DCCBs own capital and stores, Deposit from the general public, and DCCBs loans from state co-operative banks. The functions of District Central Co-operative Banks include: DCCBs meet the member societies credit prerequisites. We will also be carrying out the banking sector and supplying identification facilities for it. For Primary Agricultural Credit Societies (PACS), DCCBs go around as a bridge position. This is finished by the operation of the excess assets of certain communities for the individuals suffering fund deficits. Equally, DCCBs will do non-credit activities. DCCBs shall remain in communication with the PACS. This means that they should owe them control and direction. In addition, DCCBs manage and examine PACS with the end goal of providing a sheltered spot for the PACS asset speculation.

### 1.7.5 State Co-operative Bank

The apex bank of each state is the State Co-operative bank. They work at the state level. They plan DCCB exercises, monitor them and provide the directions needed. India has 32 State Co-operative Banks. SCB receives financing from RBI's share capital, Deposit assortment from co-operative establishment, public and company, and loan. State co-operative banks lend loans to farmers through DCCBs to important agricultural co-operative societies for loan cash. They promote DCCB activities, monitor them, and make valid conditions for the growth of

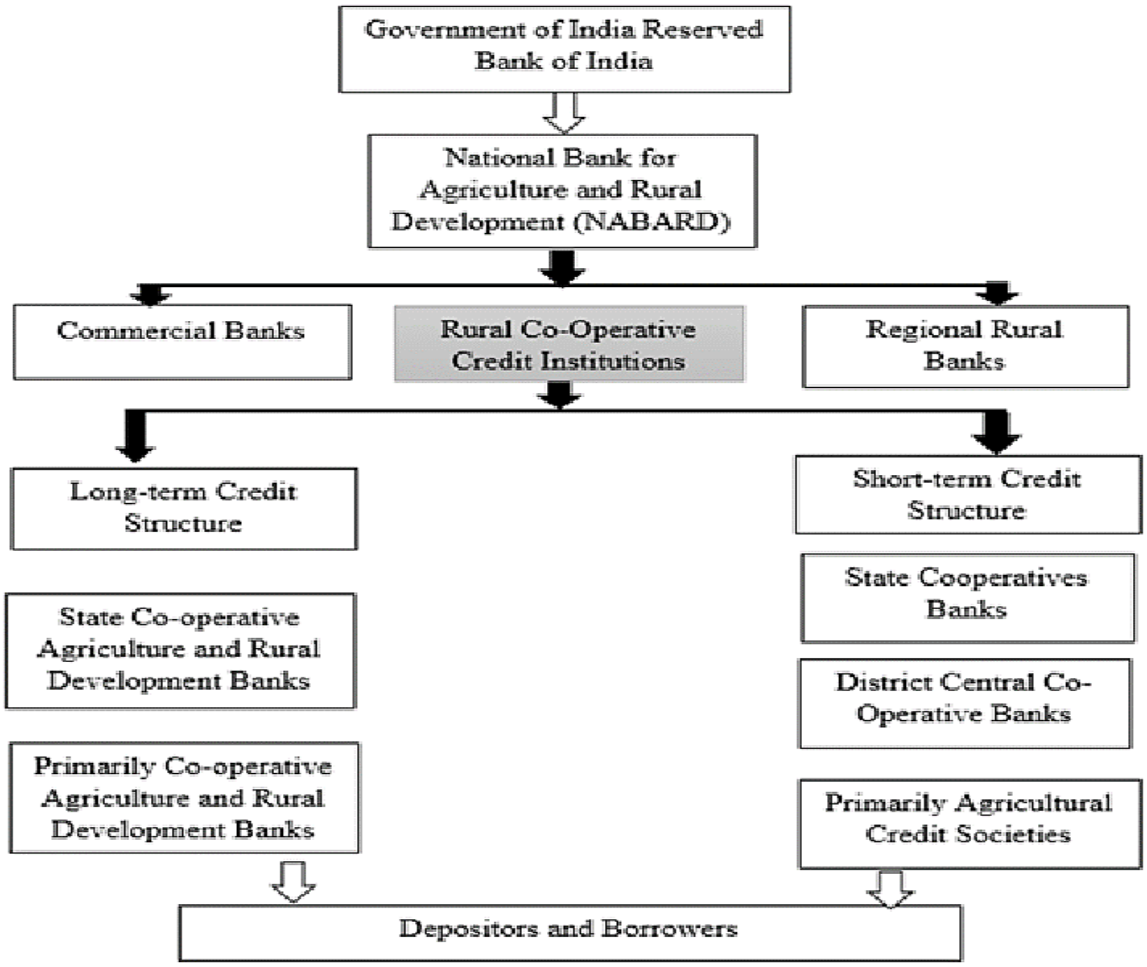
the state's co-operative movement. It serves as a link between NABARD from which it borrows and lends to the co-operative central bank and primary societies in village level.

### 1.7.6 National Bank for Agricultural and Rural Development (NABARD)

On July 12, 1982, the National Bank for Agricultural and Rural Development (NABARD) was constituted by Parliament Act, with the mission of providing recognition for the advancement of farming, small-scale enterprises, cottages and town projects, handicrafts and other provincial artworks, and other unified economic exercises in rural areas with the ultimate goal of integrating progress rural development and making sure about success of provincial regions". This mandate covers a wide range and acquires a combination of recognition exercises for other monetary exercises such as preparation, advertising, and other post-harvest advances and specialized services, etc. NABARD is an Apex improvement bank that is fundamentally associated with the provision of different types of refinancing to qualified foundations and it performs functional and administrative functions equally. It operates by State Co-operative Banks, State Land Development Banks, Local Rural Banks, and Commercial Banks and offers short-term, medium-term, refinancing just as long-term credit.

Because the credit conveyance scheme to the agricultural section, which had more than a hundred years of convoluted history, was an enormous disappointment. The setting up of the farm credit system in India (as shown in Figure 1-1 underneath) and the equivalent emerged. This credit framework has been the result of both advancement and mediation what's more, represents the framework's reaction to the improvements from the proceeding with incredible dissatisfaction to the credit conveyance (Rakesh Mohan, 2004).

*Figure 1-1 Institutional Structure of Agricultural Finance in India*




(Sources: RBI bulletin 2004 Rakesh Mohan article agricultural credit in India)

### 1.8 Classification of Agricultural Finance in India

Agricultural Finance might be grouped based on (a) the purpose for which it is required, (b) the length of the period for which advances are required, and (c) the security from which loans are progressed.

### 1.8.a According to Purpose:

The description of the farming credit by Reserve Bank by reason of current is as follows:

**1.8.a.1 For Agricultural Purpose:** Such credit is provided for the acquisition of seed, fertilizer, and grain, rent instalment, reimbursement, employment, harvest water system, livestock acquisition, agricultural execution repairs, farm houses, and other agricultural capital consumption.

**1.8.a.2 For Non-farm Business:** Such credit is required for repair, such as manufacturing and transport hardware, current non-farm expenditure, purchase of farm equipment, etc.

**1.8.a.3 For Family Expenditure Development:** Such credit is provided for the purchase of domestic utensils and the payment of apparel for health, instructive and other family expenses, the acquisition, construction and repair of residential homes and the installation of old obligations.

**1.8.b According to the length of Loan period**

From the perspective of the length of loan time frame, agricultural credit may fall into three classifications:

**1.8.b.1 Short-term Credit:** It is routinely provided for short-term loans of less than 15 months to meet current farming costs and domestic expenses, etc. These short-term credits are usually entirely repaid after harvest. These are recoverable from the crops concerned selling proceeds. Generally, farmers, in the time of cultivation loan an amount for a short span of time for the purchase of fertilizers, HYV seed, for meeting expense on religious or social ceremonies and would repay by the time of harvest.

**1.8.b.2 Medium-term Credit:** For a medium duration of between 15 months and 5 years, some changes are required for land, cattle purchases, agricultural machinery, fencing and so on. Such advances are better than short-term advances, which can be repaid over a longer period of time. Credit time is usually related to the period of functioning of the assets to be acquired with the loan yet ordinarily it doesn't surpass 5 years.

**1.8.b.3 Long-term Credit:** It is needed by the farmer to buy extra land, make permanent improvements to land such as recovery and renovation, farm house growth, property consolidation, and so on, take care of old debts, and buy expensive machinery. These loans will be reimbursed separately from the extra profits that the investment on land makes sure of.

Accordingly, these advances are for extensive stretches of over 5 years, extending from 15 to 20 years.

It could be shown that the farmer needs basically a wide range of credits at various phases of cultivation. The pressing need, however, is to arrange long- and medium-term credit, as the alternative is not easily accessible to him.

### 1.8.c According to Security

Based on the security, agrarian credit can be characterized into following classifications:

**1.8.c.1 Farm Mortgage Credit:** It is secured against land by methods for a mortgage of land.

**1.8.c.2 Property and Collateral Credit:** The farmer is given on the livestock, yields or distribution centre of the farmer's livestock, and so on, and the last on the protection of the farmer. Various forms of collateral are shares, bonds and insurance policies.

**1.8.c.3 Personal Credit:** It is advanced on the farmers' promissory or specific notes, with or without the protection or assurance of another. The standard of shared assurance is the characteristic of all co-operative credit societies.

The longer the time for which credit is needed, the more unmistakable, if in question, is the protection that the bank requires. Long-term loans on land security are usually best in the class along these lines, while short and temporary loans on insurance or individual security are awarded.

## 1.9 Challenges of Agricultural Finance in India

Indian individuals mass illiteracy by and wide and rural people especially exacerbated agricultural credit issues. With about 70 to 80 percent of farmers unqualified and unaware of the specific farm credit wellsprings that produce at a lower interest rate. The farmers were therefore in no position to pass judgment on the credit wellspring, which supplies the loan charge equal to that of private cash moneylenders. Another challenge that adds dimension to this situation is that the institutional sources are known to the farmers, their helpless asset-endowment base leaves them between a rock and a hard place to give something like

protection that is necessary for credit organizations transactions. Village money lenders exploit this situation by propelling liberal credit without asking much on protection but charging the service with higher interest rates and now and again persuading farmers to fall back on the harvested product's restricted deals. The tiny and uneconomic property lets the farmers produce the attractive surplus next to none; keeping farmer's ineligible for the repayment of the loan, if any, from institutional organizations. All who have dealings with village money lenders cannot think about a commercial/marketable surplus, as promised in advance.

In general, the unavailability of villages, all the more so in rainy season, insufficient transportation and communication weaken the loaning foundations to operate in those territories, as it has increased the cost of loan transactions. Lack of education combined with the subsistence essence of farming, weakening farmers to really look at it as a business and maintaining records. The institutional organizations always think in the non-appearance of records that it is difficult to advance any sensible loan strategies for the good of the farmers.

Another squeezing problem for institutional organisations, for unproductive cause, is concern about development loans. This is due to pressing household issues, because farming and family are indistinguishable. Without competition from any institutional source, moneylenders procured the position of monopolists on landings in agriculture. This prompted the charging of high interest rates much to the farmers' detriment.

### 1.10 Agriculture Debt Waiver and Debt Relief Scheme (2008)

The Government of India initiated the Agriculture Debt Waiver and Debt Relief Scheme (ADWDRS) in 2008 to assist helpless farmers. ADWDRS had the argument of getting the defaulting borrowers into the institutional overlay again. The properly implemented plan secured all direct agrarian credits provided by various banks to farmers between the periods from 31 March 1997 to March 31, 2007. Furthermore, the overdue as of December 31, 2007 remaining unpaid until February 29, 2008 was also secured. This scheme was to profit the small and marginal farmers (up to two hectares of land) under whom to waive the entire eligible amount. Because of farmers other than small and marginal farmers, there was to be a

One Time Settlement (OTS) scheme in which farmers were to receive a 25 percent discount on qualified sums, giving them 75 percent equalisation **(Government of India, 2008)**.

### 1.11 Agriculture Credit Policy of Government of India

Several Committees were set up now and again to investigate different issues identifying with credit conveyance for agriculture. The Advisory Committee on the Flow of Credit to Agriculture and Related Activities of the Banking System is one such ongoing cause formed under the chairmanship of Prof. V. S. Vyas in June 2004. A detailed credit strategy includes an estimation of growth in agricultural credit flows over the next three years and provides farmers with debt relief due to natural disasters. The characteristics of these declarations are the following:

- The flow of credit to the agricultural sector is expected to increase by 30% per year.
- Debt restructuring for farmers in distress and in arrears, allowing for the rescheduling of unpaid advances over a five-year period, with a two-year ban, rendering all farmers eligible for new credit.
- Small and marginal farmers' old and ongoing loan histories are subject to a special one-time settlement scheme.
- Banks could make it easier for farmers to recover credit from private money lenders by allowing more financial assistance.
- Commercial banks are expected to back 100 farmers per branch. Banks will fund 50 million farmers in a year.
- Agriculture transactions and related activities are being added at a rate of a few per branch.
- Amendments to Kisan Credit Cards (KCCs) and financial scale fixation.

The former Director-General of the Indian Agricultural Research Council, New Delhi, has recommended that the government should make investments appropriate and make the right environment to draw on private investment. **(The Tribune, September 21, 2017)**.

# CHAPTER 2

# LITERATURE REVIEW AND RESEARCH METHODOLOGY

Development of Institutional Agriculture Credit in India and Goa, utilization pattern of acquired loans, relationship of socio-economic elements with institutional agricultural credit and the perception of farmers about institutional wellsprings of agricultural credit have been generally discussed issues in India as well as in different nations. Countless examinations have been performed in different parts of India on the points stated above. The accessible literature was focused in this part in order to gain an understanding into the goals of the present investigation. A succinct survey of important investigations in such a way that has been comprehensively overviewed and dissected in order to discern the current status of undertakings in the field of crop financing and, if any, to recognise gaps in the area is attached below.

Understanding the need and importance of agriculture finance, multiple provisions were included for the seventh and eight five-year plans with a view to the upliftment of farmers, triggering the development and expansion of the finance system. Agricultural credit is the basic prerequisite for specific agricultural production in developing and developed countries. To know the areas successfully addressed and to obtain useful bits of information, a study of previous investigations is necessary. The audited inquiries are an excellent source for understanding the progress mechanism, but they do not provide an accurate gage of the parameter effect evaluation. The first part of the chapter handles the literature review conducted out for the examination and the latter section deals with the research methodology distinguished from the research gap from past consolidated investigations for the current study for a specific exploration in the field of agricultural finance. The following paragraphs present a brief overview of important reviews carried out by various professionals and experts in this field on different aspects of agricultural finance:

## 2.1 Review of Literature

The review of various studies gives an opportunity to assimilate research problem and also assist the researcher to recognize several issues associated therewith. Literature review also aids in locating the methodological and conceptual issues of interest to the study. Even it assists researcher for gathering various sources for good reasoning and purposeful interpretation. Diverse problems have contributed to articulate research agenda for the study.

**Simbakalia (2012)** in his study related to Tanzania stated the role of institutions in the production and industrialization of agriculture. Small farmers specially doesn't have enough capital and skills to incorporate technology in field. The moneylenders demands for quite high interest which affects them badly. The bank policies was suggested to be reviewed for more of agriculture and for its upliftment.

**Kumar, Kumar and Sharma (2011)** explained about agriculture and poverty in India. Their study infers the importance of rural literacy, farm wages and productivity of agriculture. Also it was identified that there is fast track requirement for justifiable hike in public assets in village infrastructure, irrigation facilities, R&D, etc. They concluded that land reforms, boosting rural credit and great public investments will help in promoting agricultural growth in underdeveloped areas in the country.

**Bhaskaran (2008)** indicated that the bank loans for the farmers ought to be revamped. It was noticed that the progress rate of formulation and production for approximately entire crops was –at a deteriorating level from mid-nineties. Only for selected crops minimum crop prices are available. It was suggested to innovate Crop loan expands on the basis of KCC to the farmers at subsidize rates.

**Narayanamurthy and Kalamkar (2005)** tried to study indebtedness among farmers in many states in India, also studied trends and frequency determinants of farmers that are in debt as per data obtainable from NSSO survey. The study discovered that indebtedness assortments from the Assam being 18% to that of 82% in Andhra Pradesh. They determined that wherever there were huge production conducted, there were huge farmers with indebtedness, lower production, and lower rate of agricultural indebtedness.

**Thorat (2006)** in his study objectively analyzed the rural credit in India with the problems and questions relevant to it. The formal institution structure should be remake to fit the credit efficiency in the rural area was highlighted in the paper. Various achievements and challenges with regards to countryside credits were also conferred. It was resolved with the spot that NABARD and Self Help Groups should tie-up for additional expansion of bank credit to the rural areas and agriculture in particular.

**Kumar (2005)** accepted the circumstance that there has been great improvement in Information Technology, infrastructure, foreign exchange reserves but there is no such progress in agricultural sector.To accomplish boost in agriculture, agricultural policies has to be improved so that balance can be maintained with sustainable development.

**Lad (2013**) said in his Agriculture-based Finance paper that financing is the country's key ingredient in agricultural production. He also reported that numerous financial institutions, such as Commercial Banks, Co-operative Banks and NABARD, are all seeking to elevate the agricultural sector. Even mentioned that Traders and commission agents were supplying credit quite before the crops gets matured.

**Karmakar(2008)** studied patterns in Indian rural finance. The proposal was put forward that rural micro-finance institutions should become part of the financial network for timely credit distribution in rural areas. Banks will strive to structure their policies in such a way that rural population can effectively be implemented.

**Deb (2004)** did a study on terms and trade investment behaviour in Indian Agriculture. Various statistical tools were applied in order get fair analysis. It was noticed that in-country there is promotion of private investment. The results of the study eject doubt on the allegation that price reforms were needed to maintain stimulus context for enhancing private investment in Agriculture.

**Gulati and Bathla (2002)** aims to use their defaults and policy options to research institutional credit to Indian agriculture. The primary emphasis was on researching significant factors that impinge on loan recovery and building up over debts or defaults. They have also been taken to review policy steps to reduce the rate of defaults and to revitalize Rural Financial Institutions. Seventeen major states in India were studied from the period 1980-97. It was concluded that Rural Financial Institutions were confronted with poor resource base along with other inherent limitations like limited reach, inequality in distribution of loans and uneven regional spread.

**Dalwai (2012)** evaluated agricultural growth dynamics in India. A powerful credit system need to be constructed for agricultural growth and advancement for both i.e. investment as well as to meet working capital. It was noticed that though there were many bank branches

were introduced, still approach to finance has remained scarce in rural areas. It was suggested to have workable solutions in the agricultural policies at national level.

**Pal and Mruthyunjaya (2003)** sought to study the structural development of Indian Agriculture. They covered the success of rural loan institutions and numerous micro-credit institutions. It has been mentioned that Government should participate in policy formulation so as to give due importance to small farmers. Financial need was must for farmers to meet all mending work. Even point was made clear that credit to be provided must be well-planned and accountable credit program.

**Toby and Peterside (2014)** studied the involvement of banks in Nigeria's agricultural and industrial sector financing, with the key goal of researching the importance of banks in Nigeria's agricultural and industrial sector financing. The study found that increment in availability of credit to those sectors, which are inclusive in the real sector of the economy, has potential of increasing Gross Domestic Products (GDP). Thereby, the study recommended mandatory credit allocation to real sector of the economy.

**Sivaiah and Naidu (2015)** discussed need and importance of agricultural finance for agricultural development. They stated that small and marginal farmers require credit badly for meeting all their requirements. Statistical tools were applied to get the accurate results for the studies. In spite of credit facilities provided by various financial institutions, there was still inadequate credit available to the farmers. It was noticed that banking system appears ambivalent on many factors to grant credit to small and marginal farmers.

**Satish (2012)** opined about innovations in agricultural credit market and policies associated with it. He pointed out various reasons regarding hesitance of formal institutions for providing credit to farmers, for instance huge cost of service delivery, high level of rural poverty, illiteracy among farmers, etc. Innovative schemes by formal institutions were taken up so that indirect financing could been done to needy farmers and they included Inventory Financing and Warehouse Receipts Financing, Supply/Value Chain Financing, Leasing, Contract Farming and Producer Companies. Author concluded that these innovations will eventually help in contributing sustainable access to finance for agriculture in reality.

**Namboodiri (2006)** tried to analyse Agricultural Credit and Indebtedness in the country. It was noticed that flow of investment credit had lost its share since early 1990s. Co-operative institutions had shown comparatively less growth. Even it was seen that small farm holdings were at diminishing trend. Economic causes were major hindrance for the farmers. Cost of borrowing was considered one of the major reasons determining flow of credit. An exhaustive crop and animal husbandry insurance schemes were strongly felt by the specific group.

**Christopher et al. (2010)** conducted a study on agricultural financing policies and rural development in Nigeria. The study revealed that Government had taken serious polices for agricultural development by allocating enough budget and curbing corruption to the extent possible. It was recommended that policies should be strategically framed for investment in agriculture and boosting rural infrastructure. Even it was recommended to have strict supervision of Central Bank of Nigeria on all financial institutions working under it.

**Kumar, Singh, and Sinha (2010)** emphasised the progress of crop insurance flows and identified predictors of increased institutional loan utilisation at the farm household level in India. The secondary data-based study revealed that real-world organisational loans to agriculture have increased dramatically over the last four decades. A variety of socio-demographic factors influence the quantity of institutional credit used by farming households, including schooling, farm size, family size, caste, class, household occupation, etc. The study proposed simplifying the way smallholders and less-educated/illiterate farmers have greater access to agricultural credit.

**Sahu (2007)** analyzed the supply study of institutional agricultural credit for major states in India, and attempted to classify factors causing differences in the distribution of agricultural credit to various states in India. Based on the per capita net state domestic product, states were divided into moderate, middle and low-income categories for research purposes. The study showed that in most nations, the rate of growth of agricultural credit was higher during the pre-reform era relative to the reform era. It was also observed that over the sub-periods and across states the growth rate of agricultural credit was uneven.

**Jansson et al. (2013)** highlighted the significance of agricultural sector financial institutions in selected European countries. The key objective was to identify and compare the financial

structure in selected European countries for the agricultural credit markets. It was concluded that the main suppliers of loans are commercial banks, and co-operative banks of farmers. Resources at the outset of a creditor-debtor partnership are the most important aspect.

**Khandker & Faruqee (2003)** analysed the effects of farm credit in Pakistan on evaluating the role of Pakistan's Agricultural Development Bank (ADBP) in rural areas and assessing its cost-effectiveness in the provision of farm credit. Study of the report is taken from Pakistan's Rural Financial Market Studies (RFMS). The effect of ADBP financing is significant, and the impact in agriculture is greater for smallholders than for medium and large holders.

**Mohan (2004)** checked Agricultural Credit status, problems, and future in India. Old legal system and archaic tenancy rules are making credit flows in the country hindered. He further disclosed that while the credit flow has improved for many years, many loopholes in the framework have been identified, i.e. no provision for credit facilities as such for small and marginal farmers. Therefore, efforts to fix and overcome these types of problems are needed.

**Tejeswini et al. (2015)** revealed that in most of the developing countries rural households does not have a good access to financial institutions. One thing was good to see that informal institutions have reduced drastically. Regional Rural Banks and Commercial Banks were working for betterment of the farmers could be noticed as per the study. Providing training to the borrowers with regards to procedural formalities of various banks will provide increase in the number of farmers who will approach banks. Even loan disbursement process should be made simple to the farmers.

**Tanbir and Sarahat (2011)** carried out an inquiry into Bangladesh's Efficiency Assessment of Agricultural Banks. Agricultural sector success has an significant impact on Bangladesh's overall economic growth. It was seen from the research that during their survey time from 2004-08 specialist agricultural banks were able to provide financial help to the farmers. Various pattern equations and regression squares were checked with the coefficient. Study revealed that the distribution and recovery of agricultural loans is not consistent in format. It was proposed that banks should offer loans under simple terms and that they would also set goals to recover loans on regular basis.

**Salami and Arawomo (2013)** examined the empirical study of African agricultural credit and the position of the institutions. Various literatures cited that credit production in agriculture in Africa as being very small and therefore importers of agricultural goods. From 1991-2011, panel data from ten countries from the continent was exposed. Study revealed that interest rates charged by Commercial Banks were severely affecting agriculture. Establishment of Co-operative societies, Thrift and credit societies within the farming community will help in solving credit problems in the continent and will also solve queries with respect to collateral securities. Also it was stressed that Institutions must strengthen to motivate deduction in corruption.

**Obilor (2013)** in his report assessed the effect of Commercial Bank loans to agriculture on agricultural production in Nigeria. Various tests like e-views regression, F-Test, Unit root rest, Dickey-Fuller test, etc. were implemented in the studies. It emerged that agricultural loan schemes by Commercial Banks have helped in the country's agricultural productivity. It was recommended that banks need to be more proactive as customers' attitudes changes quite frequently. It was concluded that all polices need to be implemented more vigorously in Nigeria to boom up agricultural sector.

**Kaur (2015)** looked at the development of farm loans in India. An attempt was made in his analysis to examine agricultural credit development in India from 2001 to 2012. The data study used percentages and cumulative annual growth rates. It was seen that, over a period of time, the distribution of institutional credit to agriculture has also seen a growing pattern, likewise unpaid loans. And the author has indicated this pattern has to be reversed in the immediate future. Also, it was noticed that activity by co-operative banks is decreasing which is another troubling condition. It was concluded that in order to improve the Indian economy, financial institutions need to be revamped for a good credit system in rural areas.

**Hoda and Terway (2015)** evaluated Agriculture Credit Program in India. Therefore, the paper lays a good argument for a thorough analysis of the farm credit subsidy scheme. Co-operative banks have given Commercial Banks their dominant position as supplier of loans to the agricultural sector. Though they charge exorbitant interest rates, non-institutional entities tend to prosper. It was recommended to review interest rate subvention on short-term credit and skip generalized loan waivers.

**Ahangar, Ganie and Padder (2013)** assessed the amount of loans issued by institutional agencies and their outstanding amount. The study revealed that in the case of Scheduled Commercial Banks the highest increase in loans were issued whereas in the case of Co-operatives was the lowest. And from the other hand, the number of total account holders in Scheduled Commercial Banks rose from 5,841 to 30,538 while the total number of financial services rose from ₹14,516 to ₹2,71,670 in the period referred. The liquidity that the numerous systemic outlets have given has enhanced its advances. But the banks must make an effort to minimize their outstanding, so that the institutional credit recovered can be more injected into the agricultural sector for its production.

**Gaur and Khatkar (2011)** made an effort to research agricultural institutional lending through various regions of India to test the importance of the disparity between the credit flow and expenditure trends on business infrastructure growth across various regions of the world, Friedman Test' was applied. The findings showed a large distance between those two. It was concluded that a sustainable credit flow for both output and capital accumulation in the agricultural sector needed to be implemented with effective policy measures for steady agricultural development and equally growing productivity across different regions of India.

**Velayudham and Sankaranarayanan (2015)** critically examined Regional Rural Banks and rural credit in India. RRBs history, background, weaknesses were highlighted as well. Khusro committee's points regarding RRBs were also mentioned. It was suggested that in order to strengthen RRBs, the sponsor bank and state must provide adequate support and take the responsibility respectively.

**Devaraja (2011)** analysed institutional financing and agricultural credit policies in India. Various strategies were analyzed for RRBs, Co-operatives, Commercial Banks and Money lenders. It has been proposed that the success of the state government is very significant and they will seek to get specific financial assistance from the Central Government. Small and marginal farmers should be provided with finance without much of irrelevant hesitance.

**Kannan and Sundaram (2011)** clarified Agricultural development patterns in India. Significant variables from published sources, such as location, inputs used, production and output value were organized from the period 1968-2008.Data research showed that Indian

cropping practices had undergone major changes over a period of time. Using technology has helped grow few crops but institutional support does not appear to be comparable to all the crops in the world. It was hypothesized that sufficient credit facilities would help the country's crop production to boost.

**Matkar and Jadhao (2015)** clarified the state of agriculture and the associated problems. The key issues they found included poor, medium and marginal farmers and poorer parts of society. Credit plays a vital role in the introduction of emerging technology, the intent of development and marketing. In India it was found that there exists still inadequate financing for crop production. This condition calls for numerous efforts to boom agricultural credit in India with less risk dimension of interest on sums approved in the form of loans for farmers.

**Mohan (2006)** attempted to study the status, issues and the future agenda of agricultural loans in India. It has been recognized that whilst the supply of credit has improved over a period of time, there were several shortcomings that have affected both competitiveness and financial institutions' survival. Various measures were required to cover all agricultural and agro-industry segments including horticulture, aquaculture, dairy, fish farming, sericulture, poultry, vegetables, food manufacturing, beef, other agro-processing and the like. Nationwide project improvement needs to be implemented so that the farmers involved can have consistent availability of credit when and when they need it for agricultural purposes.

**Chand and Parappurathu (2011)** acquired the information about spatial agricultural patterns in India at the national and state levels. The study revealed that growth output was unequal for each area of the world. The period of the Green Revolution was regarded as one of its kind golden periods. Sluggish production in both public and private public agricultural investments has been observed over a period of time. Effective private and public outlay, quality seed supply, extension of credit facilities would contribute to quality growth in the future production of agriculture.

**Satpathy (2011)** assessed the role of institutional finance in the growth of agriculture in India. It identified various issues for agricultural finance in India that need to be considered. Prompt availability of financing plays a significant role in the growth of agriculture. The analysis shows that there is tremendous demand for credit but that supply is not quite adequate. And

then small farmers are left with no choice, outside of finding support from informal financial sources. It was concluded that priority must be given to providing agricultural credit for the overall growth of the Indian rural economy.

**Mishra (2006)** focused on institutional nuances and agrarian transition in Arunachal Pradesh. He said that the state has a low level of agricultural productivity. He found out there was a disparity between administrative policies and the state administrative reality. It was inferred that consideration of institutional realities was required while figuring the requisite strategies for agricultural transformation both in the state and in the rest North-Eastern states.

**Mani and Sinha (2010)** evaluated credit abortion potential of farmers in Uttar Pradesh. The major institutional bodies were included- Commercial Banks, Provincial Rural Banks and Co-operative banks. Specific statistical methods were used to pick several districts for review. It was noted that small- and large-scale farmers were not given sufficient credit as per the financial scale. It was also recommended that the Farm Club would be taken into consideration in order to maximize the extension of farm credit to those farmers who were ignorant of different financial institutions' benefits. It has been proposed that a shared forum be created for banks and academic institutions so that technological and financial goods can be produced together to boost the take-off of finance in a particular area.

**Ray (2007)** did a study on economics of change of cropping pattern in relation to farmers of West Bengal. 160 households were interviewed randomly from the state. Regression models were used. Study proved that both institutional and non-institutional have made significant improvement in agricultural production. Profitability was also high in case of small and marginal farmers. Though there was high profitability, food security, huge cost of crop cultivation, non-availability of finance at required time as well as in right quantities were hindering aggregate shift of cropping pattern towards cultivation.

**Soni and Saluja (2013)** evaluated the success of Co-operative Banks in Chhattisgarh with respect to agricultural credit and rural development. The analysis was based on both the primary and secondary results. Study showed that in the state, Co-operative Banks were operating outstandingly well. It was proposed to change their policies on the basis of the crop

loan program in order to increase their efficiency further in future. Accountability and openness in the Co-operative Banks structure must be inculcated.

**Singh and Dhaliwal (2011)** attempted to investigate the role of commission agents in the Punjab province. Field research was conducted for the same purpose, including interviewing 300 commission members. From the study it was noticed that many such agents use various malpractices against the farmers. The authors suggested for farmer-friendly banking system. Costly credit system should be improved so that farmers feel more comfortable in banks rather than going to commission agents.

**Kannan (2011)** examined the relationship between farm credit and crop production policies in the state of Karnataka. The study showed that approximately 69 per cent of farmers borrowed from financial institutions and remained from borrowers of capital. Even it has been proposed that it was important not only to raise the amount of credit for the agricultural sector but also to pool more farmers under the umbrella of the credit facility. Farmers should be informed, and the state Department of Agriculture should take this matter seriously.

**Konare (2001)** conducted a report on Agricultural Financing challenges in Mali with the goal of conducting an analytical review of the existing financial system in Mali in order to understand the factors that hinder lending to cotton, rice and coarse grains. The analysis showed that the structure of banking in Mali remains underdeveloped. Mali's financial system was marked by ineffective financial institution administration, deficiencies in organizational processes, insufficient review of credit demands, absence of compliance controls, ineffective supervision of unpaid loans and ineffective recovery mechanisms.

**Nair and Dhanuraj (2016)** attempted to describe the role of the Government of Kerala in improving the stagnant stage of Agriculture. It was found that while the state government invests a lot, there was sluggish growth in the agricultural sector. His opinion was that the state had implemented defensive measures that had rejected further agricultural production in the province. Proper absorption of capital is needed to bring down sluggish agricultural growth in Kerala.

**Shah (2014)** discussed about agricultural credit delivery system in Maharashtra. Commercial banks had shown not so encouraging trends for farming sector in the state. Even during the

period 1981-2001, RRBs have shown quite poor performance. SHGs have started growing up and were getting support from Commercial banks. It can be concluded that NABARD have started working hard for improving agricultural credit in the state. Various initiatives have been started for the same. Formal credit system should draw strategies for operational efficiency and credit recovery purpose in the state.

**Sohi and Chahal (2004)** opined about interlinked credit transactions in rural Punjab. Farmers as well as non-farmers were interviewed for the study. It was seen that small farmers were much comfortable in approaching informal credit rather than entering formal institutions. Tenancy was found more in developed regions of the state. Various forms of linkages were identified using Logit form of regression. Factors like education and caste remained statistically significant in all the cases. It was suggested to the policymakers that institutionalized way of credit will benefit borrowers at less cost rather than having only dependency on SHGs and informal credit.

**Sidhu, Vatta and Kaur (2008)** tried to analyse dynamics of institutional credit and growth in rural Punjab. Four equation models were used for understanding institutional credit contribution in the state. The relationship between variable inputs and production credit distribution had seen highly significant. The demand and supply relationship of credit availability had kept changing over a period of time and there is need to see that excess demand or excess supply should be considered before centrally sanctioning credit amount to any state on uniformity basis across country by the Central Bank.

**Roy (2012)** compared agricultural finance with that of microfinance by Institutions in the state of Assam. The key emphasis was to demonstrate and examine the position of MFIs (Microfinance Institutions) against the farmers in Assam being provided with the agricultural loan. Samples of 34 MFIs were obtained and Descriptive statistics were added. The study showed that majority of Assam's MFIs played an important role in providing their beneficiaries with agricultural loans and this agricultural microfinance is a very lucrative sector for these MFIs.

**Kumari (2005)** carried out a report on the economic development of Northern Telegana region rural indebtedness. Easy random sampling interviewing 165 random farmers was

introduced. From the report it was noted that most farmers failed to repay the loan for different reasons such as low yield, crop failure, lack of irrigation facilities, low market price, etc. Furthermore, significant economic reasons for repayment defaults have been established, including lack of technological know-how, deteriorating irrigation infrastructure, increased biotic and abiotic power, inadequate financial institution credit, etc. Few measures were suggested for improving the economic state of farmers in Northern Telangana.

**Reddy and Sen (2004)** examined farm-specific socio-economic characteristics of farmers in Bihar. 270 farmers were selected on the basis of marginal, small, semi-medium and medium type of farmers. Socio-economic factors like size of farm, age of the farmer, education, experience, location, caste, classification of land, number of farm-workers and percentage of good land were considered. Correlation of Coefficient and T-ratio were used. Study depicts existence of technical inefficiency and suggested to promote co-operative kind of farming, improving literacy rates and providing for alternative options for employment during offseason to the farmers.

**Singh, Yadav, R.B. Singh, Baghel el. (2009)** examined the correlation of socio-economic status in the Jaunpur district of Uttar Pradesh with economic encouragement of the farmers. The research sought to figure out the farmer's personal socio-economic characteristics and also to figure out the relation of socio-economic status with the farmer's economic motivation. A hundred link farmers were selected as respondents. Consideration was granted to independent variables such as ethnicity, employment, land ownership, social participation and socio-economic status. It was discovered that good socio-economic status works as a supplementary factor in affecting positive earnings incentive condition. Land ownership has a strong correlation with a statistically important economic incentive. Whereas the Kisan Sahayak was the key source of farmer's knowledge, followed by radio, input dealers and demonstration frequently used by the farmers.

**Roy et al. (2013)** examined the socio-economic condition of Almora hill farmers in Uttarakhand district. They attempted to analyse the hill farmers' socio-economic status to equate it with their acceptance of better agricultural practices. 60 Farmers were chosen from the 2010-11 era. Study showed that the adoption activity is related to socio-economic factors.

**Sangalad and Huddar (2011)** carried out a report on the socio-economic conditions of the Bagalkot District farmers. The research was carried out with the intention of researching the social and economic condition of the families of the (farmer's suicides) victims. 65 samples chosen with standardized questionnaires (2004 to 2010). The research showed that the bulk of farm victims were illiterate, and that low annual wages caused more suffering. They were unable to fulfil family expectations and social commitments. More cases failed to fulfil the family's financial promise, which was the key cause of suicides among farmers.

**Awais (2011)** in his thesis related to empirical analysis of the socio-economic circumstances of tribal farmers in the District of Bijnor, Uttar Pradesh State highlighted the status of agriculture. Findings suggested that on both groups of tribal holdings, a large proportion of family members were involved in subordinate and casual occupations. The area's key lending institutions were the Commercial Banks, Co-operative Societies and Municipal money lenders.

**Talule (2013)** reported economic conditions for the Maharashtra farmers in the Vidarbha district. The paper also sought to determine the value of institutional and other farm credit for the region's agricultural indebtedness. The research found farmers lacking the expertise for competent cultivation. Sample farmers with poor educational qualifications were historically as well as socially disadvantaged. It was found that the market for credit was lower the size of the landholdings. The small and medium-sized farmers had not thoroughly used structured financing. It was suggested to the Maharashtra government to promote education to the remote areas and improve transportation and other relevant facilities to boost farmer's socio and economic status.

**Channaveer, el. (2012)** evaluated different systems of governance for the good of the Karnataka farmers. The farmers gathered different socio-economic characteristics through pre-tested questionnaires. Lack of awareness of formal financial institutions was a major concern among farmers about credit. Development programs were required to allow farmers to imbibe themselves with the availability of credit that will help farmers improve their socio-economic status within society.

**Mohanty (n.d.)** in his paper sought to establish social causes in the state of Maharashtra in particular with respect to suicide cases. Financial assistance for small and landless labourers was not available. Furthermore, small farmers were seen hesitant to take advantage of credit from banks as opposed to big farmers as they were backed up by design by government facilities. It was noted that extension programs funded by the Government struggled to educate lower castes which remained illiterate. Because of many social reasons many farmers ended up with suicides. In order to empower farmers of equal standing with others, the Government will seek to look seriously at this issue.

**Makar, Ghosh and Nyekha, (2009)** published a case study on obstacles for Agricultural Finance institutions in Nagaland. Nagaland's 80 percent population is dependent on agriculture but it gets very badly affected because of the lack of good financial framework. It was found that many of the growers had no documents relating to their possession of the farm. There are various development systems but regeneration is much fewer. This was found that financial institutions were not doing well, and that financial institutions did not offer assistance to tribal citizens. The writers recommended that government regulations be drawn in such a way that poor farmers get preference when it comes to the availability of credit. Co-operative network and self-help communities in hilly areas are to be promoted.

**Umdor (2008)** objectively analysed the conduct of farmers and rural households borrowing and utilizing credit from the uplands of North-East India. This interviewed a total of 816 households. The data were analysed using Chi-square, T-test. Report reveals that 80 per cent borrowed from banks and remainder from other outlets of informality. It also depicts that there was no connection between land size and fund sources. Loans made for economic uses were larger than those obtained for investment purposes. Most of the farmers borrowed loans from Commercial banks and Co-operative Banks were hardly entertained. Friends and families were approached over money lenders when it comes to informal source of finance.

**Menon, K. N. (2007)** published a study of Agrarian households' suffering debt and suicides in Kerala. The key aims were to investigate the causes of agrarian distress in the sample villages, to research the effect of poverty on household livelihoods and to sample the various aspects of household debt. They used stratified random survey, observational interviewing methods such as focus groups, semi-structured interviews, and case studies. A steep fall in crop prices such as pepper, coffee, cardamom and tea coupled with declining yield rates due to adverse weather conditions created a situation of 'shock and insecurity' and agrarian distress in the areas of study.

**Arvind, S (2013)** examined various causes of farmers' suicide in the Vidarbha district of Maharashtra. It completed an exploratory survey with 50 respondents. The causes of suicide found were heavy indebtedness, increased use of chemicals and fertilizers by putting secondary emphasis on organic fertilizers, lower crop yield, lower average crop price, poor execution of government policies, reduction of land tenure, irrigation / water problem, higher production / crop costs, lack of family planning.

**Dev (2012)** looked at the positions and problems of smallholder farming in India. It covered agricultural growth trends, cultivation patterns, smallholder farm involvement, smallholder productivity efficiency, linking smallholder holders to markets including value chains, position of smallholder holders in enhancing food security and employment. The revenue from small and marginal farms was not adequate to take care of the everyday consumption and they must borrow to survive. Smallholdings farmers also need to get part of their profits from non-farm rural activities.

**Satish (2005)** studied isolating and defining characteristics which differentiate between commercial banks and borrowers from co-operative banks. Purposive sampling technique was used and model regression was performed. The research conducted found that there were two types of agricultural lenders. Co-operative banks and co-operative farmers transferred to Commercial Banks were generally favoured by small and marginal farmers.

**Kumar and Gambhir (2013)** focused on the funding of farming by Commercial Banks and also on the problems faced by farmers in making use of this profit. Technology inculcation and use of high yielding variety seeds is also far from the hands of low- and marginal farmers. Study highlighted major problems faced by medium, marginal and large farmers that included concerns such as high interest rates, challenging loan procedures to get loans approved, lack of bank personnel cooperation and unequal care. Authors provided suggestions like to provide training to illiterate farmers, giving them basic finance knowledge, developing infrastructural facilities by Government and finally bank to approach farmers as friend, philosopher and guide to all farmers.

**Singh, Kaur and Kingra (2009)** published a report on institutional credit system inadequacies in Punjab. The analysis was focused upon randomly chosen 600 farm households. The study found that while there was an increase in financial institutions 'credit disbursement, farmers' competitive needs were still missing. Many farmers said it was very time-consuming and complicated process to get loans approved. The writers proposed that loan procedures would be performed in both a basic and local language. Banks will aim to hold only one day to help farmers cope with their credit-requirement queries.

**Jeromi, (2007)** examined the indebtedness of farmers and their effect on the Kerala agriculture. One of the better aspects of Kerala's farmers was that most of them borrowed financing from formal institutions instead of borrowing it from informal once. Debt rates were also larger. Even as a result of debt non-payment, most farmers committed suicides as they were left with no choice. It was concluded with serious points that while such issues were emerging, government policies did not take any decisive steps to address the issues of farmers' indebtedness.

**Swinnen and Gow (1999)** assessed the problems of Central and Eastern countries' agricultural credit, and the position of Government for the same. Credit markets operated very imperfectly particularly in the agricultural sector because of the cost factor required to collect the details. Collateral played a significant part in making capital available to farmers as soon as possible. Study also showed a shortage of professional staff in the banking sector. Low income from farming also impacted the farming community very badly, which made them increase their demand for outside sources. It was suggested by the authors that special agricultural credit institutions should be developed only to boost agricultural activities and eliminate hindrance in agricultural development.

**Singh and Toor, (2005)** conducted a report on Punjab farmer debt. The analysis was performed using both primary as well as secondary data. 250 farm households from each district of Punjab have been chosen. Data on farm scale, sources of revenue, specific sources of credit, amount of expenditure, interest rate for the period 2002-03 has been obtained. Farmers were found to be more drawn to non-institutional outlets than to institutional outlets, with of formalities involved. Money lent, though taken for agricultural purposes, was extensively used for domestic expenses. It was suggested that in order to come out of debt, social organization, farming community and Government should join hand in hand.

In her thesis entitled Agricultural Debt in Andhra Pradesh **(Lavanya, 2000)**, she endeavoured to research various reasons responsible for debt, sources available from the public and private sectors, and various policies available by policy initiatives. Survey approach has been used, and tabular and quantitative analysis has been used. The study showed that commercial crop spending would cost more than groundnuts, paddy, pulses and maize. Strong reliance on non-institutional markets, big interest rates, lack of irrigation facilities, rental and marketing facilities were the main factor.

**Ramkumar and Chavan, (2008)** sought to explain how agriculture resumed in the 2000s. Secondary data was used for analysis. It was found that indirect finance still holds prominent position in India because fewer formalities are involved. Commercial banks had begun to grow their branches in rural areas and were now seeking to reach as far as possible in order to make farmers aware of numerous

agricultural production schemes for farmers. Few conclusions were drawn as Commercial Banks were leaders of credit lending and huge sums of financing were used by big fat farmers rather than by small farmers.

**Rawatet al. (2010)** discussed different explanations for rising cases of suicides in India. The work was focused on primary and secondary data. The study found that the bulk of farmers suffering from crises belonged to the states where most commercial crops were grown. Majority of farmers have suffered from weak ownership of land and large responsibility for bank loans. The Government has done its hardest to remove aspect of interest from co-operative banks. Farmers who committed suicides, central Government made restrictions on loans from deceased farmers up to ₹1,00,000 has taken few measures to reform though it has not performed well for the country as a whole. Further important steps for the overall growth of the farming community were proposed.

**Desai (2015)** outlined numerous costs borne by structured organizations in working for agricultural financing. The paper's aim was to identify significant costs that were listed as operating expenses, capital costs, regular allowances and inflationary special allowances. Author pointed out numerous approaches to minimize expenses through numerous centralized organizations. He indicated that operating expenses are major costs, so action must be taken to reduce them as much as possible and suggested group financing solution as well.

**Narayanan (2016)** studied the profitability of agricultural credit in India, noting that credit was playing out the twin jobs of saving efficiency by promoting mechanization, and adding variable knowledge sources to the growth of agricultural GDP.

**Ruete (2015)** said that access to finance is a key component of every developed agriculture sector, and attracting farmers and small business visionaries from developing countries to the financial system is far from being achieved. It's no mere coincidence that the countries with established financial markets in the agricultural division are also where the segment is exceptionally evolving. A large number of cases referred to above actually come from developed nations. It includes a combination of good legislation, a particular financial segment, and small and large farmers and organizations productive enterprises in the agricultural sector.

**Maurya (2015)** in his examination work has seen a substantial increment and abatement in the development of rural lending from institutional agencies and non-institutional agencies over the past five decades, respectively. Leading establishments were facing various problems, in particular the co-operative through expanding number of overdue and defaulters. The proportion of over dues to claim

in their review of secondary information was about 40 per cent of the co-operative and 47 per cent in the case of RRB's. In view of the monsoon situation and future prices which were beyond the farmers' ability to manage, lending to the agricultural sector is inalienably risky.

**Seena (2015)** depicted the administration of farming loans in India, and also stressed on effect of various reforms in the banking sector on agriculture. She argued that the execution of agricultural credit in India showed that, while the overall growth of institutional credit has increased over the years, there are many gaps in the scheme, such as inadequate credit provision for small and marginal farmers, constrained deposit mobilization and substantial reliance on borrowed assets. Efforts to fix and rectify these issues were needed. Changes in the banking sector, such as setting prudential norms, decreased statutory liquidity ratio, cash reserve ratio, and banking diversification were suggested by the author that will positively impact agricultural financing to boost up.

**Selvaraj and Kumar (2015)**, in his examination, Agriculture in India was seen as a way of life, and was not seen by the socially, economically and technologically backward population as a beneficial suggestion. The intersectional mobility of labour force, assets and creativity was extremely constrained and made an endless technical seclusion loop in the farming sector. It is suggested that the degrees of speculation made by the farming families engaged in the agrarian division and particularly by the small farmers should be increased.

**Suganyaa (2017)** analysed marginal farmers as well as using the elements and inputs to transform money into financial and physical capital. Farmers do agriculture to get farming credit, commercial bank credit and agricultural contributions to cover their different farming costs. It allows the farmers to obtain for cultivation using sensible technique. This investigation seeks to recoup the performance that was viewed as stronger that in effect incited the Lead Bank’s powerful functioning in the field of research.

**Patil (2016)** said an Indian farmer is not as steady monetarily as foreign nations are therefore, in our nation farmers need flexible legal credit to increase their living standards. It's totally dependent on growth or building up demand and reducing cost of production. Farmers need low interest charge credit supply from approving sources such as banks and co-operative societies.

## 2.2 Significance of the Study

The study is mainly concerned with agricultural lending through institutional sources like Commercial banks, Co-operative Banks in the state of Goa and services related to short-term

loans, long-term loans and recovery. Intermittent survey of the functioning of such a national-level agency, NABARD is crucial to ensuring that it operates in a similar manner to its government's broad objectives and priorities. The current research is significant because it shows that the existing literature on institutional finance has barely focused on some of the selected issues (as expressed in the context of literature review). Additionally, the study means implementing the recommendations made in the review to make institutional finance increasingly effective and flexible.

1. Agriculture plays an essential role in the advancement of the Indian economy. It represents around 19 percent of GDP and around 66% of the populace is reliant on this segment. Agricultural finance is a subset of rural finance committed to financing rural related exercises, for example, input supply, production, dissemination, discount, preparing and promoting. Finance specialist co-operatives face particular difficulties when managing this division. For instance, the seasonal idea of production and the reliance on organic procedures and natural assets leave producers subject to occasions outside their ability to control, for example, drought, floods or infections.
2. Agrarian production in India relies on a large number of small and marginal farmers. Their intensity, exertion and effectiveness have helped in raising yields per acre of land. Fund in agriculture go about as a key to farmers. Be that as it may, farmer’s cash is consistently lacking and he needs outside fund or credit. In light of insufficient money related assets and nonappearance of ideal credit facilities at sensible rates, a large number of farmers, can't go in for improved seeds and manures or to present better strategies or procedures.
3. The farming network must be kept educated about the different wellsprings of agricultural finance. Agrarian finance has its convenience to the farmers, banks and augmentation labourers. The information of lending establishments, their lawful and administrative condition helps in choosing the fitting moneylender who can sufficiently give the credit with terms and related administrations expected to finance the farm business.
4. The provision of adequate and opportune credit at reasonable paces of interest must be considered as an essential piece of farming development. Be that as it may, help rendered by method of credit must be identified with explicit things of gainful work or

of basic expenses of cultivation. Banks have become significant establishment giving long-haul agricultural credit. The significance of considerable long-haul credit for agriculture cannot be over articulated. Because of modernization of Indian Agriculture, agrarian finance has a tremendous scope in future.

5. In the state of Goa, Agricultural costs are famously unstable and scarcely any farmers can offer guarantees that are legitimately acceptable in case of financing since the profits are likewise low. These characteristics request financing components adjusted to the different needs and administrations of rural households. These requirements incorporate (i) Short-term: input financing toward the start of the harvest year (seeds, composts, pesticides), extra work, feed, stockpiling encourages, preparing, and so forth.; (ii) Medium and long haul: hardware for escalation, commercialization (transportation), stockpiling (structures), lasting yields (venture, recharging, upkeep), constitution of groups, land buy; (iii) Family needs: individual, durable goods, housing; (iv) Non-financial administrations: observing demand, specialized help and expansion; and (v) Savings.

**2.3 Research Gap**

With regard to the available literature review from the Indian and International Research papers, the following exploration gaps were identified:

1. The variables considered in the earlier studies provided the Institutional credit to agriculture and relative share of borrowing from the different sources like Co-operative societies, Commercial Banks and Moneylenders whereas in this study the purpose for attaining loan, rate of interest and the farmer's objective for selecting the preferred bank are discussed.
2. Studies are focused mainly on the loan amount sanctioned by various banks and the yearly budget allocated to agricultural loan but in this research detailed information about the loan processing cycle, problems faced by farmers and mode of repayment with regard to bank officials are discussed through this study.

3. All studies have used utilization of credit facilities by farmers for agricultural loan whereas this study focuses not only the utilization but various factors involved towards availing credit services through financial institutions by farmers in Goa state are discussed.
4. Previous studies have considered the services through various financial institutions like Banks and Co-operative societies whereas this study concentrates on the Farmers opinions also regarding the services through banks in the state of Goa.

**2.4 Research Questions**

The study uses both primary data and secondary data to examine various questions:

1. How productive is institutional credit to the agricultural sector?
2. What has been the trend since the beginning of $20^{th}$ century?
3. What are the pathways through which credit impacts agriculture?
4. How, if at all, have these pathways changed over the years?
5. How is the loan sanctioning process of banks in the state of Goa?
6. How are banks advertising their loan facilities to farmers in Goa?
7. What is the method of cultivation adopted by farmers and types of crop cultivated in Goa?
8. How is the loan monitoring process of bank officials in Goa?
9. How are farmers benefited by agricultural credit in Goa?
10. What are the problems faced by bankers in providing loans to farmers?

**2.5 Objectives of the Study**

The following are the study's objectives:

1. To study Institutional Agricultural Financing in India.
2. To study Institutional Agricultural Financing in the state of Goa.
3. To study the impact of Institutional Agricultural financing on socio-economic aspects of farming community in Goa.

4. To study the problems faced by farmers in borrowing Institutional agricultural finance in the state of Goa.

5. To study the problems faced by financial institutions in lending agricultural finance in the state of Goa.

## 2.6 Hypothesis for the Study

1. $H_{01}$: There is no significance difference between term of loan and recovery of loan by bank officials in agricultural financing.
2. $H_{02}$: There is no significance difference between loan sufficiency and recovery of loan by bank officials in agricultural financing.
3. $H_{03}$: There is no significance association between loan sanctioning process of banks and problems faced in loan sanctioning process.
4. $H_{04}$: There is no significance association between days required for loan sanctioning and problems faced in loan sanctioning process.
5. $H_{05}$: There is no significance difference between frequency of repayment and respondents who are unable to repay the loan.
6. $H_{06}$: There is no significance difference between banks granting proposed amount of loan with regard to information provided by bank employees and behaviour of bank executives.
7. $H_{07}$: There is no significance association between banks not proposing the said loan amount and causes for overdue.
8. $H_{08}$: There is no significance difference between comparison of banks by farmers and utilising the loan amount for same purpose.
9. $H_{09}$: There is no significance difference between selection of banks with respect to asset securitised for attaining loan and purpose of loan.
10. $H_{10}$: There is no significance association between knowledge on banks agricultural finance and rate of interest for loan.
11. $H_{11}$: There is no significance association between amount of loan taken and mode of repayment followed.
12. $H_{12}$: There is no significance difference between types of crops cultivated and land ownership in agricultural financing.

13. $H_{13}$: There is no significance association between land owned in square meter and number of crops grown in a year.
14. **2**$H_{14}$: There is no significance association between revenue earning crops and reliable market price of the yield.
15. $H_{15}$: There is no significance relationship between method of cultivation adopted and types of farm land in agricultural financing.
16. $H_{16}$: There is no significance difference between medium of sale for crops and types of crop cultivated in agricultural financing.
17. $H_{17}$: There is no significant relationship between monitoring loan usage and recovery of loan by bank officials.
18. $H_{18}$: There is no significance association between social factors and related supporting business of farmers in agricultural financing.
19. $H_{19}$: There is no significance difference between external factors and causes for overdue in agricultural financing.
20. $H_{20}$: There is no significance difference between Time lag in loan sanctioning process and time lag in disbursement of loan amount.
21. $H_{21}$: There is no significance difference between the various factors related to Bankers attitude for lending agricultural loan and government norms for lending.
22. $H_{22}$: There is no significance difference between percentage achievement and percentage default in agricultural lending.
23. $H_{23}$: There is no significance difference between inducing borrowers to avail loan and misutilisation of loan through agricultural lending.
24. $H_{24}$: There is no significance relationship between various level of NPA attained through agricultural lending and proportion of crop loan to agricultural loan.
25. $H_{25}$: There is no significance relationship between large number of small agri borrowers and limited scope for agricultural expansion.
26. $H_{26}$: There is no significance difference between the medians of lack of sufficient support from the government agencies and proportion of crop loan to agricultural loan.
27. $H_{27}$: There is no significance difference between the medians of absence of subsidy for repayment and complicated recovery procedures.

## 2.7 Research Methodology

Research is a movement of knowledge from known to unknown and from the available place to the required place. The purpose of this research is to find out solutions to the problem, which has not been discovered by anybody. This portion of the study emphasizes not only on the research methods but also considers the logic behind the methods. They are in the contest of research studied and explain why using a particular method or technique. The research methodology is intended to assist in conducting the entire research process to determine the objectives of the research. Research methodology is stated in other terms as it is a skeletal structure for carrying out research study. It explains the investigation goals and a sensible method to achieve those objectives.

### 1 Data Types

The study is based on two sources of data i.e. Primary data and Secondary data. The primary data is collected through questionnaire from farmers who have taken loan and from Regional offices of: Bank of Baroda, Bank of India, Bank of Maharashtra, Canara Bank, Central Bank of India, Corporation Bank, Federal Bank, Indian Overseas Bank, State Bank of India, Syndicate Bank, The Goa State Co-operative Bank Ltd., The Ratnakar Bank Ltd., UCO Bank, Union Bank of India and Vijaya Bank who have provided loan in the state. The Secondary data was obtained pertaining to data and Reports from Reserve Bank of India and NABARD Committee Reports providing credit to farmers and from various published sources. After an appraisal of the quality of data, tabulation work is taken-up and the data was analysed by using appropriate statistical techniques.

### 2 Data Sources

The data for the objectives related to agricultural financing in India and the state of Goa comprises of secondary souces like RBI website and publications, annual budget of India and Goa, Census Reports from 2006 – 2019, NABARD Reports and Publications, Goa State Level Banker's Committee Report, Joint Liability Groups Report, Agricultural Statistics of Goa and India, etc.

### 3 Collection of Data

The data were collected from the respondents both farmers and bankers through the distribution of questionnaire.

### 2.7.4 Period of the Data

The data period for secondary data was from 2006 – 2019. The reason for choosing the preferred data period is because there were financial reforms supporting agriculture and agricultural credit. New banking reforms were placed to improve the efficiency in agricultural products.

**5 Sample Design and Types of Sample**

Objectives 3 and 4 studies the impact of Institutional Agricultural financing on socio-economic aspects of farming community and problems faced by farmers in borrowing loan from banks in the state of Goa. Hence, Stratified sampling was used for the population size of 14,978 farmers which was divided into sample size of 380 farmers as per the Morgan's Statistical sample size calculator. Stratified random sampling is applied since it helps researchers to get a sample population that corresponds better to the actual population being studied. Stratified random sampling means splitting the entire population into homogeneous groupings called strata. When the population size is too large, a researcher takes on a more feasible approach by selecting a small group from the population known as the sample size.

Objective 5 which was designed to study the problems faced by financial institutions in lending agricultural finance follows Judgmental sampling or expert sampling which is used in situations where the sample population contains highly educated individuals who can not be identified using any other probability or non-likelihood sampling process. For Bankers data, Judgment sampling were used for 15 sample of Deputy General Managers/Assistant General Managers operating in different banks of Goa.Judgement Sampling helps researchers to go straight to their target interest population. Judgment sampling increases the importance of the survey to the target population, as the sample contains only individuals that meet relevant criteria.

**Primary data** - The sample size for the primary data is 380 farmers who availed loan from banks and the data was collected through distribution of questionnaire. This sample was used to discuss objectives related to study the impact of Institutional Agricultural financing on socio-economic aspects of farming community and problems faced by farmers in borrowing loan from banks in the state of Goa. Total numbers of farmers who have borrowed loans from Financial Institutions were 14,978 as on 31$^{st}$ December 2018 as per the records of Directorate of Agriculture, Goa.

## Table 2.1 Number of farmers and banks selected Taluka wise for the study

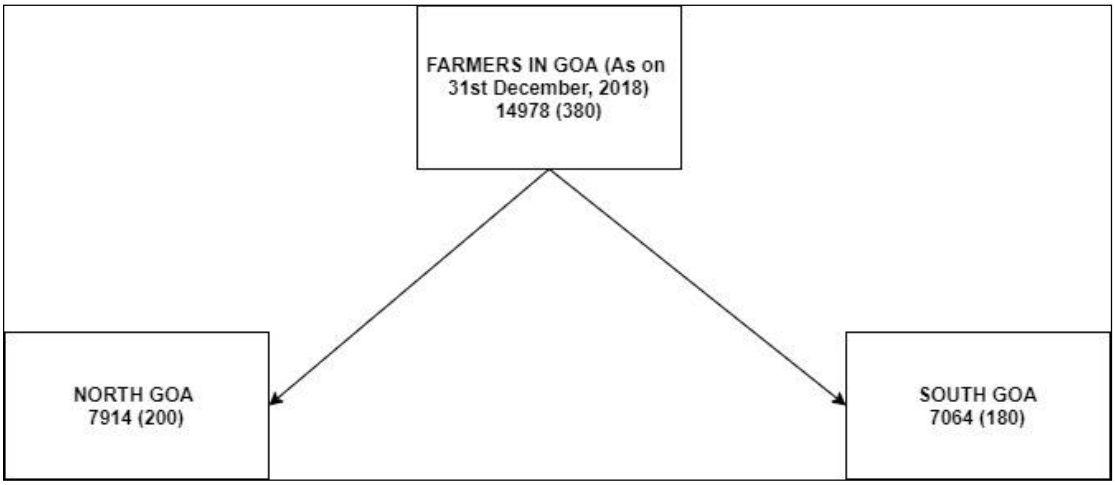
| | Bank Branches | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | TOTAL | Sample |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sr. No | Taluka | BB | BOI | BOM | CB | CBI | COR | FB | IOB | SBI | SY. B | GSCB | RBL | UCO | UBI | VB | | |
| | NORTH GOA | | | | | | | | | | | | | | | | | |
| 1 | **Bardez** | 475 | 5 | 3 | 4 | 0 | 568 | 185 | 5 | 375 | 203 | 975 | 125 | 12 | 81 | 0 | 3016 | **63** |
| | | 10 | 0 | 0 | 0 | 0 | 12 | 4 | 0 | 8 | 4 | 20 | 3 | 0 | 2 | 0 | | |
| 2 | **Bicholim** | 26 | 76 | 4 | 0 | 126 | 184 | 0 | 75 | 386 | 0 | 478 | 133 | 0 | 0 | 0 | 1641 | **33** |
| | | 1 | 2 | 0 | 0 | 3 | 4 | 0 | 2 | 8 | 0 | 10 | 3 | 0 | 0 | 0 | | |
| 3 | **Pernem** | 181 | 315 | 2 | 0 | 167 | 0 | 0 | 0 | 20 | 0 | 138 | 0 | 0 | 0 | 0 | 823 | **18** |
| | | 4 | 7 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | | |
| 4 | **Sattari** | 0 | 91 | 0 | 115 | 97 | 15 | 0 | 0 | 268 | 91 | 427 | 0 | 0 | 0 | 0 | 1104 | **25** |
| | | 0 | 2 | 0 | 3 | 2 | 0 | 0 | 0 | 6 | 2 | 10 | 0 | 0 | 0 | 0 | | |
| 5 | **Tiswadi** | 0 | 204 | 0 | 0 | 211 | 6 | 8 | 23 | 12 | 0 | 765 | 4 | 0 | 0 | 0 | 1233 | **28** |
| | | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 1 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | | |
| 6 | **Ponda** | 2 | 288 | 6 | 4 | 0 | 114 | 23 | 71 | 519 | 0 | 192 | 121 | 282 | 0 | 7 | 1629 | **38** |
| | | 0 | 7 | 0 | 0 | 0 | 3 | 1 | 2 | 12 | 0 | 4 | 3 | 7 | 0 | 0 | | |
| | **TOTAL** | 684 | 979 | 15 | 123 | 601 | 887 | 216 | 174 | 1580 | 294 | 2975 | 383 | 294 | 81 | 7 | 9293 | **205** |
| | **TOTAL (S)** | 15 | 23 | 0 | 3 | 14 | 19 | 5 | 5 | 34 | 6 | 64 | 9 | 7 | 2 | 0 | 205 | |
| | | | | | | | | | | | | | | | | | | |
| | SOUTH GOA | BB | BOI | BOM | CB | CBI | COR | FB | IOB | SBI | SY. B | GSCB | RBL | UCO | UBI | VB | Total | |
| 7 | **Canacona** | 0 | 114 | 19 | 12 | 86 | 325 | 8 | 0 | 278 | 0 | 318 | 0 | 0 | 5 | 0 | 1165 | **28** |
| | | 0 | 3 | 0 | 0 | 2 | 8 | 0 | 0 | 7 | 0 | 8 | 0 | 0 | 0 | 0 | | |
| 8 | **Dharbandora** | 0 | 172 | 0 | 162 | 0 | 182 | 0 | 0 | 116 | 0 | 139 | 0 | 0 | 0 | 0 | 771 | **18** |
| | | 0 | 4 | 0 | 4 | 0 | 4 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | | |
| 9 | **Mormugao** | 55 | 214 | 0 | 0 | 2 | 46 | 40 | 15 | 76 | 12 | 192 | 0 | 22 | 0 | 117 | 791 | **17** |
| | | 1 | 5 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 0 | 4 | 0 | 0 | 0 | 3 | | |
| 10 | **Quepem** | 0 | 143 | 0 | 39 | 0 | 72 | 0 | 4 | 178 | 6 | 167 | 0 | 0 | 0 | 0 | 609 | **14** |
| | | 0 | 3 | 0 | 1 | 0 | 2 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | | |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11 | **Salcete** | 0 | 158 | 68 | 0 | 154 | 8 | 24 | 69 | 457 | 224 | 580 | 70 | 26 | 140 | 265 | 2243 | **53** |
| | | 0 | 4 | 2 | 0 | 4 | 0 | 0 | 2 | 11 | 5 | 14 | 2 | 0 | 3 | 6 | | |
| 12 | **Sanguem** | 618 | 0 | 0 | 0 | 21 | 19 | 0 | 0 | 575 | 12 | 321 | 220 | 0 | 137 | 0 | 1923 | **45** |
| | | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 8 | 5 | 0 | 3 | 0 | | |
| | **TOTAL** | 673 | 801 | 87 | 213 | 263 | 652 | 72 | 88 | 1680 | 254 | 1717 | 290 | 48 | 282 | 382 | 7502 | **175** |
| | **TOTAL (S)** | 16 | 19 | 2 | 5 | 6 | 15 | 1 | 2 | 41 | 5 | 41 | 7 | 0 | 7 | 9 | 175 | |
| | G.TOTAL | 1357 | 1780 | 102 | 336 | 864 | 1539 | 288 | 262 | 3260 | 548 | 4692 | 673 | 342 | 363 | 389 | 16795 | **380** |
| | SAMPLE | 31 | 42 | 2 | 8 | 20 | 34 | 6 | 7 | 75 | 11 | 105 | 16 | 7 | 9 | 9 | 380 | |

(Source: Primary Source)

**Figure 2.1 Agricultural loans availed by farmers in Goa**

**(As on 31st December, 2018)**




(Source: Directorate of Agriculture, Goa)

The sample size for primary data with regards to the objective related to Bankers perceptions was collected through Regional offices of below mentioned Banks and respondents were designated as Deputy General Managers/Assistant General Managers. The list of Banks includes: Bank of Baroda, Bank of India, Bank of Maharashtra, Canara Bank, Central Bank of India, Corporation Bank, Federal Bank, Indian Overseas Bank, State Bank of India, Syndicate

Bank, The Goa State Co-operative Bank Ltd., The Ratnakar Bank Ltd., UCO Bank, Union Bank of India and Vijaya Bank.

### 2.7.6. Statistical Tools and Techniques

The data drawn from various sources were subjected to statistical treatment. The tools and techniques were basically analytical and descriptive. Graphs and diagrams were used at appropriate places. The statistical tools were evaluated through MS-Excel and Statistical Package for Social Sciences (SPSS) 26 software.

The Statistical tools used in the study were Descriptive Statistics, Reliability Testing, Analysis of Variance (ANOVA), Correlation Analysis using Pearson and Spearman Correlation, Chi-square Test, Factor Analysis, Friedman Test, Independent Sample Median Tests, Jonckheere – Terpstra Test, Kruskal – Wallis Test, Marginal Homogeneity Test, Independent Sample t-test and Logistic Regression Analysis.

#### 2.7.6.1 Descriptive Statistics

The study conducted descriptive statistics to check the Mean, Standard deviation and Standard error so as to perform and check the data structure and normality in order to process further tests.

#### 2.7.6.2 Reliability Test

On the off chance that the estimation can deliver comparable outcomes whenever utilized again in comparable conditions, estimation is said to be reliable or predictable. Therefore, a scale's reliability is the correlation between that scale and the hypothetical one that really measures what it should be. Lack of reliability can be due to negligence, misunderstanding, differential vision, errors in documentation. Unwavering reliability of internal consistency (e.g., mental tests) alludes to how much a figuring fit in with itself. Cronbach's alpha is a measurement coefficient of internal reliability as it is the standard approach to summary scales constructed from ordinary or continuous objects. These include linear multi-normal relationships, and assume unidimensionality. Reliability test is done for the following Likert scale variables:

- Factors affecting utilization of credit facilities by banks - Sanctioning of the loan, Inferior quality of Input, Market Conditions, Convenient location of banks, Quick disbursement of loans, Quality of service of bank staffs, Low interest rate, Convenient repayment method, Social factors and Weather conditions.
- Opinions regarding bank services - High Interest rates, Short loan term, Excessive collateral requirements, Lengthy application process, High costs associated with borrowing, High risks

uncertain of own ability to pay interest and repay principal, Benefits by way of subsidy, Cattle Crop Insurance, Benefits by way of agricultural implements, Penal Interest waive, Increased Agricultural turnover due to financial assistance by banks and Increased Standard of living due to financial assistance by banks.

- Problems of bankers through Agriculture financing - Induce borrowers to avail Agri loan, There is no proper utilisation of loan, Rigidity in lending rates, Cumbersome lending procedures, Insufficient tangible security, Ineffective follow up, Misutilization of loan by borrowers, Lack of corrective action on misuse, Intentional failure of the borrowers, Natural calamity failure, Inadequate return of agricultural activity, Absence of subsidy for repayment, Complicated recovery procedures, High share of NPA, Lack of sufficient support from government agencies, Ineffective insurance, Social political influence, Large number of small Agri borrowers, Continuous renewal, Target based lending, Limited scope Agri expansion, Changed attitude of society and Small land holdings.

### 2.7.6.3 Analysis of Variance (ANOVA)

The statistical method known as analysis of variance, an outline of which will be presented in this chapter, was introduced by R. A. Fisher for use in agricultural experiment; later it was applied to other branches as well.

Let $x_1, x_2, \ldots\ldots\ldots, x_n$ be independent, normally distributed random variables. Suppose that the standard deviation of all these random variables is the same but unknown, and that they may be classified into r group (i=1,2,….,r)have the same expected value $m_i$; hence the random variables of the $i^{\text{th}}$ group have the distribution N($m_i$;**σ**). Let us denote by $n_i$ the number of random variables of the $i^{\text{th}}$ group.

This mathematical model corresponds to the following sample investigation: we have r populations in which the characteristic x has a normal distribution with the same standard deviation **σ** and the expected value $m_i$, respectively, and we draw a simple sample from each population.

Let us imagine that the aim of the sample investigation is to test the hypothesis. $H_0$ ( $m_1 = m_2 = ..... = m_r$ ), that is the hypothesis that the expected values $m_i$ are equal, hence that all the random variables considered have the same distribution.

If we had only two groups; the problem would be reduced to testing the hypothesis $H_0$ ( $m_1 = m_2$ ).

Test statistic,

**STEP A:** Correction Factor = CF = $\frac{(GT)^2}{N}$

**STEP B:** Total Sum of Square = TSS = $\sum x_i^2 - CF$

**STEP C:** Between Sums of Squares

BSS = $\left[ \frac{(\sum x_1)^2}{n_1} + \frac{(\sum x_2)^2}{n_2} + \frac{(\sum x_3)^2}{n_3} + \frac{(\sum x_4)^2}{n_4} \right] - CF$

**STEP D:** Error Sum of Square = TSS - BSS

**STEP E:** Preparation of ANOVA table.

In ANOVA table, difference (i.e. k-1 and N-1), mean square, F value and p value are tabulated. And finally, we conclude the significant difference within the groups. The following variables were subjected to one-way ANOVA analysis:

- Term of loan and Recovery of loan by bank officials in agricultural financing.
- Loan sufficiency and Recovery of loan by bank officials in agricultural financing.
- Types of crops cultivated and land ownership in agricultural financing.
- Medium of sale for crops and types of crop cultivated in agricultural financing.
- External factors and causes for overdue in agricultural financing.

### 2.7.6.4 Correlation Analysis

Correlation is a bivariate analysis evaluating the association strengths between the two variables. For statistics the coefficient of correlation ranges from +1 to -1. Unless the value of the correlation coefficient is around ± 1, then the two variables are assumed to be a perfect degree of association. As the correlation coefficient value goes towards 0, the relationship between the two variables will be weaker. Usually, in statistics, we measure three types of correlations: Pearson correlation, Kendall rank correlation and Spearman correlation.

Pearson correlation is widely used in statistics to measure the degree of the relationship between linear related variables. For example, in the stock market, if we want to measure how two commodities are related to each other, Pearson correlation is used to measure the degree of relationship between the two commodities. The following formula is used to calculate the Pearson correlation coefficient '$r$'

The Pearson correlation coefficient is given by the following equation:

$$r = \frac{n(\sum_{i=1}^{n} xy) - (\sum_{i=1}^{n} x)\,(\sum_{i=1}^{n} y)}{\sqrt{[n\sum_{i=1}^{n} x^2 - (\sum_{i=1}^{n} x^2][n\sum_{i=1}^{n} y^2 - (\sum_{i=1}^{n} y^2)]}}$$

Where,

r = Pearson Correlation Coefficient

x = values in the first set of data

y = values in the second set of data

n = total number of values

Correlation technique is used to determine the level of association between factors related to Agricultural lending such as rigidity in lending rate, cumbersome lending procedures, insufficient tangible security, ineffective follow-up, misutilisation of loan by borrowers, lack of corrective action on misuse, intentional failure of the borrowers, natural calamity failure, inadequate return of agricultural activity, absence of subsidy for repayment and complicated recovery procedures. Through Pearson Correlation, relationship between monitoring loan usage and recovery of loan by bank officials was tested. Non-parametric correlation known as

the Spearman's Rank Correlation was used to study the relationship between the factors related to Bankers Attitude and Government norms for Agricultural lending.

### 2.7.6.5 Chi-Square Test of Association

Chi-square test is a measure of association, primarily between the observed and the expected distribution. The measurement is made in a simply way: subtract the observed counts/ scores from expected counts/scores, square them and then divide the product by the expected and taking the summation as in:

$$\chi^2 = \sum \left[ \frac{(O-E)^2}{E} \right]$$

Which, follows chi-square distribution with (r -1) (c -1) degrees of freedom, where 'O' and 'E' are Observed and Expected Frequency respectively. Chi-square testing is used for two specific purposes: Testing the hypothesis of no association between two or more groups and testing the likelihood that the watched dispersion of information fits with the expected distribution and to evaluate whether there are two self-assertive factors which are free. The Chi-square analysis was performed for the following variables:

- Loan sanctioning process of banks and problems faced in loan sanctioning process.
- Days required for loan sanctioning and problems faced in loan sanctioning process.
- Banks not proposing the said loan amount and causes for overdue.
- Knowledge about banks agricultural finance and rate of interest for loan.
- Amount of loan taken and mode of repayment followed.
- Land owned in square meter and number of crops grown in a year.
- Revenue earning crops and reliable market price of the yield.
- Social factors and related supporting business of farmers in agricultural financing.
- Various level of NPA attained through agricultural lending and proportion of crop loan to agricultural loan.

### 2.7.6.6 Factor Analysis

Exploratory factor analysis is a measurable philosophy regularly utilized in the examination of information. It endeavours to distinguish fundamental factors inside an assortment of observed factors which clarify the example of correlations. The Principal component analysis (PCA) is the default extraction instrument in numerous factual programming packages and is a strategy for the development of new variables (the purported principal components) which are straight composites of the first factors and are uncorrelated between them. These systems might be utilized to lessen a more prominent number of factors to less components or factors. These are associated strategies which imply these don't accept a related variable existence.

Factor Analysis is a statistical technique to study the inter-relationships among the variables in an effort to find a new set of factors, fewer in number than the original variables so that the factors are common among the original variables. In Factor Analysis a small number of common factors are extracted so that these common factors are sufficient to study the relationships of original variables. Factor Analysis helps the researcher to reduce the number of variables to be analysed and thereby making the analysis easier. Using Factor Analysis, the researcher can reduce the large number of variables into a few dimensions called Factors that summarize the available data. Factor analysis was performed for the following variables:

- Factors affecting utilization of credit facilities by banks - Sanctioning of the loan, Inferior quality of Input, Market Conditions, Convenient location of banks, Quick disbursement of loans, Quality of service of bank staffs, Low interest rate, Convenient repayment method, Social factors and Weather conditions.
- Opinions regarding bank services - High Interest rates, Short loan term, Excessive collateral requirements, Lengthy application process, High costs associated with borrowing, High risks uncertain of own ability to pay interest and repay principal, Benefits by way of subsidy, Cattle Crop Insurance, Benefits by way of agricultural implements, Penal Interest waive, Increased Agricultural turnover due to financial assistance by banks and Increased Standard of living due to financial assistance by banks.

### 2.7.6.7 Friedman's Two-Way ANOVA Test

When the assumption necessitated for two ways analysis of variance is parametric test do not hold good the data can be analysed by Friedman's non – parametric procedure. The method utilizes the

ranks within a block, suppose there are k-treatments and 'n' blocks, each block of size k. each block of size k. each treatment occurs in each block.

Assumptions for Friedman's test for same as per Kruskal Wallis test. The data for 'r' block and k-treatments can be presented in the following two-way table.

| **Blocks** | **Sample (Treatments)** **1** **2** **. . . . . .** **K** |
|---|---|
| **1** | $x_{11}$ $x_{12}$ . . . . . $x_{1k}$ |
| **2** | $x_{21}$ $x_{22}$ ……. $x_{2k}$ |
| **.** | . . . . . . $x_{r1}$ $x_{r2}$ . . . . . |
| **R** | $x_{rk}$ |

We take, $H_0$ **:** All treatments have same effect. 1 to k (lowest to biggest) in each block depending under $H_0$, is expected then the sum of ranks in all columns will almost the same. If the difference in sum of ranks of the column is remarkable, it can't be left to random variation. Hence, we have to develop for this, Friedman, gave the following tests.

Suppose $R_{ij}$ is the rank of the observation. $i^{th}$ row $j^{th}$ for i=1,2,…..,r and j=1,2,…., $k_1$ So the two-way table for ranking can be displayed as below:

| **Blocks** | **Sample (Treatments)** **1** **2** **. . . . . .** **K** |
|---|---|
| **1** | $R_{11}$ $R_{12}$ . . . . . $R_{1k}$ |
| **2** | $R_{21}$ $R_{22}$ . . . . . $R_{2k}$ |
| **.** | . . . . . . . |
| **R** | $R_{r1}$ $R_{r2}$ . . . . . $R_{rk}$ |

Friedman's test statistic under $H_0$, is $\chi^2 = \dfrac{12\sum R^2}{N(k)(k+1)} - 3N(k+1)$

Which follows $\chi^2$ distribution with k-1 degrees of freedom.

The statistics F is approximately described as $\chi^2$ with (k-1) d. f. Reject $H_0$, if $\chi^2$ is greater than (or) equal to the tabulated value of $\chi^2$ for - level of significance and (k -1) d.f otherwise accept $H_0$.

Friedman's Test was used to study the factors related to Bankers attitude and Government issues in lending loans for agriculture such as high share of NPA, lack of sufficient support from Government agencies, ineffective insurance, social political influence, continuous renewal, limited scope for agri expansion, changing attitude of society, small land holdings and misutilisation of loan by borrowers based on their ranks.

### 2.7.6.8 Independent Sample Median Test

Most of statistical procedures are based on fairly specific assumptions regarding the underlying population distribution, such as normality, exponentially, and so on. However, quite often such stringent assumptions on distributions are not satisfied. In such case distribution-free methods—also called nonparametric—are very useful.

Assume we have k independent sets of observations $V_{1,1,...},V_{1,n1}$ , $V_{2,1,...,}$ $V_{2,n2}$ ,...,$V_{k,1}$,...,$V_{k,nk}$ one from each of k populations with continuous cumulative distribution functions $F_1$, $F_2$,...,$F_k$. Let $N = n_1 +\cdots+ n_k$ denote the total number of observations. Usually the hypothesis of interest is that all k samples are drawn from identical populations, i.e.

$H_0$: $F_{1(z)} = F_{2(z)} =\cdots= F_{k(z)}$ for all z, (1)

Against the alternative hypothesis that the populations differ. The location model for the k sample problem is that the CDFs are $F_1(z) = F(z - \theta 1)$, $F_2(z) = F(z - \theta 2)$,...,$F_k(z) = F(z - \theta_k)$, respectively, where θi denotes a location parameter of the $i^{th}$ population, frequently interpreted as a median. The null hypothesis (1) can be rewritten as

$H_0$: $\theta_1 = \theta_2 =\cdots= \theta_k$. (2)

In practice, very often the experimenter may expect departures from the null hypothesis in a particular direction. In such a case, we may test the null hypothesis of homogeneity against the alternative that the location parameters are in an increasing order

$H_1$': $\theta_1 \leq \theta_2 \leq\cdots\leq \theta_k$, (3)

where at least one of the inequalities is strict. If the expected direction in (3) is not the natural ordering, one may simply relabel the samples so that the postulated order agrees with the desired one.

Without loss of generality, let $F_1$ be the CDF of the control population and let $F_i(z) = F_1(z - \theta i)$ be the CDF of the $i^{th}$ treatment, where i = 2,...,k. Our one-sided alternative hypothesis is now

$H_1$: $\theta_1 \leq \theta_2$, $\theta_1 \leq \theta 3$,..., $\theta_1 \leq \theta_k$, (4)

where at least one of the inequalities is strict. In the literature this alternative is sometimes called the "simple-tree problem" or "many-one problem." We may view our "many-one" testing problem as a collection of k − 1 sub-testing problems

$H_{0i}$: $\theta i = \theta_1$ (5)

against

$H_{1i}$: $\theta i > \theta_1$ for i = 2, 3,...,k. (6)

Thus, a distribution-free test for testing $H_0$ against $H_1$ is obtained in two steps:

- First an appropriate test for the $i^{th}$ sub-testing problem is selected.
- And then k − 1 of these tests are combined in a suitable manner to produce an overall test.

In order to specifically understand whether the groups were drawn from the same median population, the Independent Sample Median Tests was performed. The Medians for variables relating to Lack of sufficient support from the government agencies and Proportion of crop loan to agricultural loan were analysed.

**2.7.6.9 Jonckheere – Terpstra Test**

The Jonckheere-Terpstra test is a rank-based nonparametric test that can be used to determine if there is a statistically significant trend between an ordinal independent variable and a continuous or ordinal dependent variable. The Jonckheere-Terpstra test is similar to the Kruskal-Wallis H test, which can be used to determine if there are statistically significant differences between two or more groups of an independent variable on a continuous or ordinal dependent variable. In order to modify the test statistic

$$N_{k,n} = \sum_{i=1}^{n} \sum_{j=1}^{k-1} \sum_{l=j+1}^{k} 1(X_{i[j]} > X_{i[l]})(1)$$

where 1(.) denotes the indicator function. Note that $N_{k,n}$ in (1) simply counts the number of pairs of measured values from within each cycle that violate the expected order. $N_{k,n}$ in (1) so that it not only compares pairs of measured values from within a cycle, but also across the cycles. The resulting statistic is then (2)

$$J_{k,n} = \sum_{i=1}^{n}\sum_{h=1}^{n}\sum_{j=1}^{k-1}\sum_{l=j+1}^{k} 1(X_{i[j]} > X_{h\{l\}})(2)$$

Formally, this corresponds to a version of the Jonckheere–Terpstra test statistic for the null hypothesis of equal location parameters in several samples against an ordered alternative (Terpstra, 1952; Jonckheere, 1954). The statistic $J_{k,n}$ in (2) (up to a normalizing constant) was proposed in fact in this context by Vock (2001), wherein the equivalent statistic was denoted by $R^*_{k,n}$ (A statistic $\underline{R}_{k,n}$ was also considered therein, which can be seen to be equivalent to $N_{k,n}$ in (1).) The statistic $J_{k,n}$ could easily be generalized to the case of unbalanced ranked set sampling, where the number $n_j$ (j=1,…….,k) of observations from the $j^{th}$ judgement-order rank may depend on j.

In order to determine the significance of trend in the data, Jonckheere Terpstra test was used to study the relationship between large number of Small Agri borrowers and factors of Agricultural lending through banks.

**2.7.6.10 Kruskal – Wallis Test**

In statistics, the Kruskal–Wallis one – way analysis of variance by ranks (names after William Kruskal and W. Allen Wallis) is a non–parametric method for testing equality of population medians among groups. Intuitively, it is an extension of the Mann-Whitney U test to 3 or more groups.

Since it is a non-parametric method, the Kruskal-Wallis test does not assume a normal population, unlike the analogous one-way analysis of variance. However, the test does assume an identically-shaped and scaled distribution for each group, expect for any difference in medians and the steps for calculation are given below:

Rank all data from all groups together, i.e., rank the data from 1 to N ignoring group membership. Assign any tied values the average of the ranks they would have received had they not been tied.

The test statistics is $\chi^2 = \dfrac{12\sum_{i=1}^{k}\dfrac{R_i^{\,2}}{n_i}}{N(N+1)} - 3(N+1)$

which follows chi-square distribution with k-1 degrees of freedom

where R = Sum of Ranks, N = Sample Size and K = Number of Groups.

The Kruskal-Wallis test assumes that the different groups have the same distribution and hence in this analysis time lag in loan sanctioning and loan disbursement were considered to see whether it effects the population at large.

### 2.7.6.11 Independent Sample t-test

The Independent Samples t-test compares the results of two representative populations to determine whether statistical evidence exists that the related results of population are substantially different. The parametric test is Independent Samples t-test. The Independent Samples t Test can compare only two (and only two) groups with the means. They can't make distinctions between more than two categories. The procedure for computing t-test assumes that the data are normally distributed and is

$$t = \frac{\left|\overline{x_1} - \overline{x_2}\right|}{S\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

$$\text{Where, } S = \sqrt{\frac{(n_1 - 1)s_1^2 + (n_2 - 1)s_2^2}{n_1 + n_2 - 2}}$$

which follows student t distribution with $n_1 + n_2 - 2$ degrees of freedom, where, $\overline{x_1}$ is the mean of the first sample, $\overline{x_2}$ is the mean of the second and S is the combined standard deviation. Using the above formula t statistic is computed along with the p-value so that the confidence level of significance of the difference may be interpreted in a given context. The Independent sample t-test was tested for the variables: Frequency of repayment and respondents who were unable to repay the loan.

### 2.7.6.12 Marginal Homogeneity Test

Marginal homogeneity refers to equality (lack of significant difference) between one or more of the row marginal proportions and the corresponding column proportion(s). Formally, using the notation, we are actually testing:

**$P(Y = s) = P(Z = s) \Rightarrow \pi_{s,+} = \pi_{+,s}$ , for s = 1, 2, · · · , r**

Letting $d_s = \pi_{+,s} - \pi_{s,+}$ and letting $d = (d_1, \cdots, d_{r-1})$, we may see that it is redundant to include $d_r$ in the vector d, since we have $\sum_{i=1}^{r} \pi_{i,+} = 1$ or $(\sum_{j=1}^{r} \pi_{+,j} = 1)$ and $\sum_{s=1}^{r} d_s = 0$, hence, generally there are r − 1 degree of freedom is the statistics used for testing marginal homogeneity is distributed as a $\chi^2$

distribution. Therefore, marginal homogeneity occurs when the row totals are equal to the column totals, in research, a common interpretation to the "marginal homogeneity" would mean there was no effect of the parameter tested.

Marginal Homogeneity test was utilized to study the variables such as inducing borrowers to avail loan and misutilisation of loan. Because inducing borrowers to avail credit from banks can lead to wrong decision when the borrower has other commitments.

**2.7.6.13 Logistic Regression Analysis**

Logistic regression is typically well suited to explain and test hypotheses concerning relationships between a categorical outcome variable and one or more categorical or continuous predictor variables. By applying the logit transformation to the dependent variable, logistic regression solves those problems. The logistic model predicts Y's logit from X, in essence.

The simple logistic model has the form:

$$logit\ (Y) = natural \log(odds) = \ln\left(\frac{\pi}{1-\pi}\right) = \alpha + \beta x \qquad (1)$$

Taking the antilog of Equation 1 on both sides, one derives an equation to predict the probability of the Occurrence of the outcome of interest as follows:

$$X = \frac{e^{\alpha+\beta x}}{1+e^{\alpha+\beta x}} \qquad (2)$$

where n is the probability of the outcome of interest or "event, a is the Y intercept, p is the regression coefficient, and e = 2.71828 is the base of the system of natural logarithm. The relationship between logit (Y) and X is linear, according to Equation (1). Yet the relationship between the likelihood of Y and X is nonlinear according to Equation 2. For this reason, to make the relationship between a categorical outcome variable and its predictors linear, the natural log transformation of the odds in Equation 1 is important.

The value of the coefficient p determines the direction of the relationship between X and the logit of Y. When p is greater than zero, larger (or smaller) X values are associated with larger (or smaller) Z logits conversely, if p is less than zero, larger (or smaller) X values are associated with smaller (or larger) K logits. The null hypothesis notes, within the context of inferential statistics, that there is no causal association within the population. Rejecting such a null hypothesis means there exists a linear relationship between X and Y's logit.

Extending the logic of simple logistic regression to multiple predictors, a complex logistic regression for Y is easy to construct as follows:

$$logit(Y) = ln\left(\frac{\pi}{1-\pi}\right) = \alpha + \beta_1 X_1 + \beta_2 X_2 \quad (3)$$

Therefore,

$$\Pi = Probability\ (Y = outcome\ of\ interest | X_1 = x_1, X_2 = x_2)$$

$$= \frac{e^{\alpha+\beta_1 X_1+\beta_2 X_2}}{1 + e^{\alpha+\beta_1 X_1+\beta_2 X_2}} \quad (4)$$

where x: is once again the probability of the event, a is the Y intercept, $\beta_s$ are regression coefficients, and $X_s$ are a set of predictors.

- The Binary logistic regression which is performed for dichotomous variables: Banks granting proposed amount of loan with regard to information provided by bank employees and behaviour of bank executives.
- The Multinomial logistic regression which is performed for more than two categories: Selection of banks with respect to asset securitised for attaining loan and purpose of loan.
- Categorical regression was analysed for method of cultivation adopted and types of farm land in agricultural financing.

## 2.8 Limitations of the Study

Though the detailed investigation was made in the present study, unit has got the following limitations: -

**2.8.1.** This study was restricted only to the State of Goa. So, the results may not be applicable to others areas. The conclusion arrived and the generalizations made were explicit to farmers having a place with the State of Goa.

**2.8.2.** This study is based on the Farmers borrowing loans for agricultural purpose in Goa through banks. But the study satisfaction may change according to time, agro-climatic, finance, technology and socio-economic conditions.

## 2.9 Chapterisation Scheme

The research study is planned to address the following chapters:

**Chapter 1: Introduction** pacts with the Introduction, Role of Agriculture in Indian Economy, Reforms in Financial Sector, banking reforms, Agricultural Financing, Need for Agricultural Financing, Institutional Agricultural Financing in India, Classification of Agricultural Finance in India, Problems of Agricultural Finance in India and Major Policy Developments.

**Chapter 2: Review of Literature and Research Methodology** discusses Review of Literature, Importance of the study, Research gap, Research Questions, Objectives of the study, Hypothesis for the study, Research Methodology, Nature of data, Collection of data, Area of study, Sample size, Limitations of the study and statistical techniques used are discussed in detail.

**Chapter 3: Institutional Agricultural Financing in India and in Goa** Incorporates to access the Institutional Agricultural financing in India and in the State of Goa using Secondary data.

**Chapter 4: Impact of Institutional Financing on Farmers' Socio-Economic Aspects and Problems Faced by Farmers in the State of Goa** Describes the impact of Institutional Agricultural financing on socio-economic aspects of farming community and problems faced by farmers in borrowing Institutional Agricultural financing in the state of Goa.

**Chapter 5: Problems of Bankers in the State of Goa** notifies the problems faced by financial establishments in lending agricultural finance in the state of Goa.

**Chapter 6:** Compacts the **Summary of Findings, Conclusions and Suggestions.** This chapter finally summarizes the concluding observations, suggestions and recommending the scope for further research.

# CHAPTER – 3

# INSTITUTIONAL AGRICULTURAL FINANCING IN INDIA AND IN GOA

This chapter deals with the origin of rural credit system and also agricultural financing in India which is the primary objective of the study. Also, this chapter very briefly analyses recent policy measures proposed as well as initiated by Government in respect of agricultural credit issues. The institutional financing offices are assuming a pivotal role for agricultural improvement in the district and the state. It has experienced a transformative change during the most recent years. Necessity of credit for agrarian development assumes significance from the stand print of increased farm expenses and the job of institutional financing offices in this setting gives off an impression of being of nearly central. The farmers all in all have intense dearth of finance, start any formative work. The necessity of finance by the farmers is high. Be that as it may, for advancing agricultural developments, both central and state Government have presented a few oriented schemes. For implementation of various plans, distribution of assets for agricultural advancement has additionally expanded consistently over plan periods.

## 3.1 Introduction

Agricultural financing has consistently assumed an extremely critical job in helping field production in India. Despite the fact that the degree and number of assets if there should arise an occurrence of agriculture have increased; still numerous shortcomings have crawled which have concerned the suitability of these foundations. Succeeding the move in dietary and utilization designs from cereals to non-cereals items; a quiet change is seen occurring in rural side empowering expansion in agrarian items and worth expansion process in order to shield employment just as pay of the rural people. In the current situation, extremely dynamic and quality agricultural financial organizations are required so as to take into account the necessities of credit for building fundamental institutional and marketing system. New strategy is required much the same as that of green revolution during the 1970s. The variety currently required is that new activities must be in disaggregated way in different segments of

farming and agrarian related businesses like agriculture, aquaculture, dairy, sericulture, vegetables, poultry, meat, food preparing and like.

The second principle objective is to present the profile of Goa province and depict the economy of the investigation zone and evaluate the performance of institutional agencies lending to agricultural financing in the territory of Goa.For this reason, an effort is made to dissect the state's population, economic activities, live stock, poultry populations, land use, crop patterns of inundated regions, the provision of credit by institutional organizations, financial establishment targets and achievement, annual credit plans, etc.

### 3.2 Major Initiatives by Central Government

After independence, credit establishments serving the agricultural segment were created in a few stages. In the principal stage from 1947 to 1969, Co-operative agencies were the essential vehicle that provided credit. During the second stage from 1969-75, a significant advancement in the zone of rural credit was the nationalization of banks in 1969. The Commercial Banks were additionally allotted a significant job in giving agricultural credit to enhance credit by Co-operatives. The third stage, 1975-1990, saw the foundation of Regional Rural Banks (RRBs) in 1975 to provide credit to small and marginal farmers and more fragile areas of society. During this stage, presentation of the idea of priority sectors in 1985, whereby the banks were ordered to loan 18 percent of their total credit to agriculture, was a significant advance for stretching out credit to agriculture.

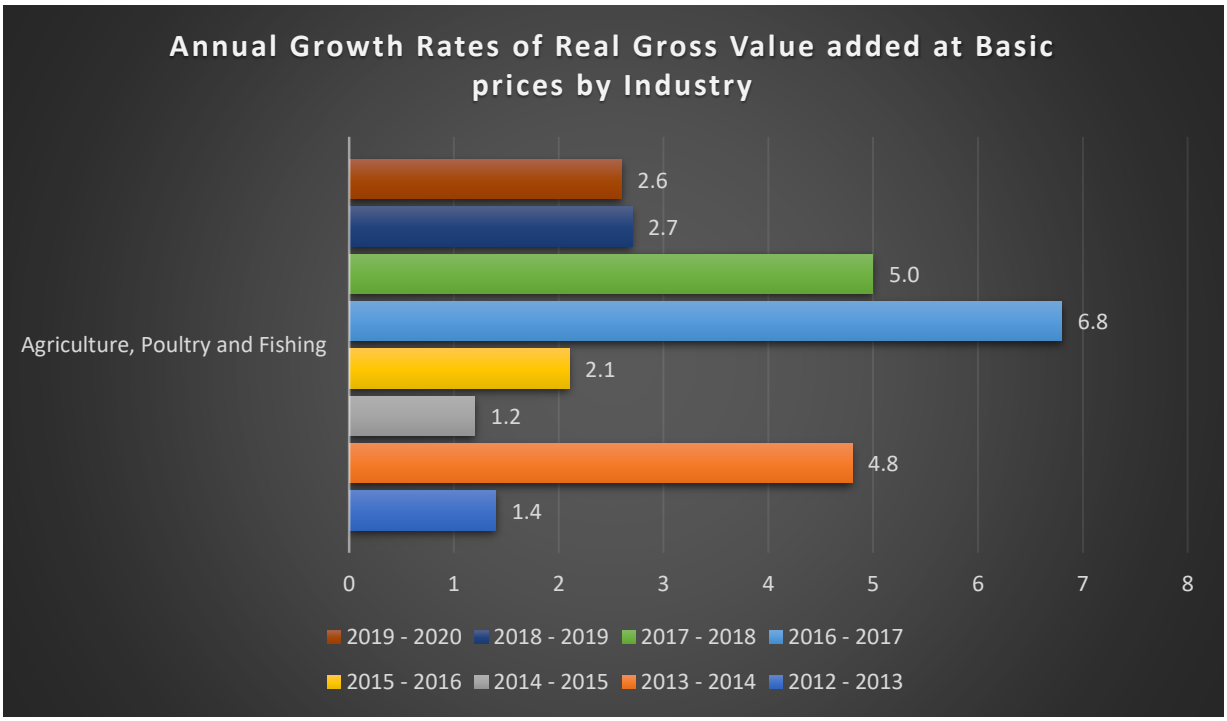
In the fourth stage, starting with the financial sector reforms of the 1990s, accentuation moved for prudential guidelines and the emphasis on social banking got weakened. In this way, the portion of agricultural in total bank credit of the scheduled business banks fell underneath the 18 percent target. As of late, in light of the agrarian crisis, there have been various activities to extend credit to agriculture, for example, the multiplying of credit inside three years, the issue of Kisan Credit Cards (KCCs), the introduction of institutional agencies such as agency banking and augmentation of the model of Self-Help Groups (SHGs) to farmers, the revitalisation of the co-operative credit structure and the Government's acknowledgment of the guideline of inclusive banking.

**Table 3-1 Annual Growth Rates of Real Gross Value added at Basic prices by Industry**

| Year | Agriculture, Poultry and Fishing (in %) |
|---|---|
| **2012 - 2013** | 1.4 |
| **2013 - 2014** | 4.8 |
| **2014 - 2015** | 1.2 |
| **2015 - 2016** | 2.1 |
| **2016 - 2017** | 6.8 |
| **2017 - 2018** | 5.0 |
| **2018 - 2019** | 2.7 |
| **2019 - 2020** | 2.6 |

(Source: Economic Survey, 2019-2020)

**Figure 3-1 Annual Growth Rates of Real Gross Value added at Basic prices by Industry**




The table 3-1 displays the Annual Growth Rates of Real Gross Value added at Basic prices by Agriculture, Poultry and Fishing Industry. There is an increase in the growth rate from the year 2016 – 2017 with 6.8 and then decreasing at 5.0 percent in the following year

2017 – 2018. Whereas, there was a steep decrease in the years proceeding 2018 – 2020 with 2.7 and 2.6 percent.

### 3.2.1 Reserve Bank of India

The banking system of a nation goes about as an extension between the individuals who require cash as credit and the individuals who supply it as stores. Banking has gained fantastic ground in India since freedom. The nation acquired a British designed stock banking framework. During the pre-independence period banks were moved generally in metropolitan areas, port towns and provincial headquarters and there was no uniform law managing the exercises of the banks. March 16, 1949 was a milestone in banking history of independent India. On this day, the Banking Companies (Regulation) Act was bought in to the statue book of the country. The act conceded the RBI the forces to control, administer and direct the elements of all banks in the nation. It was additionally in the year 1949 that the RBI was nationalized.

The Reserve Bank of India (RBI), the nation's central bank, needed to improve agricultural loan institutional fund. Henceforth, a significant panel called the All India Rural Credit Survey Committee was set up in 1952 to enquire in detail into the situation of rural credit and the exhibition of institutional organization versus non-institutional offices. The All India Rural Credit Survey Committee in its Report published in 1954 assessed that disregarding the different procedural and regulatory changes just as credit facilities from the Reserve Bank, the institutional framework could represent just 7.3 percent of the total borrowings of the cultivators.

During 1970-71 three significant improvements in the sphere to bank credit to agricultural sector occurred. In the first place, the Reserve Bank issued a lot of rules to Commercial Banks so as to empower them to comprehend the rationale, policies and techniques for making agricultural credits. Also, the expert group with Mr. R.K. Talwar, as Chairman, which was set up to look at the State Governments' establishments identifying with agricultural debt alleviation guideline of money lending land reforms and so on., presented its report. Third, so as to give an arrangement of guarantees for bank lending to individual small borrowers

including small farmers, in up to this point ignored sector of the economy, a different body known as the Credit Guarantee Corporation of India Ltd., was set up in January 1971.

### 3.3 Institutional Sector

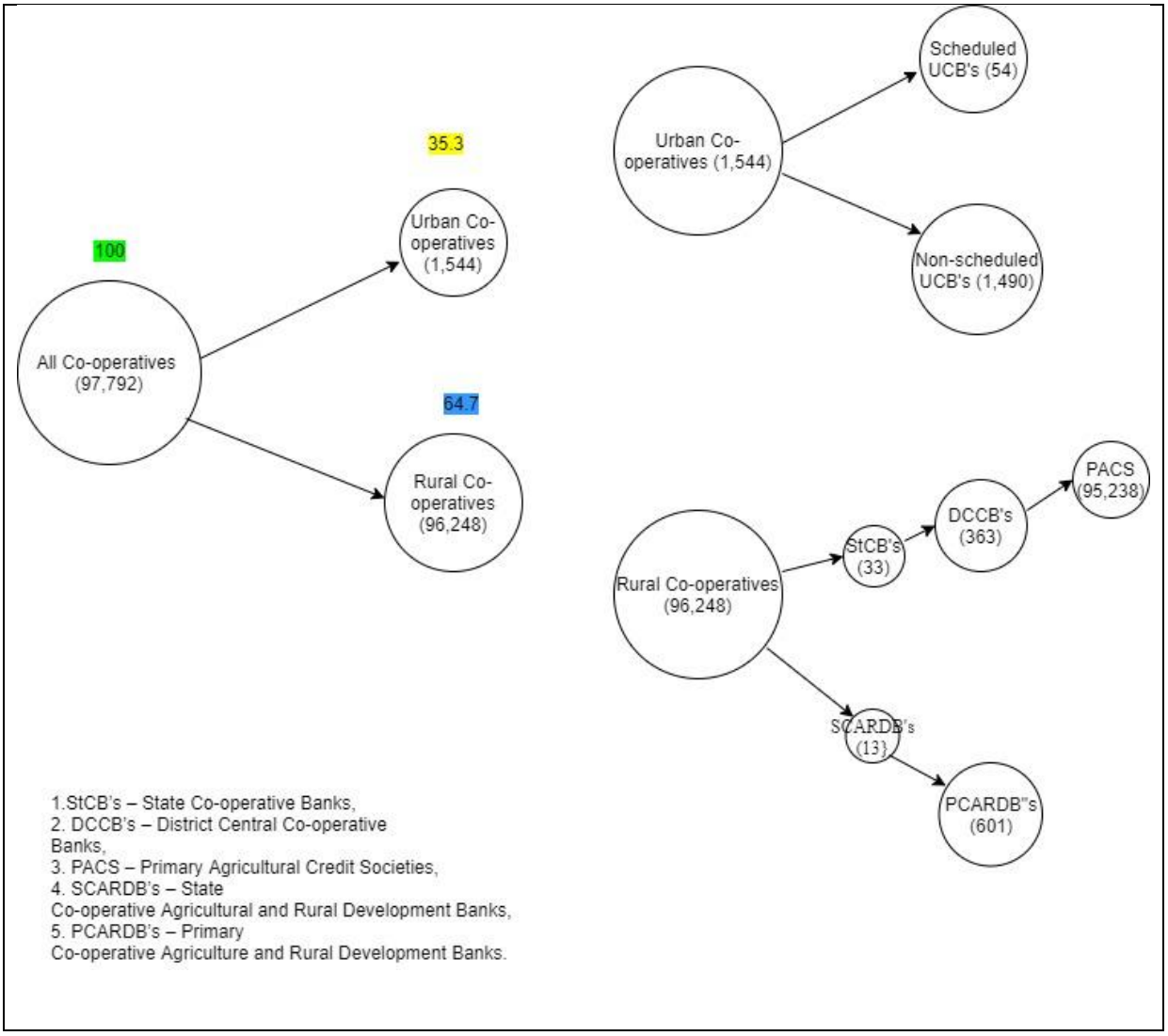
#### 3.3.1Co-Operative Banks

Based on the proposals of The All India Rural Credit Survey Committee appointed by RBI in the year 1951, Co-operatives were included as financing organizations to agriculture. The advisory group suggested that the co-operative system framework was the most appropriate for regulation of farming credit under Indian conditions. This prodded on the central and state governments to give a further force to the advancement of Co-operatives. Co-operative banks have been viewed as an instrument of monetary improvement since the appropriation of economic planning in our nation in 1951.

The significance of co-operative banks has taken off lately with the rise of financial consideration as a key push of public policy in India. The distance - social as much as physical - of Commercial Banks from their customer base has apparently been a key explanation behind the low infiltrations. Co-operative banks balance the requirement for gainfulness with the more extensive monetary and social development needs. Co-operative banks are among the most well-established forms of collective action in India, playing a critical role in the recognition of agriculture and rural areas. Their primary function is to provide credit for the funding of various rural-based business ventures. Agricultural credit plays various critical elements of which the essential incorporates the increase and development of the agricultural production.

The resources of co-operative credit foundations comprise fundamentally of deposits and borrowings for brief periods. Attributable to the constrained resources of their members, these establishments have very little of offer capital. Tragically, adequate stores have likewise not been developed attributable to meagre benefits and a lot of terrible obligations. The co-operative credit foundation can, thusly, flexibly just for the short-term and medium-term credit needs of agriculturists and scarcely their long-term necessities but partly through the Land Development Banks.

**Figure 3-2: Structure of Co-operatives by Asset Size**




(Source: RBI, 2019)

Co-operative institutions play a vital role in the provision of last-mile credit and the expansion of financial services around the country through their regional and demographic scope. Credit co-operatives at the end of March, 2019 constituted 1,544 Urban Co-operative Banks (UCBs) which is 35.3 percent and 96,248 Rural Co-operative Banks (end of March 2018), with the latter accounting for 64.7 percent of the total assets of co-operatives.

### 3.3.1.1 Urban Co-operative Banks

The current work of the Urban Co-operative Banks represents the pre-1991 economic structure, with a high degree of politization in its function and reliance on non-market, non-competitive components, whereas the order of Urban Co-operative Banks (UCB's) is to compel urban areas (RBI, 2006). The UCB's administrative structure fluctuates with the operation and work geographic region. The health of the UCB's is critical for the financial system as a whole and also for the wide economic growth.

There are lucrative open doors for the Indian banking sector to pursue financial inclusion, even though UCB's resources are moderately limited in aggregate terms, they are noteworthy in meeting middle and lower-income people's financial needs. Significant numbers of whom are small traders and business people in semi-urban and urban areas with limited access to banking. Secondly, UCB's are limited in size but often compete with Commercial Banks, a fragment that is genuinely focused. For administrative purposes, UCB's are classified into Tier-I and Tier-II levels, considering their base of contributors. Level II UCB's have a greater base of investors and a wider topographical footprint than their Tier I partner. The sum of Tier II UCB's expanded strongly during the fiscal year of 2018-19.

**Table 3-2 Tier - Wise Distribution of Urban Co-operative Banks (Amount in Crore)**

| Tier Type | Number of Banks | | Deposits | | Advances | | Total Assets | |
|---|---|---|---|---|---|---|---|---|
| | No. | % to Total | Amount | % to Total | Amount | % To Total | Amount | % To Total |
| **Tier I UCB's** | 917 | 59.4 | 43588 | 9.0 | 25076 | 8.3 | 54591 | 9.1 |
| **Tier II UCB's** | 627 | 40.6 | 440728 | 91.0 | 277942 | 91.7 | 544622 | 90.9 |
| **All UCB's** | 1544 | 100 | 484316 | 100 | 303018 | 100 | 599214 | 100 |

(Source: RBI Reports, 2019)

The profitability of UCBs, calculated in terms of Return on Equity (RoE), declined slightly, primarily due to Non-scheduled Urban Co-operative Bank's below-performance. State Urban

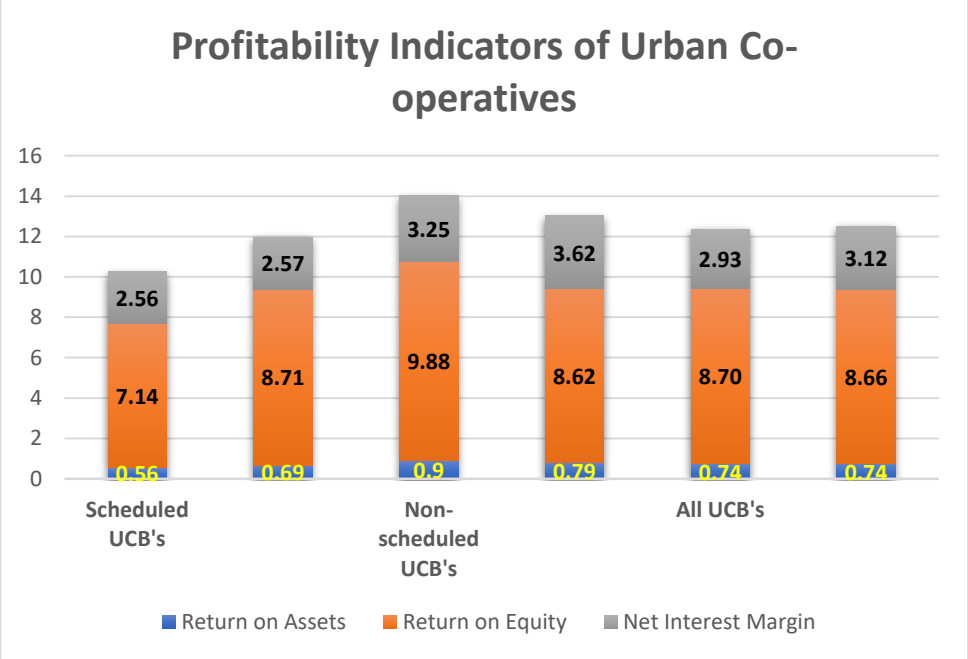
Co-operative Banks reported losses during the period 2019-20. Table 3-3 displays the Urban Co-operative Banks Profitability Metrics.

**Table 3-3: Profitability Indicators of Urban Co-operative Banks (in Percent)**

| Indicators | Scheduled UCB's | | Non-scheduled UCB's | | All UCB's | |
|---|---|---|---|---|---|---|
| | 2017-2018 | 2018-2019 | 2017-2018 | 2018-2019 | 2017-2018 | 2018-2019 |
| **Return on Assets** | 0.56 | 0.69 | 0.9 | 0.79 | 0.74 | 0.74 |
| **Return on Equity** | 7.14 | 8.71 | 9.88 | 8.62 | 8.70 | 8.66 |
| **Net Interest Margin** | 2.56 | 2.57 | 3.25 | 3.62 | 2.93 | 3.12 |

(Source: RBI Reports, 2019)

**Figure 3-3: Profitability Indicators of Urban Co-operative Banks (in Percent)**




### 3.3.1.2 Rural Co-operative Banks

Rural co-operatives play a pivotal role in conveying moderate institutional credit and promoting financial consideration through their topographical outreach in under banked territories. Short-term co-operatives fundamentally meet crop loan prerequisites, although long-term co-operatives make loans accessible in agriculture, rural ventures and housing for capital development. With regards to agricultural co-operative societies in India, some social

scientists have argued that since the very nature of co-operatives is one-sided against farmers having an enticing overflow rather than those producing for subsistence alone, it would usually disrupt rather than scaffold disparities.

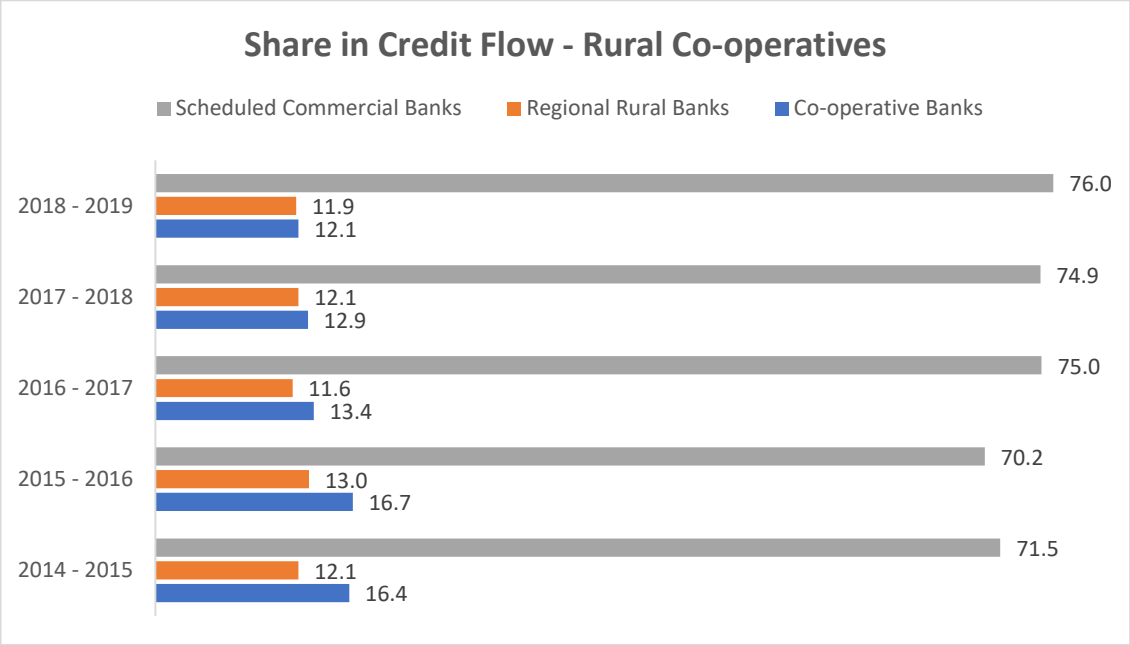
Despite the fact that the emphasis of rural co-operative lending is agriculture, the portion of rural co-operatives in this category of loans - which in 1992-93 was as high as 64 per cent - has declined significantly over the years, while Commercial Banks have gained a predominant place.

**Table 3-4: Share in Credit Flow - Rural Co-operatives (in percent)**

| Year | Co-operative Banks | Regional Rural Banks | Scheduled Commercial Banks |
|---|---|---|---|
| **2014 - 2015** | 16.4 | 12.1 | 71.5 |
| **2015 - 2016** | 16.7 | 13.0 | 70.2 |
| **2016 - 2017** | 13.4 | 11.6 | 75.0 |
| **2017 - 2018** | 12.9 | 12.1 | 74.9 |
| **2018 - 2019** | 12.1 | 11.9 | 76.0 |

(Source: NABARD)

**Figure 3-4: Share in Credit Flow - Rural Co-operatives (in percent)**



### 3.3.2Commercial Banks

Commercial Banking in India had its beginnings in the mid of eighteenth century and took root essentially in the urban and metropolitan centres. It was the All India Rural Credit Survey Committee (1954) that visualized that there is a significant role for rural credit through commercial banks. Its object essentially was the financing of trade and commerce. Considering the larger and expanding credit needs of Indian agribusiness, the Co-operative Banks' efforts should have been significantly enhanced by Commercial Banks in the wake of current technological advances. In 1967, the initial phase towards this path was taken by social control of the Commercial Banks. At that point the National Credit Council, under the chairmanship of Professor G.R. Gadgil, delegated an investigation bunch.

**Table 3-5: Number of Functioning branches of Commercial Banks - Banks Group-wise**

| | | | | | | 2019 | | |
|---|---|---|---|---|---|---|---|---|
| **Types of Bank** | **2014** | **2015** | **2016** | **2017** | **2018** | **Total** | **Rural** | **% of Rural branches to Total** |
| **Public Sector Banks** | 80,299 | 85,968 | 89,213 | 91,202 | 89,940 | 87,580 | 28,797 | 32.9 |
| **Regional Rural Banks** | 18,817 | 19,904 | 20,729 | 21,229 | 21,601 | 21,742 | 15,271 | 70.2 |
| **Private Sector Banks** | 17,627 | 19,468 | 24,234 | 26,571 | 28,219 | 31,889 | 6,836 | 21.4 |
| **Foreign Banks** | 304 | 311 | 313 | 282 | 285 | 300 | 12 | 4.0 |
| **Local Area Banks** | 91 | 106 | 118 | 82 | 93 | 93 | 14 | 15.1 |
| **Small Finance Banks** | - | - | - | 383 | 1,391 | 3,157 | 627 | 19.9 |
| **Payments Bank** | - | - | - | 2 | 146 | 794 | 35 | 4.4 |
| **Total** | **1,17,138** | **1,25,757** | **1,34,607** | **1,39,751** | **1,41,675** | **1,45,555** | **51,594** | **35.4** |

(Source: RBI, Master Office File (MOF) System- 2019)

Throughout the years, there has been a substantial increase in rural farmer’s entry into institutional credit and at the same time, the role of informal institutions, including money lenders, as a source of credit has declined.

Accessible information recommends that agrarian credit as a portion of both the input value estimation and the yield value has been ascending as of late. Among the striking highlights of India's agricultural credit scene are the large territorial variations in the way Commercial Banks dispense farming credit. Commercial Banks (in lieu of RRBs) are currently focused on ensuring that priority segment propellers make up 40 percent of net bank credit and 18 percent of net bank credit goes to the agricultural division within the overall 40 percent loan objective. To ensure that banks' commitment to direct agricultural advances is not undermined, backhanded fund lending will not exceed one-fourth of the 18 per cent agricultural sub-focus, i.e., 4.5 per cent net bank credit.

### 3.3.3 Regional Rural Banks

Despite the fact that co-operatives and commercial banks have grown dramatically as rural credit providers, Non-institutional credit in rural areas accounted for 2/3 of total credit, according to the board of trustees on Commercial Banks convened by the Indian legislature in 1975. Rural credit was in high demand due to the expansion attributable to appropriation of modern agriculture, which gradually required greater capital measures for both short-term purchases of inputs such as chemical fertilizers, high yield seeds and pesticides, medium-term loans for farm mechanization and land development. However, with regard to meeting the credit gap in rural areas, it was thought that the Co-operative System and Commercial Banks showed certain characteristic deficiencies.

The 1972 Banking Commission recommended a multi-pronged system in which the Co-operatives and Commercial Banks should assume their proper position. It was clearly felt that Co-operative Society would not prevail in every district of the country, though it had its own impediments to open branches of Commercial Banks in the rural regions. Through this way a working group under Shri M. Narasimham's chairmanship was formed on rural banks. The Committee tabled its suggestion on 30 July 1975.On the basis of its report, the Government of the Indian Union proclaimed a law on 6$^{th}$ September, 1975 and thereafter, the Regional Rural Banks was established on 2$^{nd}$ October, 1975.At that point the mandate turned into an Act of Parliament on 9$^{th}$ February 1976.

The following were the goals of the Regional Rural Banks:

a. To develop rural economy.
b. To give credit to agribusiness and partnered exercises.
c. To decrease the reliance of rural individuals on moneylenders.
d. To help the poor monetarily to meet the utilization needs.
e. To arrive at the doorsteps of the rural people in the back ward and ancestral regions.

### 3.3.4 Institutional Agricultural – Agency-Wise Share

In order to comprehend the display of various agencies in lending to the agricultural sector, a similar review was finished showing their position in the rural and allied credit acknowledgment as an exceptional as it was on March 31, 2017.

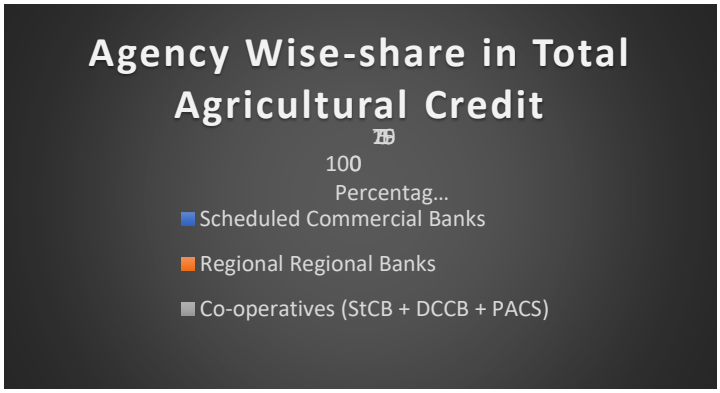
**Table 3.6: Institutional Agricultural – Agency-wise share**

| Agency Wise-share in Total Agricultural Credit | Percentage (%) |
|---|---|
| **Commercial Banks** | 79 |
| **Regional Rural Banks** | 5 |
| **Co-operatives (StCB's + DCCB + PACS)** | 15 |
| **Micro Finance Institution** | 1 |

(Source: RBI, NABARD, MFIN)

Commercial Banks contributed a significant share of agricultural and related credit (79 percent). Co-operative organizations also carry on a key role in growing rural credit, as well as a 15 percent share of all Co-operative Banks (such as StCB's, DCCBs and PACS). The RRBs contributed 5 per cent of the remaining agricultural loan. The following chart displays agency wise share in total agricultural credit.

**Figure 3-5: Agency Wise-share in Total Agricultural Credit**




The banking sector of Co-operatives is thriving either as a three- or two-tier structure. The three-level structure incorporates State Co-operative Bank, District Co-operative Central Bank and Primary Agricultural Co-operative Societies, although only State Co-operative Banks and Primary Agricultural Co-operative Societies are available in a two-level structure. In the three-level system, the lower-level rates, such as District Co-operative Central Bank and Primary Agricultural Co-operative Societies, extend credit to individual borrowers using their own assets/deposits and guarantee upper-level

refinancing. Primary Agricultural Co-operative Societies offers credit to single lenders in the two-tier system and State Co-operative Banks guarantees refinancing. Often the State Co-operative Banks distribute credit across the state to individuals through their branches.

**Table 3-7: Institutional Credit for Agriculture and Allied Activities as Directed by Co-operatives in India (2000-2001to 2015-2016) (₹ in Billion)**

| | Long Term | | Short term | |
|---|---|---|---|---|
| **Year** | **Loans Issued** | **Loans Outstanding** | **Loans Issued** | **Loans Outstanding** |
| 2000-01 | 185.56 | 181.68 | 272.95 | 461.35 |
| 2001-02 | 216.7 | 215.4 | 305.69 | 521.10 |
| 2002-03 | 236.29 | 245.18 | 340.40 | 590.64 |
| 2003-04 | 293.26 | 308.08 | 400.49 | 714.03 |
| 2004-05 | 318.87 | 324.81 | 450.09 | 788.22 |
| 2005-06 | 356.24 | 341.40 | 481.23 | 823.27 |
| 2006-07 | 407.96 | 377.64 | 540.19 | 894.43 |
| 2007-08 | 473.9 | 436.96 | 576.43 | 656.66 |
| 2008-09 | 480.22 | 456.86 | 587.87 | 640.45 |
| 2009-10 | 569.46 | 357.17 | 634.97 | 597.91 |
| 2010-11 | 690.38 | 496.45 | 781.21 | 766.74 |
| 2011-12 | 818.29 | 445.17 | 879.63 | 725.45 |
| 2012-13 | 1025.92 | 567.23 | 1112.03 | 1120.02 |
| 2013-14 | 1134.58 | 754.19 | 1199.64 | 1187.45 |
| 2014-15 | 1324.36 | 856.24 | 1278.45 | 1312.49 |
| 2015-16 | 1568.28 | 1135.22 | 1385.12 | 1425.48 |

(Source Indiastats)

The above table 3-7 speaks about total direct financing by Co-operatives Direct Institutional Credit for Agriculture and Allied Activities in India for the review period. It can have been noticed that compare to that of long term credit, short term credit is much financially better as loans issued are stronger than that of long term credit given by them.

### 3.3.5 Progress in Banking Sector

After September 2015, the pile of impaired assets has begun to recede, with the first half-yearly drop being accounted for in the Gross Non-Performing Assets (GNPA) proportion. The GNPA level of Scheduled Commercial Banks dropped from 11.5 percent in March 2018 to 10.8 percent in September 2018, according to the RBI's semi-annual Financial Stability Reports and 9.3 percent in March 2019. In addition, it is expected to further decline in 2019–20 (RBI 2018-2019 Report). From 8.3 percent in

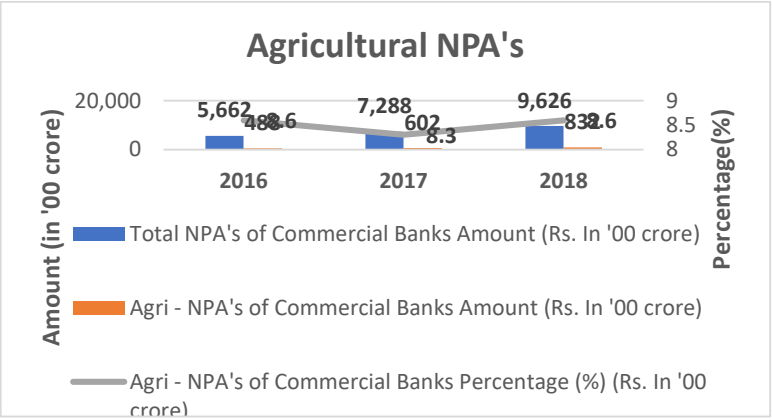
2016–17 to 8.6 percent in 2017–18, the share of priority agricultural portion of NPAs in total NPAs of Scheduled Commercial Banks extended.

**Table 3-8: Agricultural Non-Performing Assets**

| Year | Total NPA's of Commercial Banks | Agri - NPA's of Commercial Banks | |
|---|---|---|---|
| | Amount | Amount | Percentage (%) |
| | (₹ In '00 crore) | (₹ in '00 crore) | |
| **2016** | 5,662 | 488 | 8.6 |
| **2017** | 7,288 | 602 | 8.3 |
| **2018** | 9,626 | 832 | 8.6 |

(Source: NABARD Annual Report, 2018 – 2019)

***Figure 3-6 Agricultural NPA's***




There is also a compelling necessity for continued vigilance over bank asset quality and the resolution of focused assets, with a particular focus on the current resolution process under the Insolvency and Bankruptcy Code. An improvement in NPA position has advanced more institutional credit deployment. Since the recapitalisation declaration up to November 2018, the government of India has recapitalized public sector banks to the tune of ₹1,28,861 crore through market implantation and capital mobilisation. (PIB 2018)

### 3.3.6 Budgetary Allocations to Agriculture

Spending on infrastructure and other capital projects by the government should be increased, by increasing the periphery capacity of private capital, is potentially crowding into private

investment. Public investment in agribusiness is subsequently to be extended to encourage private investment. There are budgetary estimates by selected states for the year 2018–19capital spending on agriculture and related segments are presented in figure 3.8. Andhra Pradesh (66.1 percent), Gujarat (58 percent), Odisha (46 percent), Jharkhand (42.6 percent), Karnataka (40.8 percent), and West Bengal (40 percent) are states that made a significant portion of the budget (over 40%) for capital costs on agriculture and unified divisions in 2018–19.

**Table 3-9: Budgetary Allocations to Agriculture State-wise (2018-19)**

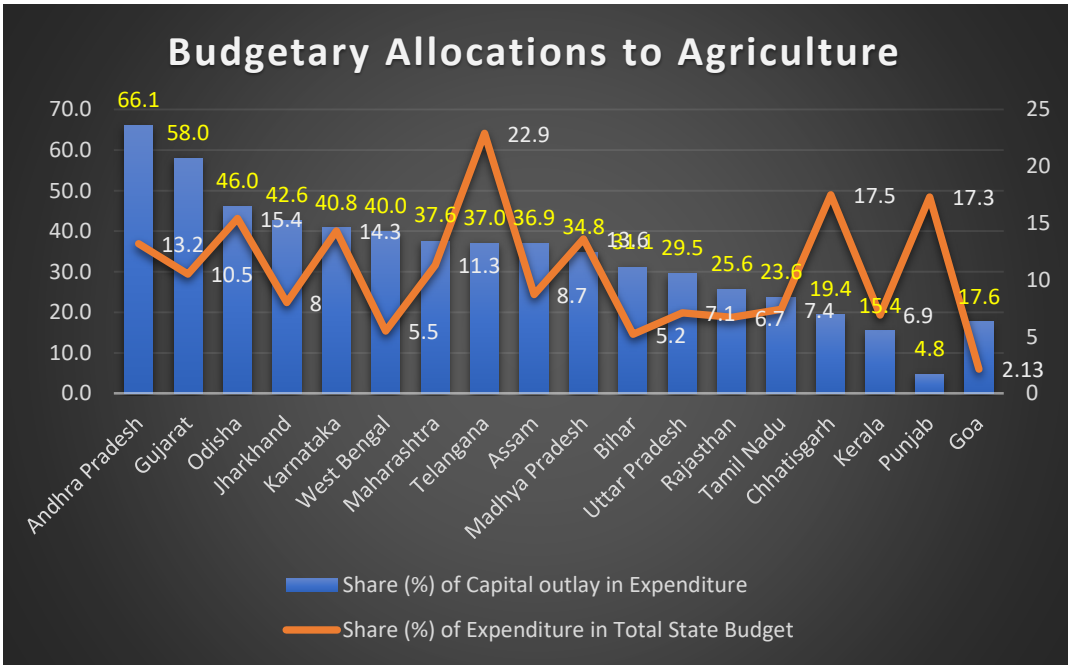
| State | Share (%) of Capital outlay in Expenditure | Share (%) of Expenditure in Total State Budget |
|---|---|---|
| **Andhra Pradesh** | 66.1 | 13.2 |
| **Gujarat** | 58.0 | 10.5 |
| **Odisha** | 46.0 | 15.4 |
| **Jharkhand** | 42.6 | 8 |
| **Karnataka** | 40.8 | 14.3 |
| **West Bengal** | 40.0 | 5.5 |
| **Maharashtra** | 37.6 | 11.3 |
| **Telangana** | 37.0 | 22.9 |
| **Assam** | 36.9 | 8.7 |
| **Madhya Pradesh** | 34.8 | 13.6 |
| **Bihar** | 31.1 | 5.2 |
| **Uttar Pradesh** | 29.5 | 7.1 |
| **Rajasthan** | 25.6 | 6.7 |
| **Tamil Nadu** | 23.6 | 7.4 |
| **Chhattisgarh** | 19.4 | 17.5 |
| **Kerala** | 15.4 | 6.9 |
| **Punjab** | 4.8 | 17.3 |
| **Goa** | 17.6 | 2.13 |

(Source: NABARD Annual Report, 2018 – 2019)

Maharashtra (37.6 percent), Telangana (37 percent), Assam (36.9 percent), Madhya Pradesh (34.8 percent) and Bihar (31.1 percent) were states with a share of the capital outlay

approximately in the range of 30%-40% of the agribusiness and its partnered areas. In total expenditure on agriculture and allied sectors, Uttar Pradesh, Rajasthan, Tamil Nadu, Chhattisgarh, Kerala and Punjab usually had small portions of capital expenditures.

**Figure 3-7: Budgetary Allocations to Agriculture**




### 3.3.7 Distribution of Agricultural Households who have taken loan

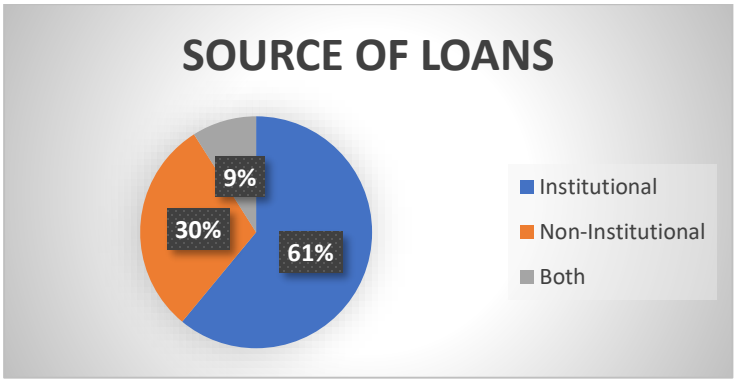
In addition, NABARD Financial Inclusion Survey (NAFIS) Report 2016-17 reported that agricultural household units use credit from sources other than banks, such as Non-Banking Financial Company/Micro Finance Institutions, financial institutions, provident funds, insurance, family members, moneylenders, landowners, etc. The graph below shows the conveyance of farm family units by form of loan source.

**Table 3-10: Distribution of Agricultural Households who have taken loan**

| Source of Loans | Percentage (%) |
|---|---|
| **Institutional** | 61 |
| **Non-Institutional** | 30 |
| **Both** | 9 |

(Source: NAFIS, 2016 – 2017)

**Figure 3-8: Sources of Loans**




As indicated by NAFIS, agricultural households preferred institutional sources to take advantage of credit, because about 61 percent of them profit from credit. In either case, a crucial proportion, for instance about 30 percent of farm households, given all, uses credit from non-institutional sources, which is a cause for concern. The reasons why institutional credit leaves 30 per cent overlooked need to be understood. The possible explanations may be that their credit request may be for use or that they may be tenant farmers, shareholders and landless employees who are unable to provide insurance coverage for institutional credit or are engaged in non-viable resource agribusiness or banks don't discover them credit commendable. Subsequently, because of the easy availability, these farmers find it helpful to borrow cash from non-institutional sources.

### 3.4 Indirect Financing Agencies to Indian Agricultural Sector

#### 3.4.1 National Co-Operative Development Corporation

The Rural Credit Survey Committee noticed the value of reuse of funds to improve credit usage. This could only be accomplished if credit arrangement was coordinated for handling stockpiling and showcasing, with the goal that the farmer would be guaranteed the most economical cost for his produce. The Committee suggested improving the co-operative credit conveyance framework and a few other institutional designs, such as nationalizing the Imperial Bank, setting up the National Co-operative Marketing and Warehousing Board (1956) and setting up the National Co-operative Development Corporation to ensure the perfect benefit of credit utilization.

The NCDC was built in 1963 by a Parliament demonstration as a special advancement association charged with planning, promoting and financing the improvement of marketing projects of co-operatives, processing and storage of agricultural products and input supply. Its help extends equally to unified agribusiness programs, viz. poultry, fishing, advancing in dairy; etc. The company had a profound impact on business development in these fields of co-operative operation, with its adaptability of approach.

In 1986-87, the NCDC implemented a structured co-operative development plan to provide budget funding to advance agribusiness and collaborating programs, as well as non-farm initiatives to benefit craftsmen and landless employees. This program was designed to reinforce the basic ties between various types of Co-operatives, organizations and overhaul the current labour and physical infrastructure in each of these organizations, like Primary Agricultural Co-operative Societies for the efficient implementation of government welfare programmes.

#### 3.4.2 National Bank for Agriculture and Rural Development (NABARD)

NABARD was founded on the suggestions of Shri. B. Shivaraman Committee (Committee for the Analysis of Institutional Credit Arrangements for Agriculture and Rural Development) on 12$^{th}$July 1982 to enact the 1981 National Bank for Agriculture and Rural Development Act. It was set up as a Development Bank Summit with a proposal to enable the credit stream for

agricultural development and change, small-scale businesses, village and cottage industries, crafts and other rural crafts. The Bank headquarters are headquartered in Mumbai (Maharashtra) and they have branches wherever all through the country. The NABARD Regional Office [RO] is headed by a Chief General Managers [CGMs] and the Head Office has a few top Chairmen such as the Executive Directors [ED], Managing Directors [MD] and the Chairperson. It has more than 336 Country District Offices, one unique cell at Srinagar. This has six educational centres in the same way.The Bank has the command to assist in all other relevant rural economic activities, advance integrated and sustainable rural development and stable rural thriving.

NABARD likewise oversees the Rural Infrastructure Development Fund (RIDF), which was set up in 1995-96. NABARD has additionally been assuming a catalytic role in miniaturized scale credit through the channel of Self-Help Groups (SHGs). The bank provides refinance to different banks for their term lending activities for the reasons of agribusiness and rural development. NABARD's initial capital was 100 crore rupees. After the adjustment of the share capital composition between the Government of India and RBI, the capital disbursed from 31 March 2013 remained at 4000 crores, with the Government of India holding 3,980 crores (99.50 percent) and the Reserve Bank of India holding 20 crores (0.50 percent). Settled up capital of NABARD stood at 4700 Crores as at 31 March 2014. (Rs 4680 crore from Government of India and 20 crore of RBI).

**Functions of NABARD:** NABARD was founded basically as an improvement bank to advance agriculture and rural development. Its key purpose is to provide refinancing, as authorised by the RBI, for rural credit disbursed by State Co-operative Banks, Regional Rural Banks and other financial institutions. The important functions of NABARD are as follows:

- Providing capital and respectively refinancing in rural areas for development and advertisement.
- Coordinate and inform the activities relating to rural credit institutions.
- Promoting agricultural science and rural development.

In addition to this pivotal role of NABARD are:

- Works as a leader of rural credit facilities activities.

- Extends aid in rural improvement issues to the country, the Indian Reserve Bank and various associations.
- Provides instructive and research administrations for banks, Co-operatives and development associations in rural areas.
- Helps state governments to achieve their goals of funding qualifying agricultural and rural development institutions.
- Acts as a controller for Co-operative Banks and Regional Rural Banks recognizable proof of exploitable possibilities under farming and different exercises accessible for improvement through bank credit.
- Refinancing banks in provincial zones for credit widening for venture and production purposes.
- Assisting Non-Governmental Organizations (NGOs) and other non-formal offices in credit progress.
- Extending formal financial administrations to the unreached rural poor by advancing a supplementary credit conveyance strategy in a cost effective way by promoting Self Help Groups (SHGs).
- Encouraging participatory watershed development in a viable manner to reform the productivity and efficiency of rain-fed agriculture;
- On-site review of co-operative banks and Regional Rural Banks (RRBs) and off-site surveillance over health of Co-operatives and RRBs.

The Commercial Banks, Co-operative Banks, Regional Rural Banks, the state government, and various Non-Governmental Organizations finance the agricultural and rural sectors. NABARD in return finance these organizations. Thus, this facility is also said as "the refinancing facility". The institutional has various types of refinance facilities. NABARD is providing various refinance facilities to different institutions.

**Table 3-11: NABARD Financial Assistance (1970-71 to 2015-16) (₹ in crores)**

| Year | No. of schemes sanctioned | Total financial assistance sanctioned | NABARD's commitment | Disbursements |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| 1970-71 | 458 | 293 | 249 | 90 |
| 1980-81 | 16574 | 46.29 | 38.6 | 22.23 |
| 1990-91 | 89513 | 231.64 | 182.99 | 143.10 |
| 1991-92 | 96219 | 261.21 | 205.36 | 163.64 |
| 2000-01 | 121097 | 712.41 | 560.32 | 508.82 |
| 2001-02 | 122058 | 787.75 | 628.58 | 575.65 |
| 2002-03 | 122555 | 869.50 | 703.89 | 649.84 |
| 2003-04 | 130181 | 952.99 | 781.28 | 725.89 |
| 2004-05 | 130342 | 1045.76 | 867.22 | 811.66 |
| 2005-06 | 130474 | 1134.42 | 953.85 | 897.88 |
| 2006-07 | 130543 | 1230.73 | 1041.83 | 985.83 |
| 2007-08 | 130564 | 1327.77 | 1132.29 | 1076.29 |
| 2008-09 | 130592 | 1443.98 | 1237.64 | 1181.64 |
| 2009-10 | 130595 | 1567.06 | 1357.73 | 1301.73 |
| 2010-11 | 130598 | 1714.44 | 1492.59 | 1436.59 |
| 2011-12 | 130600 | 1872.02 | 1646.81 | 1590.81 |
| 2012-13 | 130601 | 2052.64 | 1823.55 | 1767.55 |
| 2013-14 | 130607 | 2228.76 | 1981.76 | 1856.25 |
| 2014-15 | 130614 | 2395.24 | 2265.76 | 2175.59 |
| 2015-16 | 130621 | 2590.47 | 2417.23 | 2312.34 |

(Source: Reserve Bank of India, 2016)

Table 3-11 provides the facts relating to NABARD's financial assistance for agriculture and allied activities from 1970-71 to 2015-16 in India. NABARD's total disbursement is increased steeply from 90 crores in 1970-71 to 143.10 crore in 1990-91, the increased is 159 times in pre-reform period. In the post-reform period, there is an increase from ₹ 163.64 crores in 1991-92 to ₹ 2312.34 crore in 2015-16, the increase is 14.13 times.

### 3.4.3 National Co-Operative Bank of India:

The establishment of India's National Co-operative Bank was the result of a goal set by the Trustees' Co-operation Board (1965), which was led by Shri. Ram Niwas Mirdha. It was founded with the point of going around as the national apex bank for all the states' co-operative credit system. The mission drawn by the board primarily was to direct the

refinancing provided by the RBI and other respected financing given by the central government through its institution to the Co-operatives.

The All India Conference of Central Co-operative Banks (1978), which was organized by the National Federation of State Co-operative Banks, asked the legislature to create a National Bank for Agriculture and Co-operation. The Eighth Indian Co-operative Congress coordinated India's National Co-operative Union to make fundamental mutual progress with the National Federation of State Co-operative Banks and Central Co-operative Banks in establishing the National Co-operative Bank.

### 3.5 Innovations in Development of Agricultural Credit

#### 3.5.1. Kisan Credit Card (KCC) Scheme:

In 1998-99, the Kisan Credit Card Program was launched as a creative plan to encourage access to short-term credit by farmers - 27Commercial Banks, 378 District Central Co-usable Banks / State Corporation Banks and 196 Local Rural Banks across the nation took on prominence and execution. The Kisan Credit Card (KCC) scheme aimed at providing sufficient and convenient credit support from the banking framework in a solitary window with adaptable and simplified technique for farmers for their general recognition of prerequisites, such as crop cultivation, post-harvest costs, product display, farm resource maintenance and agricultural partner exercises. In addition, the needs of agricultural households for use. According to 2019 results, there were complete 66.2 million operating KCC accounts, of which the shrewd portion of bank classification appears in the accompanying outline:

**Table 3-12: Share in Operative KCC's**

| Types of Bank | Percent (%) |
|---|---|
| **Commercial Banks** | 36 |
| **Co-operative Banks** | 46 |
| **Regional Rural Banks** | 18 |

(Source: RBI and NABARD, 2018-2019)

*Figure 3.9 Share in Operative KCC's*

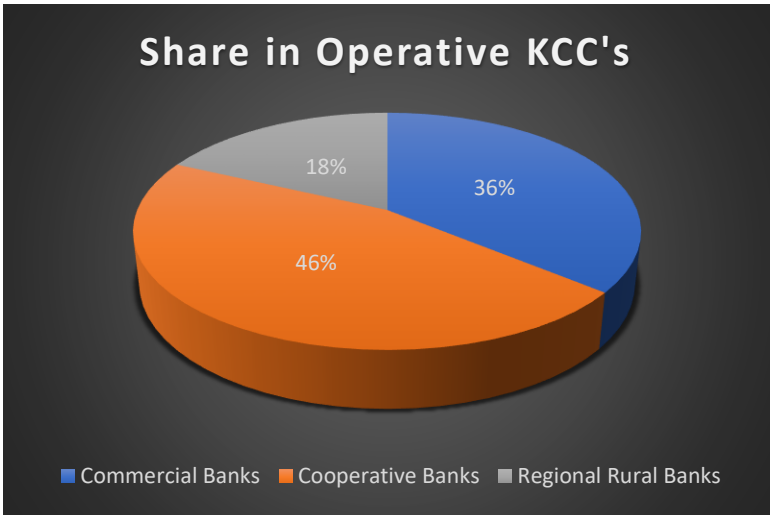
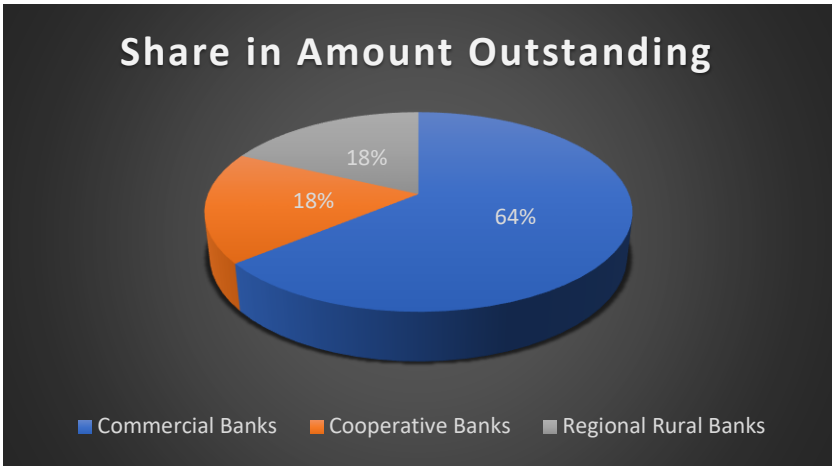



**Table 3-13: Share in Amount Outstanding in KCC**

| Types of Bank | Percent (%) |
|---|---|
| **Commercial Banks** | 64 |
| **Co-operative Banks** | 18 |
| **Regional Rural Banks** | 18 |

(Source: RBI and NABARD, 2018-2019)

*Figure 3-10 Share in Amount Outstanding in KCC's*



In order to increase awareness of the scheme so that all eligible agricultural farmers are protected by the program and to encourage cardholders to use the cash credit facility in an even more ideal and efficient manner, NABARD has designed a model scheme to channel its monetary assistance from its Co-operative Development Fund (CDF) using a one-time processgrant to all SCBs and DCCBs, with a budget allotment of Rs.6 crore in the year 2007-08. Different banks have operationalized the budget plan for individual protection cover for accidental death or permanent disability for KCC holders (up to a maximum of Rs.50,000 and Rs.25,000 respectively).

### 3.5.2 Self Help Group – Bank Linkage Model:

Self help Group - Bank Linkage Programme (SHG-BLP) propelled in 1992 was an innovative outfitting the co-operative energy of adaptability of an informal framework with the quality and moderateness of a conventional system. The SHG-BLP model has the accompanying three fundamental highlights:

- Acknowledgment of informal groups as customers of banks – both deposit and credit linkage.
- Presentation of guarantee free lending.
- Consent to lend to groups without particular of purpose/activity/venture.

The policy environment bolstered this savings drove and initiated door step credit conveyance instrument based on social security. The accompanying graph gives a record of the accomplishment of SHG model.

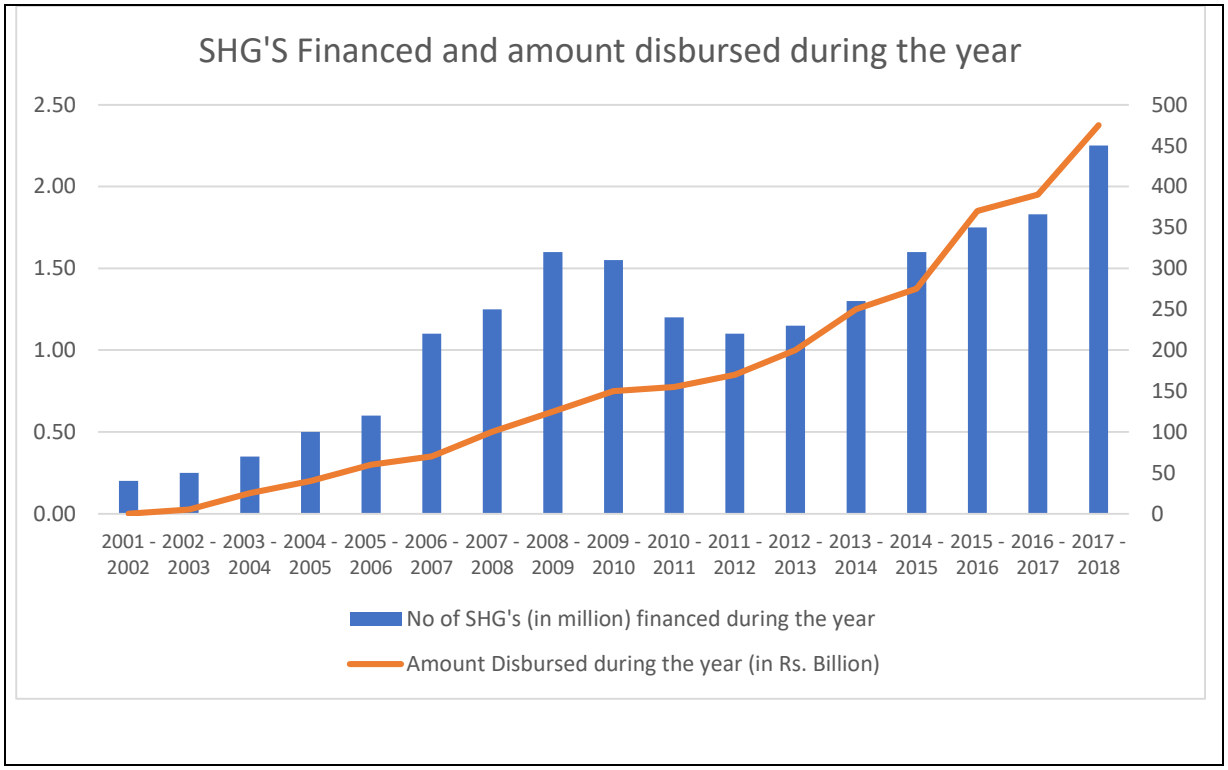
**Table 3-14: SHG's Financed and Amount Disbursed**

| Year | Number of SHG's (in million) financed during the year | Amount Disbursed during the year (in ₹ Billion) |
|---|---|---|
| **2001 - 2002** | 0.20 | 0.05 |
| **2002 - 2003** | 0.25 | 5 |
| **2003 - 2004** | 0.35 | 25 |
| **2004 - 2005** | 0.50 | 40 |
| **2005 - 2006** | 0.60 | 60 |

| | | |
|---|---|---|
| **2006 - 2007** | 1.10 | 70 |
| **2007 - 2008** | 1.25 | 100 |
| **2008 - 2009** | 1.60 | 125 |
| **2009 - 2010** | 1.55 | 150 |
| **2010 - 2011** | 1.20 | 155 |
| **2011 - 2012** | 1.10 | 170 |
| **2012 - 2013** | 1.15 | 200 |
| **2013 - 2014** | 1.30 | 250 |
| **2014 - 2015** | 1.60 | 275 |
| **2015 - 2016** | 1.75 | 370 |
| **2016 - 2017** | 1.83 | 390 |
| **2017 - 2018** | 2.25 | 475 |

(Source: Handbook of Statistics of Indian Economy, 2017 – 2018)

***Figure 3-11 SHG's Financed and Amount Disbursed***



### 3.5.3 Deendayal Antyodaya Yojna – National Rural Livelihood Mission (DAY– NRLM):

In June 2011, the flagship poverty alleviation program DAY-NRLM was introduced by the Government of India's Ministry of Rural Development (MoRD) as a revised version of Swarna Jayanti Gram Swarozgar Yojna (SJGSY). NRLM has the order to touch 100 million rural poor in 0.6 million cities across the nation by self-guided Self-Help Groups (SHGs) and assist them for aggregates of livelihoods in a timeframe of 8-10 years.

According to the NABARD: Microfinance status in India 2017-18 Study, SHGs are being supported by 100 Scheduled Banks, 300 DCCBs, 27 State Rural Livelihood Missions and more than 5000 NGOs. The system owes this degree of inclusion to its ability to mobilize rural populations, impose on the machinery of government, and attract offices of growth of all hues.

This programme offers for those at the pyramid base a strong intervention of economic enabling and financial consideration. Since then, a demonstrated stage considered at first to extend the activities of the banking administrations among the poor has progressed into a plan to advance occupations and alleviate poverty.

### 3.5.4 Farmer Producer Organisations (FPO's):

Small holders regularly experience the ill effects of helpless access to quality inputs, institutional credit and other resources like storage, organised markets, present day farming innovations and so forth making small holding-based agriculture unviable.In a fragmented land holding model, there is a characteristic shortcoming because from one point of view, overheads on goods and services purchased are exceedingly high, while on the other hand, production stays in the marketplace are limited by the extraordinarily low rates of individual marketable surplus.This leads to higher cost of production and lower appreciation of interest, thus undermining the viability of cultivation as an economic activity. Similarly, divided land ownership restricts motorisation and economies of scale in agricultural production.

Collectivizing farmers into Producer Organizations (PO's) may be able to overcome the challenges faced by small and medium-sized farmers to break farmers' reliance on intermediaries through improved haggling power.The benefits of Farmers' Collectives include

lower production and marketing costs, exposure to emerging technology, increased exposure to storage, effective supply chain management, easier access to securities-free financial resources and support services from other service providers.Efforts have been made over the past decade to establish and improve POs (the primary rural producers for both farm and non-farm exercises) and their place in the mainstream value chains. The Government and NABARD have introduced a number of steps to advance and strengthen FPOs.

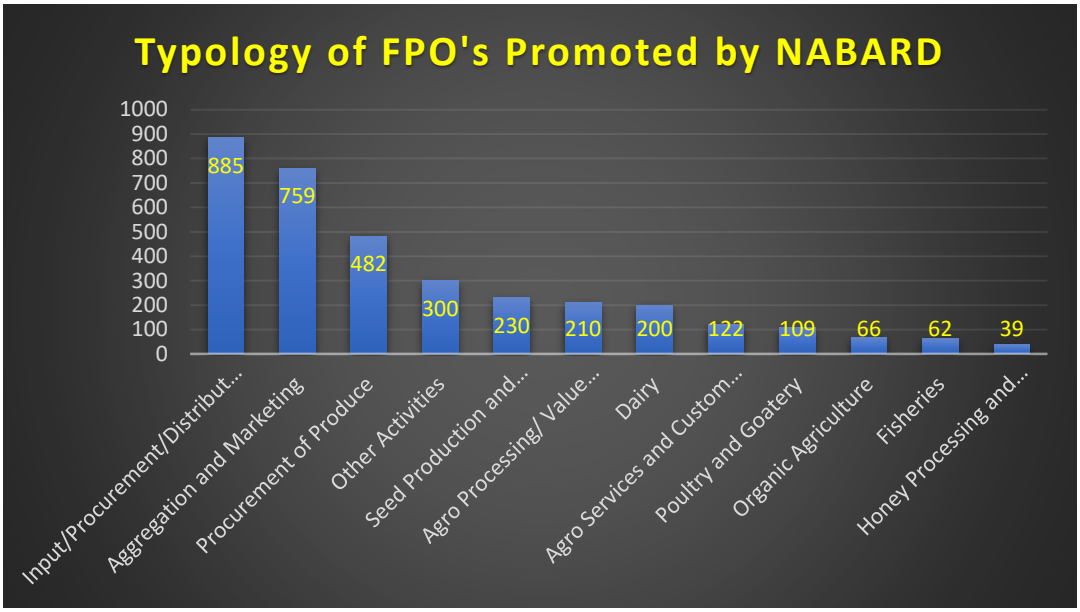
Be that as it may, NABARD has detailed that it has aggregately advanced/upheld more than 3000 FPOs across states. The typology of the FPOs advanced by NABARD as on March 31, 2019 is appeared in the accompanying diagram.

**Table 3-15: Typology of FPO's promoted by NABARD**

| FPO's PROMOTED | COUNT |
|---|---|
| **Input/Procurement/Distribution** | 885 |
| **Aggregation and Marketing** | 759 |
| **Procurement of Produce** | 482 |
| **Other Activities** | 300 |
| **Seed Production and Marketing** | 230 |
| **Agro Processing/ Value Addition** | 210 |
| **Dairy** | 200 |
| **Agro Services and Custom hiring** | 122 |
| **Poultry** | 109 |
| **Organic Agriculture** | 66 |
| **Fisheries** | 62 |
| **Honey Processing and Marketing** | 39 |

(Source: NABARD)

**Figure 3-12: Typology of FPO's promoted by NABARD**




### 3.6 Non – Institutional Sector

The Non-institutional division incorporates indigenous bankers, moneylenders, Nidhis, chit funds, and so forth.

**3.6.1 Indigenous Bankers:** There are two kinds of indigenous bankers-

i) Professionals who incorporate multanis, shroffs, chettiars, marvaris and others;

ii) Non-professionals including agriculturists, retail traders, commission agents and others indigenous bankers receive deposits and deals in hundis.

**3.6.2 Moneylenders:** There are two sorts of moneylenders:

i) Professional- Proficient moneylenders have profit as their primary thought process. They don't receive deposits. Their primary capacity is lending cash. The interest rates charged varies from 12 percent to 37.5 percent and it varies as indicated by the nature of securities vowed with them.

ii) Non-proficient- The non-professional moneylenders incorporate landowners, traders, agriculturists, and others (companions, family members, beneficiaries, widows, and so on).

Moneylending is just an auxiliary movement to them. They give short term loans for utilization, social and religious functions and production necessities, and so forth. By and large credits are offered on personal security.

**3.6.3 Nidhis:**They allude to the mutual loan affiliations.

**3.6.4 Chit Funds:**Chit reserves are intentional relationship for activating rural investment funds.

### 3.7 Production of Major Agricultural Crops

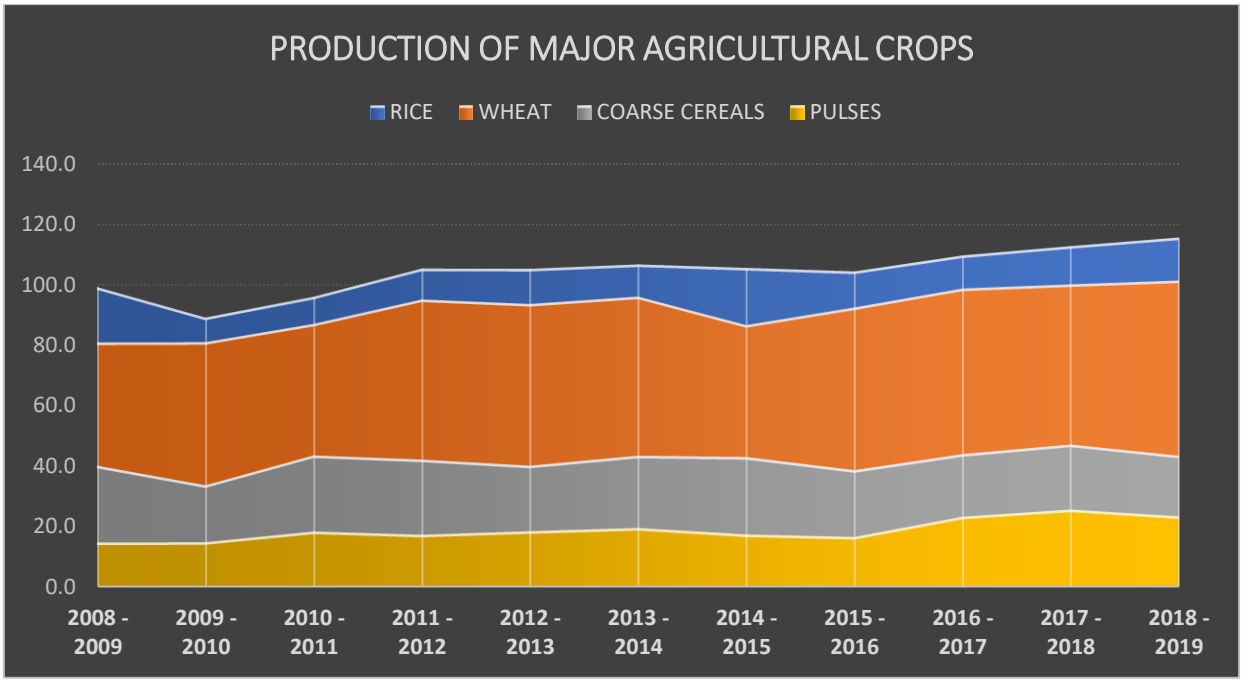
Total food grain production in 2018–19 was expected to increase by 1.4 percent to 283.4 million tons ( MT) over the previous year. Rice production was predicted to reach by 3.7 percent to 115.6 MT, while wheat production was expected to rise by 2.6 percent to 101.2 MT. The overall production of food grain rose from 234.5 MT (2008–09) to 285 MT (2017–18) 2.12% Annual Compound Growth Rate (CAGR).

**Table 3-16: Production of Major Agricultural Crops**

| Year | Rice | Wheat | Coarse Cereals | Pulses | Total Food grains |
|---|---|---|---|---|---|
| **2008 - 2009** | 99.2 | 80.7 | 40.0 | 14.6 | 234.5 |
| **2009 - 2010** | 89.1 | 80.8 | 33.6 | 14.7 | 218.2 |
| **2010 - 2011** | 96.0 | 86.9 | 43.4 | 18.2 | 244.5 |
| **2011 - 2012** | 105.3 | 94.9 | 42.0 | 17.1 | 259.3 |
| **2012 - 2013** | 105.2 | 93.5 | 40.0 | 18.3 | 257.0 |
| **2013 - 2014** | 106.7 | 95.9 | 43.3 | 19.3 | 265.2 |
| **2014 - 2015** | 105.5 | 86.5 | 42.9 | 17.2 | 252.1 |
| **2015 - 2016** | 104.4 | 92.3 | 38.5 | 16.4 | 251.6 |
| **2016 - 2017** | 109.7 | 98.5 | 43.8 | 23.1 | 275.1 |
| **2017 - 2018** | 112.8 | 99.9 | 47.0 | 25.4 | 285.0 |
| **2018 - 2019** | 115.6 | 101.2 | 43.3 | 23.2 | 283.4 |

(Source: NABARD)

**Figure 3-13: Production of Major Agricultural Crops**




### 3.8 Institutional Credit to Agriculture and Allied Sectors

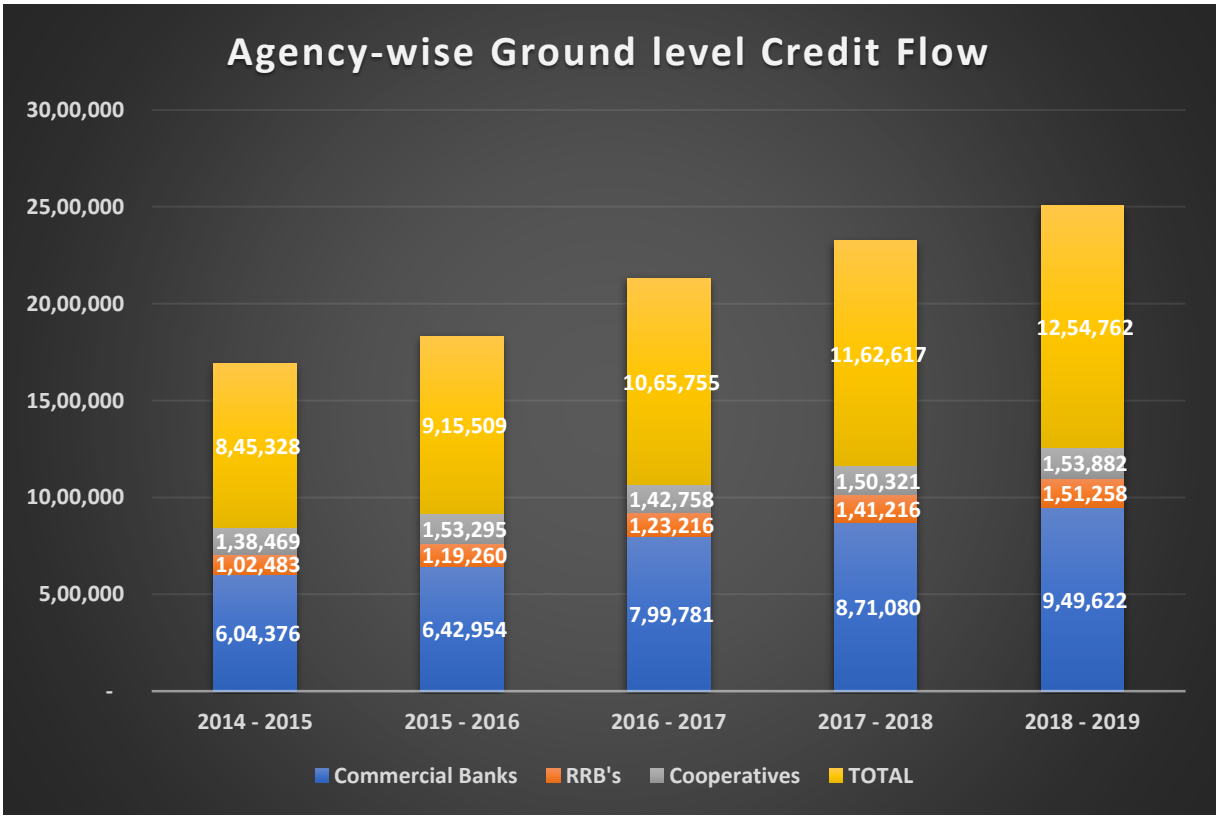
In the 2018–19 fiscal year,banks disbursed a total of Rs.12.55 lakh crore in ground-level loans to agriculture (farming and related operations, agri-infrastructure, and ancillary operations), exceeding the annual target of Rs.111 lakh crore. Commercial Banks (76 per cent) tend to dominate agricultural credit disbursement. The share of Regional Rural Banks (RRBs) remained constant at 12 percent, while Co-operative Banks slowly lost their share of credit flow to Commercial Banks and decreased over the years to 12 percent in 2018–19.

**Table 3-17: Agency Wise Distribution**

| AGENCY | 2014 - 2015 | 2015 - 2016 | 2016 - 2017 | 2017 - 2018 | 2018 - 2019 |
|---|---|---|---|---|---|
| **Commercial Banks** | 6,04,376 | 6,42,954 | 7,99,781 | 8,71,080 | 9,49,622 |
| **RRB's** | 1,02,483 | 1,19,260 | 1,23,216 | 1,41,216 | 1,51,258 |
| **Co-operatives** | 1,38,469 | 1,53,295 | 1,42,758 | 1,50,321 | 1,53,882 |
| **TOTAL** | 8,45,328 | 9,15,509 | 10,65,755 | 11,62,617 | 12,54,762 |

(Source: NABARD, 2019)

**Figure 3-14: Agency-wise Groung level Credit Flow**




Agricultural credit flow has risen by 15.1 percent at CAGR over the past decade (2008–09 to 2018–19), from some 3.0 lakh crore to some 12.55 lakh crore. Next, CAGR The term loan and crop loan contributed respectively to 18.9 percent and 13.4 percent.

### 3.9 Goa State Profile

**Figure 3-15: Goa Map**


(Source: pinterest.com)

On 30th May 1987 Goa accomplished statehood. Goa was incorporated as twenty-fifth Indian territory. Goa state has two districts to be unique to North Goa, which is headquartered at Panaji and South Goa is headquartered at Margao . Goa is a state in India within the coastal region of western India known as the Konkan.It is bounded to the north by Maharashtra and to the east and south by Karnataka, with the Arab Sea forming its western coast. It is the smallest state by region in India and the fourth smallest by population.

Goa is one of the nation's dynamic states with a predominantly managed economy contributing about 63 per cent of the state's all-out GSDP. The South Goa district's main economic activities are in a particular order the travel industry, fishing and agriculture.Goa has the highest per capita GDP of all Indian states, which is more than two and a half times that of the country. The "Eleventh Finance Commission" named it as the best-placed state for

its infrastructure and rated by the National Commission on population, based on the 12 Indicators, on top for the best quality of life in India. (India 's Finance commission reports).

Panaji is the state's capital, while Vasco da Gama is its biggest city. The noteworthy city of Margao still shows the cultural influence of the Portuguese, who previously arrived in the mid sixteenth century as traders and conquered it before long. Goa is an ancient Portuguese territory; which existed for about 450 years before India annexed it in 1961.

### 3.9.1 History

Early Goan culture witnessed drastic change when Indo-Aryan and Dravidian transients integrated with the local inhabitants, forming the base of early Goan culture.Goa was a part of the Maurya Empire during the third century BC, ruled by the Buddhist sovereign, Ashoka of Magadha. The Buddhist priests in Goa set up the structure for Buddhism. Goa was ruled by the Bhojas of Goa between the second century BC and the sixth century A.D.

Chutus of Karwar likewise administered many parts as feudatories of the Satavahanas of Kolhapur (second century BC to the second century AD), Western Kshatrapas (around 150 AD), Abhiras of Western Maharashtra, Bhojas of the Yadav factions of Gujarat and Konkan Mauryas as feudatories of the Kalachuris.The rule later went to Badami's Chalukyas who controlled it from 578 AD to 753 AD and later between 753 AD and 963 AD by the Rashtrakutas of Malkhed.Throughout the next barely hundreds of years, Goa was progressively governed by the Kadambas as the feudatories of the Chalukyas of Kalyani. In Goa they disparaged Jainism.

Goa went under Delhi Sultanate administration in 1312. The hand of the Kingdom on the area was weak and was forced to give it to Harihara I of the Vijayanagara Empire by 1370. The rulers of the Vijayanagara clutched the region until 1469, when the Bahmani rulers of Gulbarga seized it.After that dynasty disintegrated, the region fell under the control of the Adil Shahis of Bijapur, who built up as their auxiliary capital the city referred to under the Portuguese as Velha Goa (or Old Goa).

In 1510, with the help of a local ally, Timayya, the Portuguese defeated the ruling Bijapur king Yousuf Adil Shah. They founded an ongoing settlement in Velha, Goa. It was the

beginning of Portuguese rule in Goa which would go on for four and a half centuries, until it was annexed in 1961.The Portuguese moved the Capital from Velha Goa to Panaji in 1843. By the mid-eighteenth century, Portuguese Goa had extended to the vast majority of the state boundaries of today. All the while the Portuguese lost rest possessions in India until their fringes stabilized and formed the State of Portuguese India, the largest of which was Goa.

When India gained independence from the British in 1947, Goa stated surrender to Indiaon the Indian sub-mainland and Portuguese declined to bargain with its Indian enclaves on their rights. The Indian Army began military tasks on 19$^{th}$ December, 1961 with 'Operation Vijay' leading to the incorporation of Goa, Daman, and Diu into the Indian union.Goa was sorted as a centrally controlled Union Territory of India, alongside Daman and Diu. The territory of the union was divided on 30$^{th}$May 1987 and Goa became the twenty-fifth state of India, with Daman and Diu remaining a territory of the Union.

### 3.9.2 Geographical Features

Goa envelops an area of 3,702 km2 (1,429 sq mi). It lies between 14 ° 53′54″ N and 15 ° 40′00″ N latitudes, and 73 ° 40′3″ E and 74 ° 20′13″ E longitudes.Goa is a part of the waterfront country known as the 'Konkan' and is an rising escarpment ascending to the mountain range of the Western Ghats, isolating it from the Deccan Plateau. The Sonsogor is the highest point and has a height of1,167 meters (3,829 ft). Goa has a coastline of 101 km (63 mi).

Goa's seven significant rivers are the Zuari, Mandovi, Terekhol, Chapora, Galgibag, Kumbarjua trench, Talpona and the Sal. River Zuari and Mandovi are the most significant streams, interspaced by the Kumbarjua trench, forming a significant estuarine complex. These rivers are taken care of by the virtue of Southwest monsoon rain and their basin covers 69% of the state's geological territory. These rivers are probably the busiest in India.

Goa has in excess of 40 estuarines, eight marines and some 90 islands on the coast. The total length of rivers Goa can cross is 253 km (157 mi). Goa has over 300 ancient water-tanks built during the Kadamba dynasty rule and over 100 therapeutic springs. A standout among other daily harbors in South Asia is the Mormugao harbor on the mouth of the Zuari River.Goa

primarily has three usual divisions to be topographically unique to the Low terrains, the Plateaus and the Mountain Plain.

Beach front lines are for the most part the lowland area. It is some 110 kilometers long.There are several beaches along the coast nearby. Accordingly, numerous streams stream east to east here this land is rich in territory. That area is densely populated.

The level locale is located between the eastern mountain district and the western swamps. Tallness of the land varies from 30 meters to 100 metres. Essentially a lot of laterite stone is found in this area. This is used for the building of the buildings. A part of the level land is named Goa headland. These headlands are based upon beacons.

### 3.9.3 Flora and Fauna

The distribution of forest in Goa is diverse. The forest claimed by the government is estimated at 1224.38 $km^2$ while it is granted as 200 $km^2$ for private use. The larger portion of the state forest is found in the state's inland eastern areas. The Western Ghats, which structure the vast majority of eastern Goa, have been perceived globally as one of the world's biodiversity hotspots. Goa was contrasted with the Amazon and Congo basins in the February 1999 issue of National Geographic Magazine for its rich tropical biodiversity. The state creature of Goa is the Gaur, the state winged bird is the Ruby Throated Yellow Bulbul, a variety of Black-crested Bulbul and the state tree is the Asan.

Bamboo sticks, Maratha barks, chillar barks and the bhirand are valuable forest products. Given the elevated areas, coconut trees are omnipresent and are accessible in nearly all regions of Goa. There is a huge number of deciduous vegetation which consists of teak, salt, cashew and mango trees. Jackfruits, mangos, pineapples and blackberries are used in natural products. Foxes, wild hogs, and migratory birds can be found in the Goa wilderness. The avifauna consists of kingfishers, mynas, and parrots. Furthermore, different kinds of fish are harvested off Goa 's shore and in its rivers. A part of the pool catch is composed of crabs, lobsters, shrimps, jellyfish, shellfish and catfish. Goa also has a large snake population which is responsible for keeping the rodent population in control. Goa has several well-known National Parks, including the prestigious Salim Ali bird Sanctuary.

### 3.9.4 Climate and Rainfall

Goa has a hot atmosphere as it exists in the tropics. There is no clear shift to much in the atmosphere consistently. Temperature level is not high every day. In the months of June, July, August and September Goa gets rains. June-September is here for the Monsoon season. In the mountain area the precipitation is more than in the coastal region. Goa gets substantial rain from the winds of the South-West Monsoon. Goa has a cool atmosphere in October-January then months. From February it starts getting hotter and it stays until May. Goa experiences a dry tropical climate with humidity. Summer temperatures range between 24°C and 36°C. The mercury swings between 21°C and 30°C in winter.

### 3.9.5 Soil

Goa's soils are typically lateritic (81%). They are sandy topsoil, depleted and exceptionally acidic (5.5 to 6.5 pH) to residue soil in texture. These soils have moderate organic carbon and are poor in potash. About 11 per cent of the soils along the seaside and estuaries are sandy to sandy soils. They incorporate the Ker grounds and the front seashore. The remaining 8 per cent of the soil in nature are alluvial. The Khazans and the connecting zones have alluvial soil with high tables of water and are dependent on saline water inundation. Most of Goa's soil cover consists of wealthy laterites in ferric-aluminium oxides and colour reddish. The soil is mostly alluvial and loamy further inland and along the banks of the river.

**Figure 3-16: Soils in Goa**

(Source: ccari.res.in)

The soil is plentiful in minerals and humus, good for agribusiness in this way. Probably the oldest rocks in the Indian subcontinent are to be found in Goa between Molemand Anmod on

Goa's border with Karnataka. The rocks are known as Trondjemeitic Gneiss, believed to be 3,600 million years old, dated by isotopic rubidium dating.

### 3.9.6 Land Types

Goa has mainly three natural divisions of Land types: Khazan Land, Ker Land and Morod Land

**3.9.6.i. Khazan Land:** This consists of low-lying areas in the estuaries, ten underneath sea level. This land is used for cultivation of monsoon paddy followed by Rabi Vegetables. Additionally, pisciculture is performed in restricted regions by monitoring water progression.

**3.9.6.ii. Ker Land:** It is flat land above sea level at low elevation and has a high water table. Arable, sandy to sandy loams fir soils by irrigation for multiple cropping. These areas are cultivated with Rabi paddy crops, pulses, etc.

**3.9.6.iii. Morod Land:** It refers to a suitable upland or terraced field for horticultural / plant crops or single rain-fed rice crops.

### 3.9.7 Agriculture

At the time of liberation, around 70 per cent of the population was associated with agriculture as their full-time occupation. Paddy was the State's transcendent crop then followed by Cashew and Coconut. The cropping design is evolving and we have Cashew nut today, which is being grown in nearly 55,000 ha with paddy covering 31,000 ha. Because of the better returns, lower risk and resistance of these yields for low maintenance cultivation, the production of agricultural harvests is gaining significance.

### 3.9.8 Literacy Rate

Goa's literacy rate has seen an upward trend and stands at 88.70 per cent as per population census for 2016. For this, male literacy stands at 92.65%, while female literacy stands at 84.66%.

### 3.9.9 Availability of Mineral Resources

Goa state is endowed with mineral wealth. Iron ore, manganese ore, bauxite are commercially important minerals. There are also small minerals, such as basalt, laterite stones and rubbles, river rocks, murrumetc.

### 3.9.10 Population and Economic Activity

The absolute population of the state is 14,58,545 according to the 2011 Census which includes 8,18,008 from North Goa and 6,40,537 from South Goa. From the contents of the table below, it is clear that the state has a working population of 5,77,248, comprising 39.58 percent of the total workforce (main employees in addition to minor employees). This means that the remaining 60.42 per cent comprises young people and older people. This also shows how agricultural workers compose just 2.26 percent of main employees hired by house hold industries. Together, the farm workers and cultivators make up 4.04 per cent of the overall workforce. House hold industries contribute 2.55 percent while the state accounts for 87.38 percent of other merchants.

**Table 3-18: Occupational distribution of work-force as per 2011 Census– Goa**

**(in nos.)**

| S.NO | Occupation | North Goa | South Goa | Goa |
|---|---|---|---|---|
| **I** | **Main workers** | 269437 | 206616 | 476053 |
| A | Cultivators | 11154 | 12908 | 24062 |
| B | Agricultural labour | 5243 | 5515 | 10758 |
| C | House hold Industries | 6514 | 4266 | 10780 |
| D | Other traders | 246526 | 183927 | 430453 |
| **II** | **Marginal workers** | 58221 | 42974 | 101195 |
| A | Marginal Cultivators | 4248 | 3044 | 7292 |
| B | Marginal Agricultural labor | 8877 | 7125 | 16002 |

| | | | | |
|---|---|---|---|---|
| C | Marginal Household Industries | 2348 | 1580 | 3928 |
| D | Marginal Other traders | 42748 | 31225 | 73973 |
| **III** | **Non-workers** | 490350 | 390947 | 881297 |
| | **Total Population** | **818008** | **640537** | **1458545** |

(Source: Government of Goa, Census Report 2011)

### 3.9.11 Livestock and Poultry Population

Livestock is closely associated to agricultural production. Cultivator households fundamentally, by convention, keep up some domesticated animals for their residential necessities, dairy items and for carrying on agricultural tasks. Subsequently, there is a absolute connection among agricultural and livestock economy in India. Table 3.17 gives the insights of livestock and poultry populace and their composition in the territory of Goa.

**Table 3-19: Livestock and Poultry Population (in nos.)**

| Parameters | North Goa | South Goa | Total |
|---|---|---|---|
| **Cattle** | | | |
| **Below 1 year** | 7048 | 5340 | 12388 |
| **1 - 3 year** | 6689 | 6009 | 12698 |
| **Above 3 years** | 23679 | 21782 | 45461 |
| **Buffaloes** | | | |
| **Below 1 year** | 4826 | 2986 | 7812 |
| **1 - 3 year** | 3885 | 2857 | 6742 |
| **Above 3 years** | 13001 | 8561 | 21562 |
| **Sheep** | 116 | 6 | 122 |
| **Goat** | 5629 | 4107 | 9736 |
| **Ruminant Livestock Unit (RLU)** | 38331 | 30964 | 69295 |
| **Pigs** | 13149 | 47523 | 60672 |
| **Broilers** | 750000 | 300000 | 1050000 |
| **Layers** | 50000 | 25000 | 75000 |

(Source: researchgate.in)

Fundamentally, there is a huge distinction between Cattle population and Buffalo. They are implied basically for breeding and agricultural activities. Male cattle are preferred to cultivation activities particularly in the development of commercial and dry land crops. Female buffaloes are raised for dairy which is ending up being profoundly profitable.

Sheep's have established invalid extent in the State of Goa. Goat and pig population do exist in the state. Poultry, both domestic and commercial is turning into a significant non-farm business endeavour because of a growing business sector for chicken and eggs. The poultry population of the State is lower than the population proportion inferring a shrouded potential for development in future. Poultry has become a significant non-farm business venture.

### 3.9.12 Land Utilization

Distribution of geographical area under different uses is a significant indicator of the effective use of land for various purposes. The total geographical area of the state is about

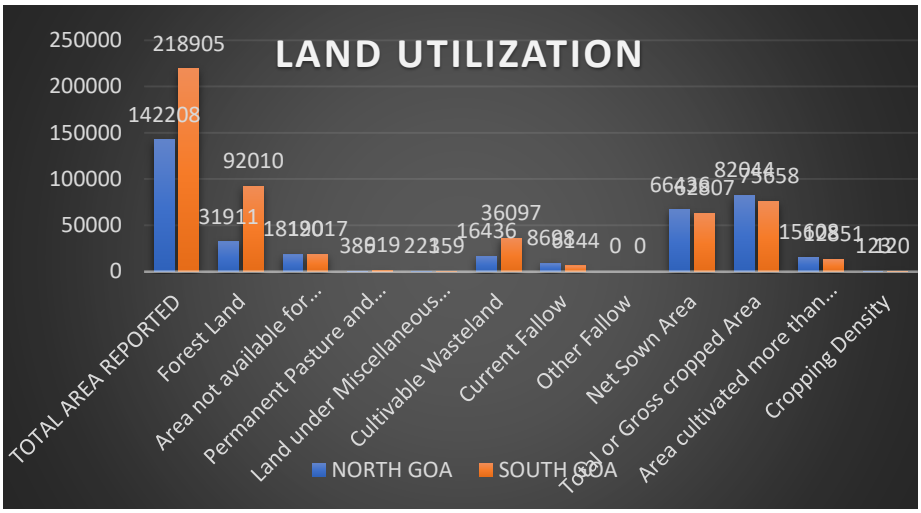
3,61,113 hectares. Details of land utilization pattern are shown in Table 3.18 with regard to North Goa and South Goa.

**Table 3-20: Land Utilization in Goa**

| Land Utilization | North Goa (Ha) | South Goa (Ha) |
|---|---|---|
| **Total Area Reported** | 142208 | 218905 |
| **Forest Land** | 31911 | 92010 |
| **Area not available for Cultivation** | 18120 | 19017 |
| **Permanent Pasture and Grazing land** | 386 | 919 |
| **Land under Miscellaneous Tree crops** | 221 | 359 |
| **Cultivable Wasteland** | 16436 | 36097 |
| **Current Fallow** | 8698 | 6144 |
| **Other Fallow** | 0 | 0 |
| **Net Sown Area** | 66436 | 62807 |
| **Total or Gross cropped Area** | 82044 | 75658 |
| **Area cultivated more than once** | 15608 | 12851 |
| **Cropping Density** | 123 | 120 |

(Source: State Focus Paper, Goa 2016 – 2017)

**Figure 3-17: Land Utilization**




### 3.9.13 Distribution of Operational Holdings

The crucial factors in agriculture like land, its ownership and management determine the state of agricultural prosperity. Table 3.19denotes number of operational holdings varies in each census

differently. This was mainly because of types of assistance given to farmers, subsidiary occupations available, etc.

**Table: 3-21: Classifications of Holdings**

| Ha. | Nos. | % of Total | Ha. | % of Total |
|---|---|---|---|---|
| **< = 1 Ha.** | 59900 | 76.78 | 28103 | 31.58 |
| **> 1 to < = 2 Ha.** | 9817 | 12.58 | 17591 | 19.77 |
| **> 2 Ha.** | 8303 | 10.64 | 43300 | 48.65 |

(Source: State Focus Paper 2016 – 2017)

The data in the table 3.21 gives a picture of a large proportion of tiny holdings surrounding a few capitalist farms, which by itself is an index of semi-feudalism on the one hand and penetration of capitalist agriculture on the other.The table 3.21 depicts the numbers related to holdings for small farmers which is 59900 in number and 28103 in Area (Ha). For marginal farmers the count is 9817 Holdings in number and 17591 in Area (Ha). Large farmers constitute 8303 in holdings and 43300 in Area (Ha).

**Figure 3-18: Classification of Holdings**

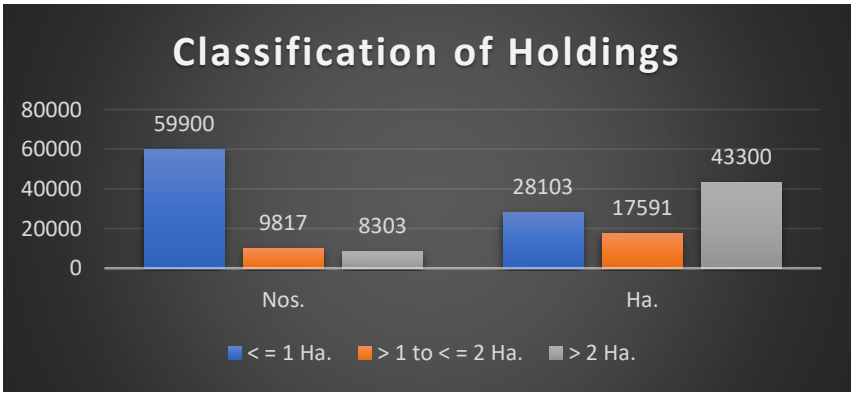
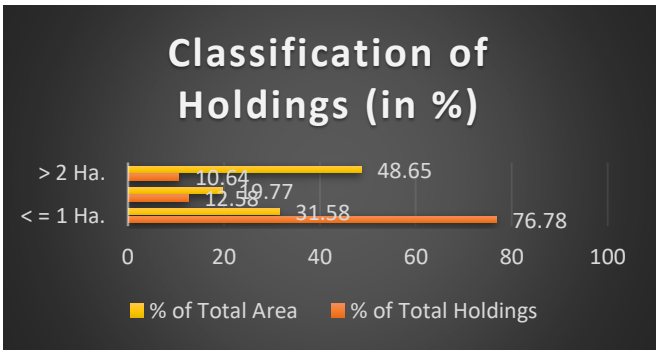



**Figure 3-19: Classification of Holdings (in %)**



The marginal farmers whose holdings are very small with less than one-hectare account for 76.78 % in holdings and 31.58 % in area according to latest reports.With regard to small farmers who held more than one-hectare but less than two hectares' accounts for 12.58 % in holdings and 19.77 % in area. The table also depicts that the top land holding size i.e. more than two hectares held by Large Farmers account for 10.64 % in holdings and 48.65 % in area.

### 3.9.14 Cropping Pattern and Production of Principal Crops

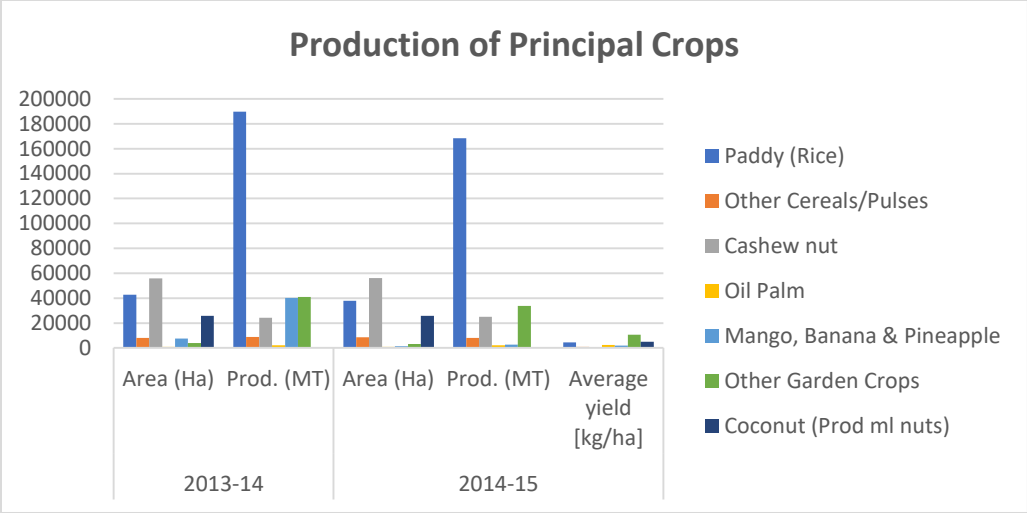
Cropping pattern is an element of a few variables and characteristic enrichment, for example-geographical, geological, climatic, precipitation, urbanization, soil conditions, land tenure and business. Likewise, the relative prices of agricultural products and production methods would generally have an effect on crop design. The region under different yields during 2013-2014 and 2014-2015 is appeared in table 3.22. The information outfitted in table shows that the paddy and cashew nuts are the significant harvests developed in the state.

**Table 3-22: Production of Principal Crops**

| Sr. No. | Crop | 2013-14 | | 2014-15 | | Average yield [kg/ha] |
|---|---|---|---|---|---|---|
| | | Area (Ha) | Prod. (MT) | Area (Ha) | Prod. (MT) | |
| **1.** | **Paddy (Rice)** | 42820 | 189760 | 37990 | 168334 | 4431 |
| **2.** | **Other Cereals/Pulses** | 8100 | 8926 | 8563 | 8074 | 944 |
| **3.** | **Cashew nut** | 55936 | 24332 | 56079 | 25011 | 446 |
| **4.** | **Oil Palm** | 839 | 2071 | 834 | 2055 | 2460 |
| **5.** | **Mango, Banana & Pineapple** | 7438 | 40152 | 1480 | 2715 | 1835 |
| **6.** | **Other Garden Crops** | 3839 | 41039 | 3165 | 33754 | 10665 |
| **7.** | **Coconut (Prod ml nuts)** | 25750 | 128.15 | 25786 | 127.8 m nuts | 4955 |

(Source: Directorate of Agriculture, Goa)

**Figure 3-20: Productions of Principal Crops**




Paddy crop is transcendent by and large varying yields as it has involved the first and significant segment of cropped area and thus tends to be considered as the state's major irrigated harvest. Cashew nut occupied the second place as it covered 55,936 hectares in the year 2013-14 with an increase of 56,079 hectares in 2014-15.

In addition, coconut production had expanded. Often cultivated are nursery crops (jackfruit, papaya, guava, custard apple, bullock's heart, cucumber, lady's finger, red amaranth, cluster beans, radish, eggplant, kokum, black pepper, nutmeg, chilly, cinnamon, turmeric, clove, marigold, jasmine, orchid, etc.).

An investigation of cropping design uncovers that there is decrease in net total area partly because of transformation of agricultural terrains. The cropping intensity is varied and area under paddy has diminished. There is degree for expanding the region under cereals and pulses. The region under Mango, Banana and Pineapple has been decreased impressively. The crop which involves the bottom situation in the region of cropping is oil palm.

### 3.9.15 Productivity of Principal Crops

Production of principal crops will undoubtedly change from year to year and the effect of a large group of exogenous and indigenous components which are not talked about here because of a deliberate constraint.

Rise of cashew nut is seen from the information. An opposite pattern is inspired in regard of the vast majority of different harvests. It will be an inability to think about the efficiency of crops for any one season or year. The yield of principal crops is processed on a two-year premise and the normal yield is introduced for the principal crops in Table 3.23.

**Table 3-23: Estimates of Total Area under Principal Crops and Irrigated Area, 2016 - 2017**

| Sr. No | Crop | Total Area Under the Crop | % of Total Cropped Area | Irrigated Area |
|---|---|---|---|---|
| **1** | **Rice - Kharif** | 27630 | 17.86 | - |
| | **Rabi** | 13193 | 8.53 | 13193 |
| **2** | **Pulses** | 5887 | 3.81 | 5745 |
| **3** | **Groundnut** | 1689 | 1.09 | 1352 |
| **4** | **Areca nut** | 1809 | 1.17 | 1809 |
| **5** | **Coconut** | 25913 | 16.75 | 3282 |
| **6** | **Cashew nut** | 56735 | 36.67 | - |
| **7** | **Sugarcane** | 897 | 0.58 | 897 |
| **8** | **Mango and Banana** | 7355 | 4.75 | 2244 |
| **9** | **Vegetables** | 7379 | 4.77 | 4293 |
| **10** | **Pineapple** | 383 | 0.25 | 383 |
| **11** | **Other Fruits** | 3934 | 2.54 | 1892 |
| **12** | **Oil Palm** | 836 | 0.54 | 836 |
| **13** | **Pepper** | 777 | 0.5 | 777 |
| **14** | **Tree Spices** | 205 | 0.13 | 205 |
| **15** | **Sweet Potato** | 52 | 0.03 | 52 |
| **16** | **Kokum** | 47 | 0.03 | - |
| **Total Area Sown** | | **154721** | **100** | **36960** |

(Source: Directorate of Agriculture, Goa)

### 3.9.16 Source-Wise Irrigated Area

Productivity of crops and utilization of land to various crops depend upon the sources of irrigation. There are some sources available for this in the state. Data of table 3.24 reveals the features of irrigation in the state. It is observed that irrigation through tanks is more. It has increased due to good monsoon conditions in the state.

**Table 3-24: Irrigation Coverage as per 2011 Census**

| Sr. No. | Particulars | Area (in Ha) |
|---|---|---|

| | | |
|---|---|---|
| **1** | **Total Area Available for Irrigation (NIA+ Fallow)** | 57486 |
| **2** | **Irrigation Potential Created** | 32837 |
| **3** | **Net Irrigated Area (Total area irrigated at least once)** | 44421 |
| **4** | **Area irrigated by Canals / Channels** | 8035 |
| **5** | **Area irrigated by Wells** | 7868 |
| **6** | **Area irrigated by Tanks** | 26233 |
| **7** | **Area irrigated by Other Sources** | 2285 |
| **8** | **Gross Area Irrigated** | 44421 |

(Source –Directorate of Planning, Statistical & Evolution of Goa)

The statistical data of the table pasteurizes the features of irrigation in the state. It is observed that total area available for irrigation is 57,486 Ha. The area irrigated through Tanks was highest with 59.06% of total. The areas irritated through canals are 18.09%. The area irrigated through wells is 17.71% and the area irrigated through other source through was only 5.14%.

### 3.10 Institutional Finance of Goa

Equally with the changing times, banking industry in India has accomplished tallness. Usage of creativity has brought about a change in the banks' operating style. Be that as it may, the changing elements of the banking business bring with it new kind of exposure to hazards. The Reserve Bank of India (RBI), Commercial Banks, Co-operative Banks, and Development Banks are all part of India's financial system (Development Finance Organizations).

#### 3.10.1 Banking Network

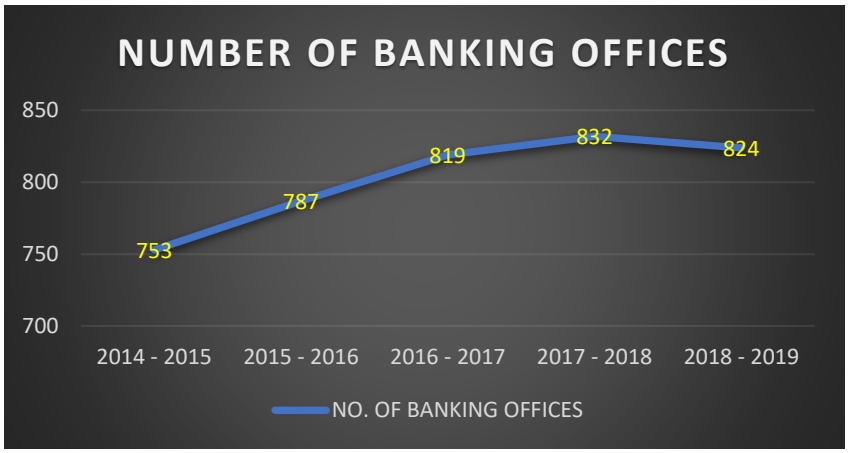
There are 824 banking workplaces in the State as on 30.09.2019. The pattern in the quantity of banking branches from 2012-13 to 2018-2019 is given in table 3.25. The quantity of bank offices shows an upward pattern.

**Table 3-25: Year-wise Number of Banking Offices**

| Year | No. Of Banking Offices |
|---|---|
| **2014 - 2015** | 753 |
| **2015 - 2016** | 787 |
| **2016 - 2017** | 819 |
| **2017 - 2018** | 832 |
| **2018 - 2019** | 824 |

(Source; Economic Survey 2019 – 2020)

**Figure 3-21: Number of Banking Offices**




### 3.10.2 Supply of Credit

Mounting agricultural improvement like rising credit prerequisites is a measure for its production. State agricultural credit is provided by institutional as well as non-institutional organizations. Agricultural money lenders rule in the state among the non-institutional offices and offer credits at high interest rates for any reason.

During 2019-20 (up to 30.09.2019), the credit dispensed is ₹ 23712 crore. Table No. 3.26 shows the credit and yearly development rate from 2014-15 to 2018-19. It very well may be plainly comprehended that there was a development of 16.48% in credit during 2015-16 anyway it was declined by 2.03 % during 2016-17. In this way, it demonstrated an expanding pattern in growth rate.

**Table 3-26: Annual Growth Rate of Credit**

| Financial Year Ending | Credit (in crores) | % growth over previous period |
|---|---|---|
| **31 March 2015** | 16643 | - |
| **31 March 2016** | 19385 | 16.48 |
| **31 March 2017** | 18991 | -2.03 |
| **31 March 2018** | 21749 | 14.52 |
| **31 March 2019** | 23904 | 9.91 |

(Source: Lead Bank, Economic survey 2019 – 2020)

Table No. 3.24 provides that although the level of advances is showing upward trend until 2015-16 but growth rate percentage in different years varying.

### 3.10.3 Performance by Banks under Annual Credit Plan (2019 – 2020)

The performance under Annual Credit Plan 2019-20 (up to 30.09.2019) is given in Table no. 3.27:

**Table 3-27: Performance under Annual Credit Plan (As on 30/09/2019) (in Crore)**

| Activity | Target for the quarter 30.9.2019 | Achievement up to 30.9.2019 | Percentage achieved |
|---|---|---|---|
| **Agri crop loans** | 141 | 31.62 | 22.43 |
| **Agri Term loans** | 199.7 | 166.27 | 83.26 |
| **Sub-total Agri** | 341.7 | 197.89 | 57.91 |
| **Agricultural Infrastructure** | 21.8 | 18.51 | 87.91 |
| **Allied Activities** | 23.6 | 78.02 | 330.59 |
| **Agriculture Total** | 387.1 | 294.42 | 76.06 |

(Source: Lead Bank, Economic Survey 2019 – 2020)

Up to 30.09.2019, the disbursement of crop loans is ₹ 31.62 crore as opposed to the target of ₹ 141 crore i.e. ₹ 22.43 percent achievement. Crop loans performance is reduced by about ₹ 76.54 crore as it was about ₹ 108.16 crore in 2017 for the related time frame.

Agricultural term loan disbursement up to 30.09.2019 is ₹ 166.27 crore as compared to the goal of ₹ 199.70 crore i.e. 83.26 percent achievement. For the corresponding time a year ago, the performance under Agricultural Term Loans is diminished by as much as ₹ 27.80 crore against as much as ₹ 194.07 crore.

Under the agriculture sector, the overall achievement is somewhat ₹ 294.42 crore up to 30.09.2019 as opposed to a focus of some ₹ 387.10 crore, for instance 76.06 percent achievement. For the related time frame a year ago, the overall achievement under the agriculture sector is declined by ₹ 76.40 crore as against some ₹ 370.82 crore.

### 3.11 Banking Networks of All Banks

The State Co-operative Bank, Primary Agricultural Co-operative Societies Commercial Banks and Other Co-operative Banks (counting Urban Co-operative Bank) provide short, medium and long-term agricultural credit among institutional organizations. Attributable to late changes in the social, economic and political context of the nation as a whole and of the zone specifically, which force more noteworthy limitations on money lending by non-institutional organizations, their role is declining.

In order to fill the gap emerging in this particular circumstance and close the credit gap, it is here that institutional credit offices, especially Co-operatives and Commercial Banks, are expanding their activities. Part of the subtleties of institutional offices, such as the State Co-operative Bank, Primary Agricultural Co-operative Societies, Commercial Banks and other Co-operative Banks (counting Urban Co-operative Bank) are introduced.

**Table 3-28: Network & Outreach (As on 31/03/2018)**

| Agency | No. of Banks/Soc. | No. of Branches | | | No. of non-formal agencies associated | | Per Branch Outreach | |
|---|---|---|---|---|---|---|---|---|
| | | Total | Rural | Semi-urban | SHGs/JLGs | BCs | Villages | Households |
| **Commercial Banks** | 42 | 631 | 254 | 377 | 4665/998 | 21 | 0.52 | 471 |
| **Regional Rural Bank** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **State Coop Bank** | 1 | 59 | 34 | 25 | 3505/145 | 0 | 5.56 | 5034 |
| **Primary Agri. Coop. Society** | 78 | 78 | 71 | 7 | 0 | 0 | 4.21 | 3808 |
| **Other Coop. Bank (incl UCBs)** | 13 | 94 | 15 | 79 | 0 | 0 | 3.49 | 3160 |
| **All Agencies** | 134 | 862 | 374 | 488 | 8170/1143 | 21 | 13.78 | 12473 |

(Source- Goa State Level Banker's Committee Report)

(SHGs- Self Help Groups, JLGs- Joint Liability Groups, BCs- Banking Correspondents)

The efforts of the banks, since nationalization, have brought a notifiable transformation in the development of banking facilities in the state. The banks have reached deeply in rural areas, which were unexposed or relatively less exposed to commercial banking. They have mobilized savings from the community and channelized the savings to meet the credit needs of the priority sector and other national priorities under various schemes sponsored by the State and other national priorities under various schemes sponsored by the State and Central Governments to uplift the weaker sections.

In the field of banking, the record of progress achieved by banks in this area is far better than that of many other states in India. There are several branches of various banks working in the state when it was established. SBI is the lead bank in the state and is entrusted with the responsibility for the preparation of the credit plan and co-ordination of credit functions at the state level. Besides SBI, UCO Bank, Dena Bank, Indian Overseas Bank and Corporation Bank have also established their branches at various places in the state.

### 3.12 Branch Expansion

The branch expansion program of the Commercial Banks is quite satisfactory in the state. Branch expansion program of main agencies in Goa are presented in Table 3.26. The data with regard to branch expansion presented in the table reveals that the total numbers of branches of Commercial Banks are more accounting 73.20% of the main agencies, followed by Other Coop. Bank (including UCBs) by 10.90%. The state has only one state co-operative bank i.e. Goa state co-operative bank, having 59 branches in total. There are no Regional Rural Banks in the state.

There are number of non-formal agencies working in the state too. Self Help Groups and Joint Liability Groups are highly associated with Commercial Banks and rest with Goa state co-operative banks.

### 3.13 Deposits Outstanding

Deposits are like blood to the life of the banks. Banks activities are chiefly dependent upon the deposits. Mobilization of deposits forms an integral part of the development process. As a main financing agency, with rapid branch expansion machinery, the Commercial Banks have made another achievement in the field of deposit mobilization in the state. Expansion of credit

virtually depends on the accumulation of deposits. There has been considerable increase in deposit resources of Commercial Banks in the state. Deposit mobilizations by agencies in the state are presented in Table 3.29.

**Table 3-29: Deposits Outstanding**

| Agency | No. of accounts | | | | | Amount of Deposits [` lakh] | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 31 Mar 13 | 31 Mar 14 | 31 Mar 15 | Growth (%) | Share (%) | 31 Mar 13 | 31 Mar 14 | 31 Mar 15 | Growth (%) | Share (%) |
| **Commercial Banks** | 2238733 | 2790374 | 2836062 | 1.64 | 72.72 | 3648872 | 4367774 | 5028528 | 15.13 | 92.06 |
| **Regional Rural Bank** | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| **State Coop Bank** | 355311 | 384403 | 3641627 | -5.2 | 9.34 | 94412 | 108839 | 124234 | 14.14 | 2.27 |
| **Other Coop. Bank (incl UCBs)** | 737815 | 659057 | 699501 | 6.14 | 17.94 | 222860 | 303369 | 309728 | 2.10 | 5.67 |
| **All Agencies** | 3331859 | 3833834 | 7177190 | 2.58 | 100 | 3966144 | 4779982 | 5462490 | 31.37 | 100 |

(Source - Goa State Level Banker's Committee Report)

It can be observed from the data available from the table that the deposits of Commercial Banks have increased from ₹3648872 to ₹5028528 during the period 2013 to 2015 in the state. Moreover, the average deposits per branch have also significantly risen. The number of accounts of Commercial Banks and Other Co-operative Banks (including UCBs) has increased but State Co-Operative Bank it has decreased by negative 5.2%.

# CHAPTER 4
# SOCIO-ECONOMIC ASPECTS OF FARMING COMMUNITY AND PROBLEMS FACED BY FARMERS THROUGH AGRICULTURAL FINANCING IN GOA

Credit is a machine of an economy's growth. As blood is to a human body, so is finance to an economy. Accordingly, the flow of credit in the right direction, at the right time, to the right place, to the right farmer in the right size, is very crucial for agricultural advancement for the characterized reason and by an appropriate organization. In this chapter, banking institutions are seen as the best instruments of rural economic financial change, play a crucial role in formulating an effective credit plan for the agricultural sector. It is only the credit plan, planned by banks, which guarantees the farmers legitimate progress of bank credit.

## 4.1 Introduction

A challenging task is accomplished in a unique way by dynamic co-activity and coordination of all financial intermediaries in general and specifically banks. Well-arranged credit stream is a boon not just to the banks but to the borrower in addition. Anyway, a poorly arranged credit stream prompts the two financiers and borrowers to get ill-health. This chapter attempts to explore the variations in the credit stream on the basis of foundation from various banks in Goa state, other than to evaluate the varieties in the progression of credit for different farming and unified exercises by the chosen commercial banks operating in Goa state.

The chapter discusses the analysis with respect to the objectives and hypothesis mentioned in research methodology. The main motive is to examine the impact of Institutional Agricultural financing on socio-economic aspects of farming community in Goa. Secondly this chapter aims at investigating the problems faced by farmers in borrowing loans through financial institutions in the state of Goa.

## 4.2 Descriptive Analysis on Sample

Percentage analysis is one of the statistical measures used to describe the characteristics of the sample or population in totality. Percentage analysis involves computing measures of variables selected of the study and its finding will give easy interpretation for the reader.

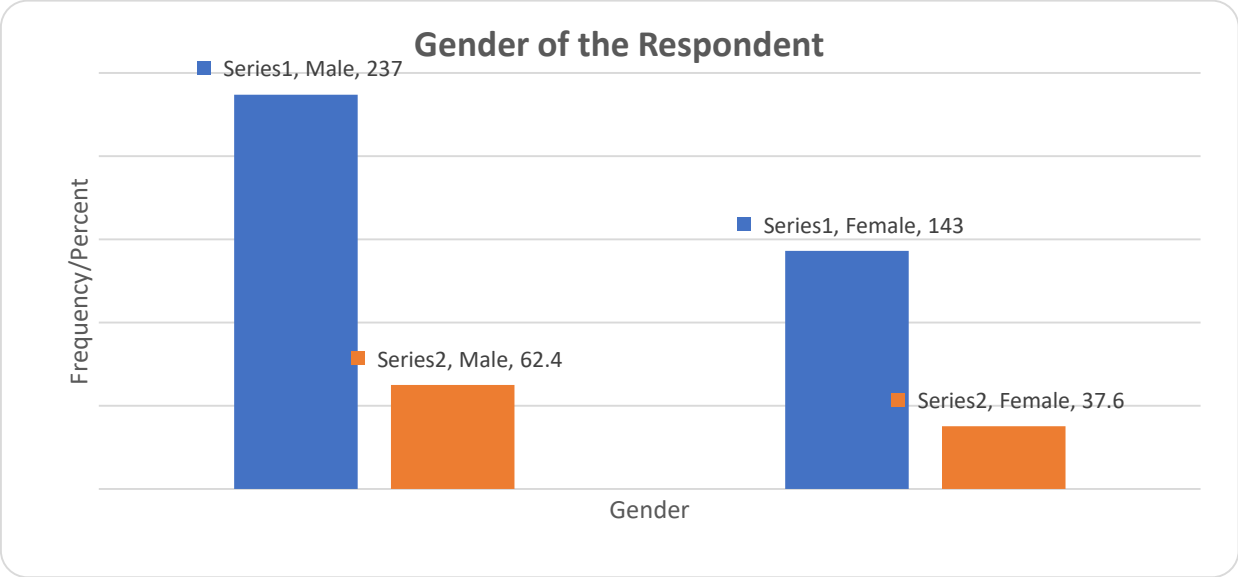
### 4.2.1 Bar Chart for Gender Distribution

For information on Gender of the respondent, column chart is used to find the gender distribution in the research done. Table 4-1 displays the frequency and percentage of Gender of the respondents.

**Table 4-1: Gender of the respondent**

| | Frequency | Percent |
|---|---|---|
| **Male** | 237 | 62.4 |
| **Female** | 143 | 37.6 |
| **Total** | 380 | 100 |

**Figure 4-1: Gender of the respondent**




The above diagram 4-1 displays that the Gender of the respondent is concentrated towards Male farmers with 62.4 % whereas female constitute 37.6 % of the population.

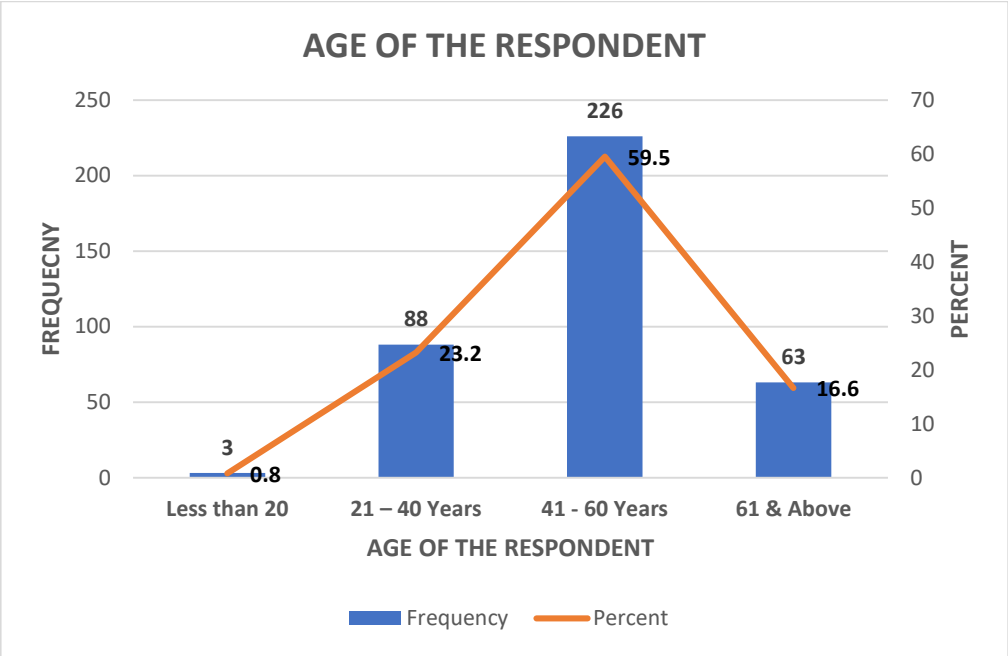
### 4.2.2 Combined Bar Chart for Age of the Respondents

For information on age of the respondents in the study, Bar chart is used to know the age considered for the research. The following table displays the age of the respondents with their respective frequencies and percentage.

**Table 4-2: Age of the Respondent**

| | Frequency | Percent |
|---|---|---|
| **Less than 20** | 3 | 0.8 |
| **21 – 40 Years** | 88 | 23.2 |
| **41 - 60 Years** | 226 | 59.5 |
| **61 & Above** | 63 | 16.6 |
| **Total** | 380 | 100 |

**Figure 4-2: Age of the Respondents**




The diagram 4-2 signifies that the Age of the respondent was maximum in 41 – 60 years with 59.5 % followed by 21 – 40 age groups with 23.2 % whereas the minimum was observed in Less than 20 age group with 0.8 %.

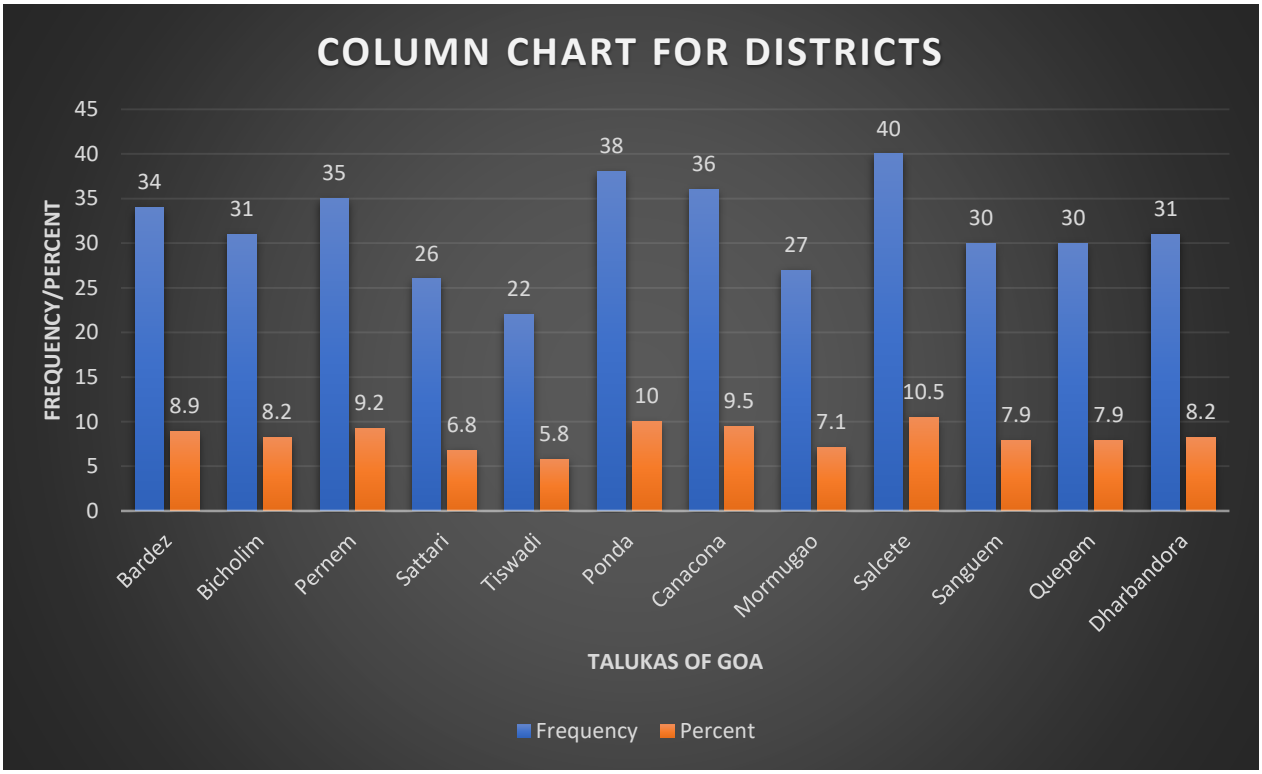
### 4.2.3 Column Chart for Taluka of Respondents

For information on Taluka of the respondent in the study, Column Chart is used to know the taluka considered for the research.

**Table 4-3: Taluka of Goa with regard to Respondents**

| | Frequency | Percent |
|---|---|---|
| **Bardez** | 34 | 8.9 |
| **Bicholim** | 31 | 8.2 |
| **Pernem** | 35 | 9.2 |
| **Sattari** | 26 | 6.8 |
| **Tiswadi** | 22 | 5.8 |
| **Ponda** | 38 | 10 |
| **Canacona** | 36 | 9.5 |
| **Mormugao** | 27 | 7.1 |
| **Salcete** | 40 | 10.5 |
| **Sanguem** | 30 | 7.9 |
| **Quepem** | 30 | 7.9 |
| **Dharbandora** | 31 | 8.2 |
| **Total** | 380 | 100 |

**Figure 4-3: Taluka of Goa with regard to Respondents**



The diagram 4-3 signifies the talukas of the respondent which is high in Salcete taluka with 10.5 % followed by Pernem with 9.2 % whereas the minimum is observed in Tiswadi taluka with 5.8 %.

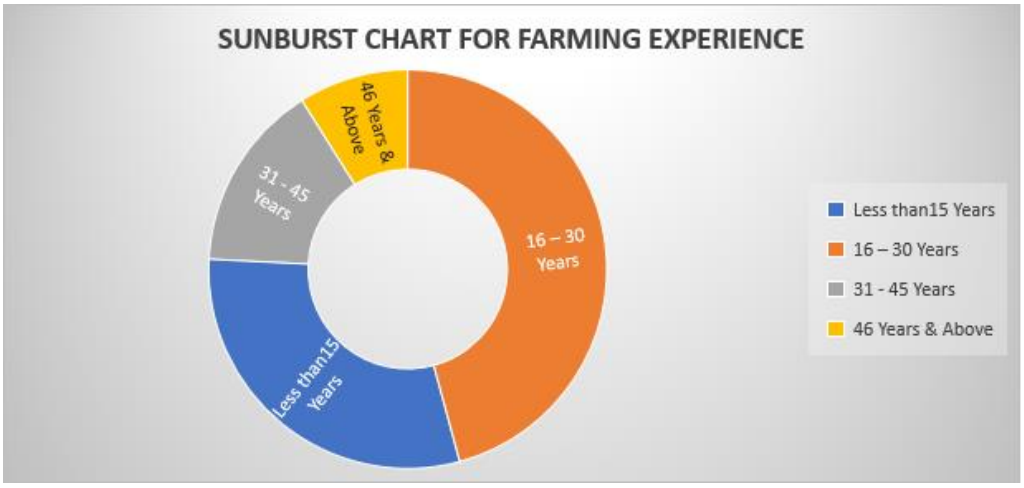
### 4.2.4 Sunburst Chart for Farming Experience of the Respondents

The farming experience of the respondent is displayed in the table 4-4 and it is visualised through the Sunburst Chart figure 4-4.

**Table 4-4: Farming Experience of the Respondents**

| Years | Frequency | Percent |
|---|---|---|
| **Less than15 Years** | 117 | 30.8 |
| **16 – 30 Years** | 163 | 42.9 |
| **31 - 45 Years** | 63 | 16.6 |
| **46 Years & Above** | 37 | 9.7 |
| **Total** | 380 | 100 |

**Figure 4-4: Farming Experience of the Respondents**




The sunburst chart signifies that the farming experience is concentrated in the range of 16 – 30 years with 42.9 % followed by Less than 15 years' category with 30.8 % and the least is observed in Above 46 years' experience category with 8.9 %.

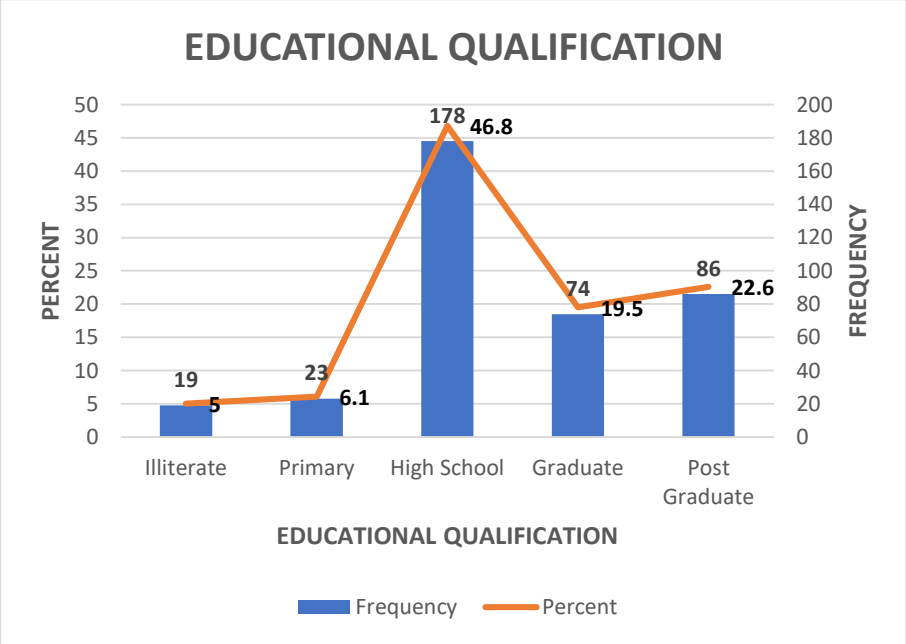
### 4.2.5 Combined Chart for Educational Qualification

The Educational Qualification of the respondent is displayed in the table 4-5 which is essential for this research and combined chart is prepared as follows:

**Table 4-5: Educational Qualification of the Respondents**

| | Frequency | Percent |
|---|---|---|
| **Illiterate** | 19 | 5 |
| **Primary** | 23 | 6.1 |
| **High School** | 178 | 46.8 |
| **Graduate** | 74 | 19.5 |
| **Post Graduate** | 86 | 22.6 |
| **Total** | 380 | 100 |

**Figure 4-5: Educational Qualification of the respondents**




The combined chart 4-5 displays the educational qualification of the respondents with maximum being farmers who have completed their High school with 46.8 % whereas minimum of the respondents are belonging to Illiterate category with 5 %.

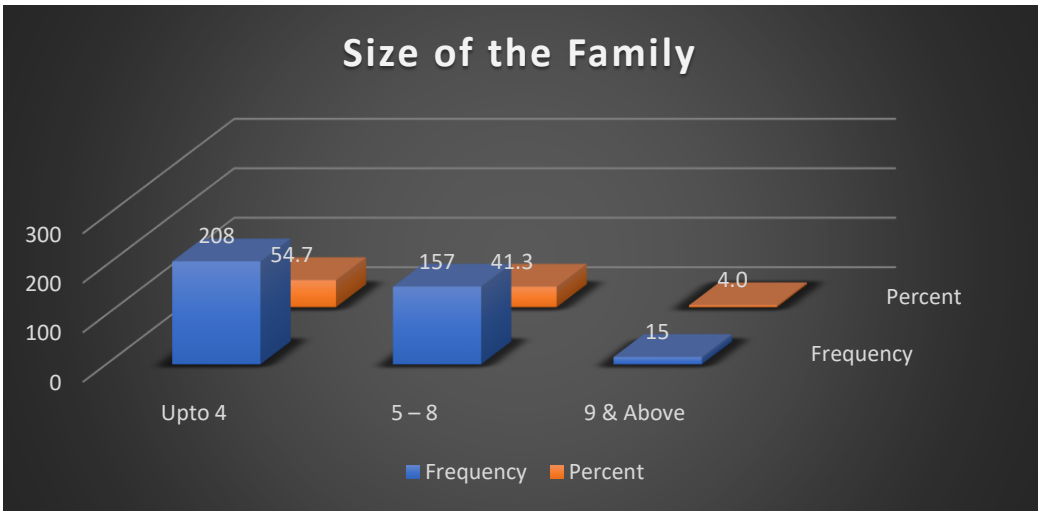
### 4.2.6 Clustered Bar Chart for Size of the Family

The Table 4-6 for family size of the respondent is summarised below and the corresponding bar chart is displayed below:

**Table 4-6: Size of the Family**

| | Frequency | Percent |
|---|---|---|
| **Up to 4** | 208 | 54.7 |
| **5 – 8** | 157 | 41.3 |
| **9 & Above** | 15 | 4.0 |
| **Total** | 380 | 100 |

**Figure 4-6: Size of the Family**




The Bar Chart 4-6 displays the family size of the respondents with maximum 54.7 % respondents having up to 4 members in the family and minimum family size being within 9 and above members with 4 % of the respondents.

### 4.2.7 Tree Map for Religion of the Respondents

For information regarding the Religion, table 4.7 describes the distribution among the respondents with regard to religion and a Tree Map is displayed to illustrate.

**Table 4-7: Religion of the Respondents**

| | Frequency | Percent |
|---|---|---|
| **Hindu** | 318 | 83.7 |
| **Christian** | 49 | 12.9 |
| **Muslim** | 13 | 3.4 |
| **Total** | 380 | 100 |

**Figure 4-7: Religion of the Respondents**

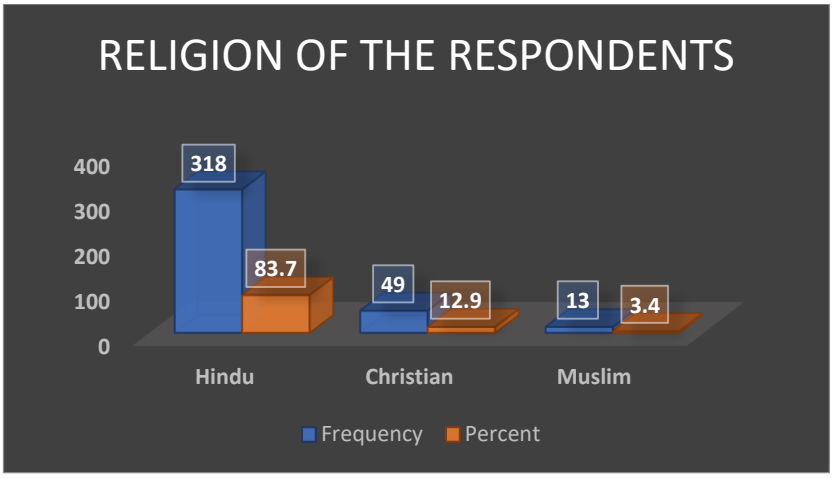



Figure 4.7 provides the information for distribution of religion with regard to respondents. Maximum of the respondents are Hindus with 83.7 % and the least is observed in Muslims with 3.4 % respondents.

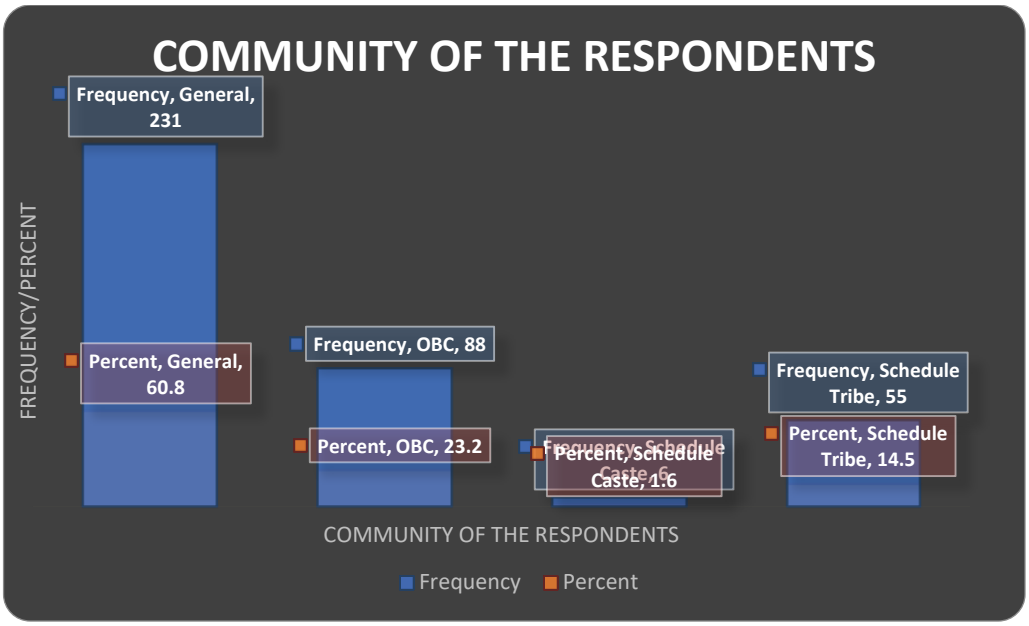
### 4.2.8 Community of the Respondents

The Respondents are categorised with regard to their community and Bar chart is displayed in the table below:

**Table 4-8: Community of the Respondents**

| | Frequency | Percent |
|---|---|---|
| **General** | 231 | 60.8 |
| **OBC** | 88 | 23.2 |
| **Schedule Caste** | 6 | 1.6 |
| **Schedule Tribe** | 55 | 14.5 |
| **Total** | 380 | 100 |

**Figure 4-8: Community of the Respondents**




The above bar chart illustrates the respondents belonging to certain community with regard to agricultural financing. Mostly General community people of 60.8 % are the maximum whereas the minimum is observed among Scheduled caste community people with 1.6 %.

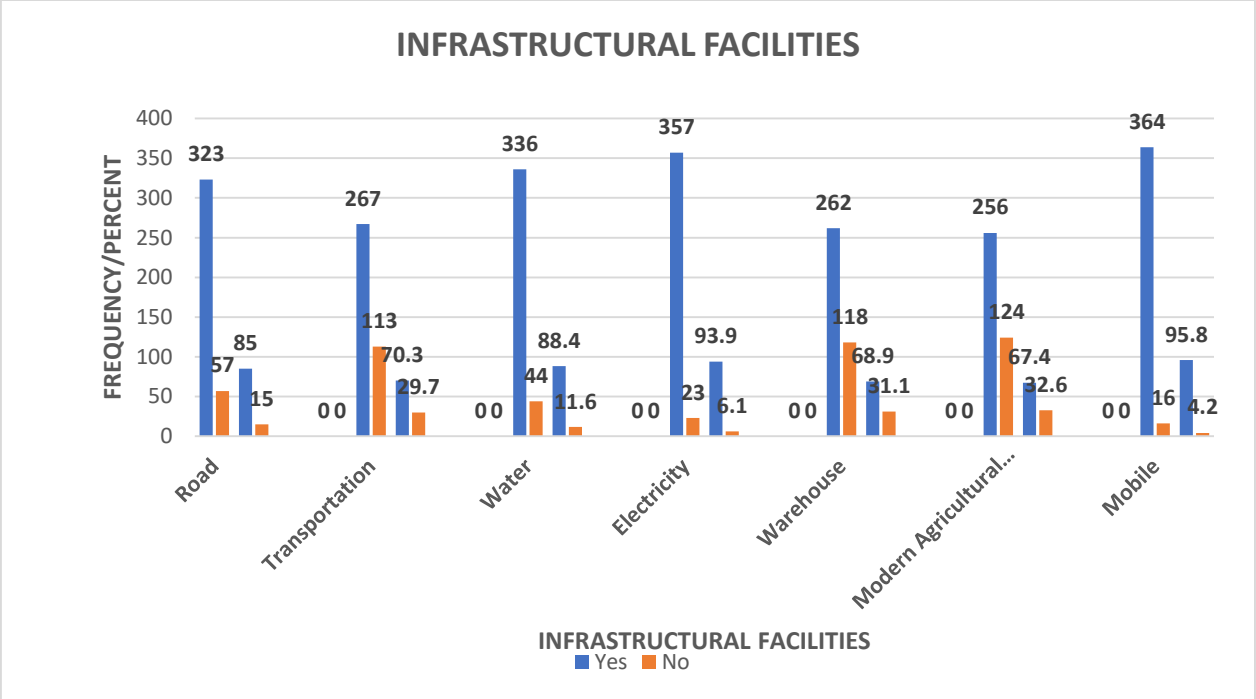
### 4.2.9 Column Chart: Infrastructural Facilities with Regard to Respondents

Facilities with regard to Infrastructure are an important aspect for respondents in order to know their way of living. Road, transportation, water, electricity, warehouse, modern agricultural equipment and mobile facility. The table below and corresponding Column Chart describes the following:

**Table 4-9: Infrastructural Facilities with regard to Respondents**

| **Road - Pukka** | | |
|---|---|---|
| | **Frequency** | **Percent** |
| **Yes** | 323 | 85 |
| **No** | 57 | 15 |
| **Total** | 380 | 100 |
| **Transportation** | | |
| | **Frequency** | **Percent** |
| **Yes** | 267 | 70.3 |
| **No** | 113 | 29.7 |
| **Total** | 380 | 100 |
| **Water** | | |
| | **Frequency** | **Percent** |
| **Yes** | 336 | 88.4 |
| **No** | 44 | 11.6 |
| **Total** | 380 | 100 |
| **Electricity** | | |
| | **Frequency** | **Percent** |
| **Yes** | 357 | 93.9 |
| **No** | 23 | 6.1 |
| **Total** | 380 | 100 |
| **Warehouse** | | |
| | **Frequency** | **Percent** |
| **Yes** | 262 | 68.9 |
| **No** | 118 | 31.1 |
| **Total** | 380 | 100 |
| **Modern Agricultural Equipment** | | |
| | **Frequency** | **Percent** |
| **Yes** | 256 | 67.4 |
| **No** | 124 | 32.6 |
| **Total** | 380 | 100 |
| **Mobile** | | |
| | **Frequency** | **Percent** |
| **Yes** | 364 | 95.8 |
| **No** | 16 | 4.2 |
| **Total** | 380 | 100 |

**Figure 4-9: Infrastructure Facilities with regard to Respondents**




The diagram 4-9 illustrates that Infrastructural Facilities are available for majority of the respondents since there is a positive response with regard to road, transport, water, electricity, warehouse, modern agricultural equipment and mobile facility.

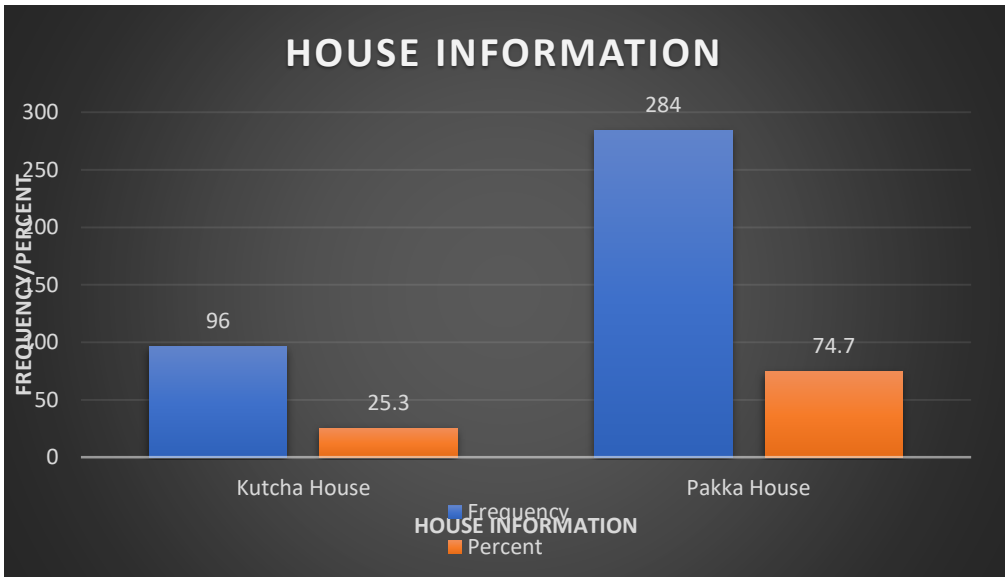
### 4.2.10 Clustered Bar Chart with Regard to Other Personal Information

The Personal information of the respondents includes House, Bank Savings, Life Insurance and Crop Insurance.

**Table 4-10: House Information**

| | Frequency | Percent |
|---|---|---|
| **Kutcha House** | 96 | 25.3 |
| **Pakka House** | 284 | 74.7 |
| **Total** | 380 | 100 |

**Figure 4-10: House Information**

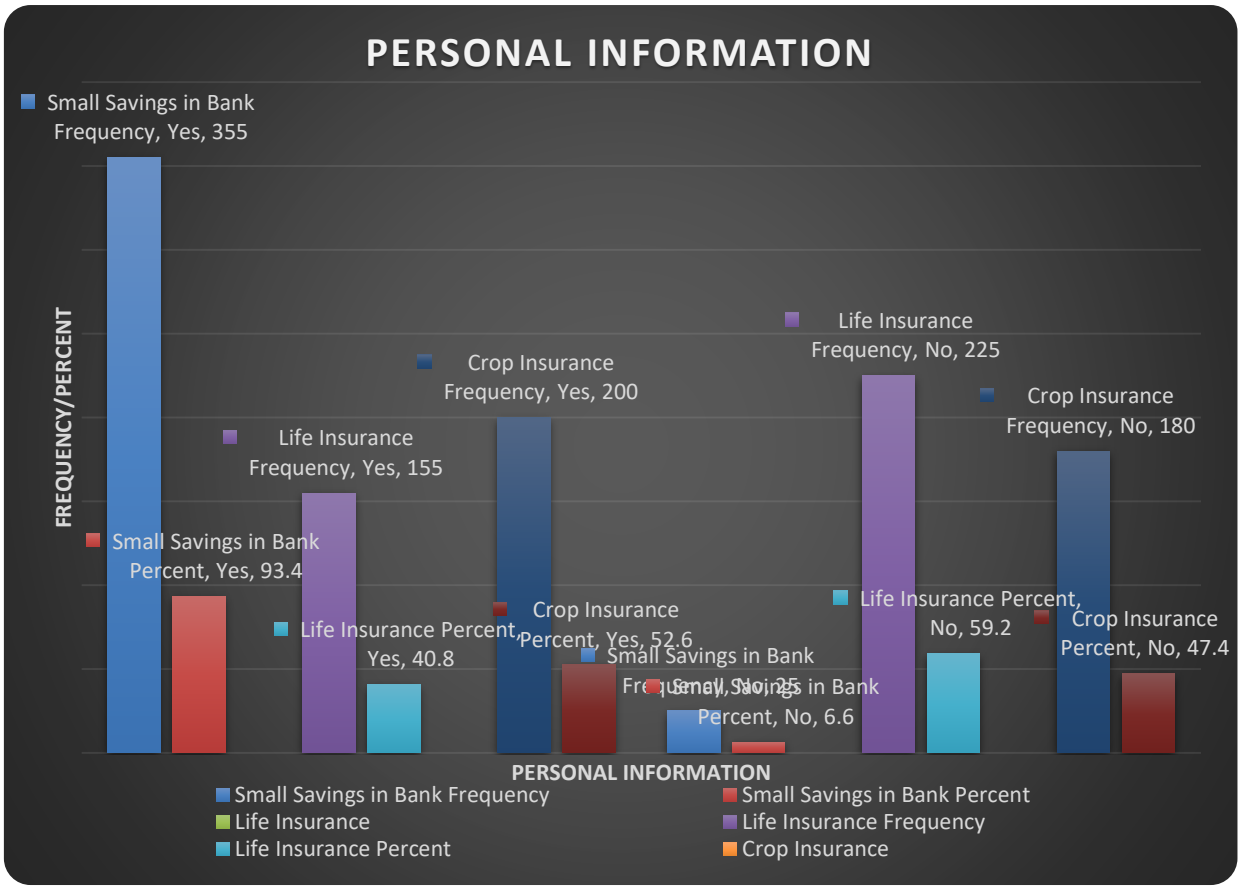



Shelter being an important aspect of farmer's property, the above diagram describes that Pakka house is observed among 74.7 % of the respondents and Kutcha house has minimum respondents with 25.3 %.

**Table 4-11: Other Personal Information**

| | **Small Savings in Bank** | |
|---|---|---|
| | Frequency | Percent |
| Yes | 355 | 93.4 |
| No | 25 | 6.6 |
| Total | 380 | 100 |
| | **Life Insurance** | |
| | Frequency | Percent |
| Yes | 155 | 40.8 |
| No | 225 | 59.2 |
| Total | 380 | 100 |
| | **Crop Insurance** | |
| | Frequency | Percent |
| Yes | 200 | 52.6 |
| No | 180 | 47.4 |
| Total | 380 | 100 |

**Figure 4-11: Personal Information of the Respondents**




The above diagram 4-11 tells that respondents have a Small Savings in Bank with 93.4 % positive response and 6.6 % negative response. With regard to Life Insurance, there is only 40.8 % positive response and 59.2 % respondents with negative reply. On the other hand, respondents are well secured with Crop Insurance for their respective crops and there is 52.6 % positive reply compared to 47.4 % negative reply.

### 4.2.11 Annual Income of the Respondents

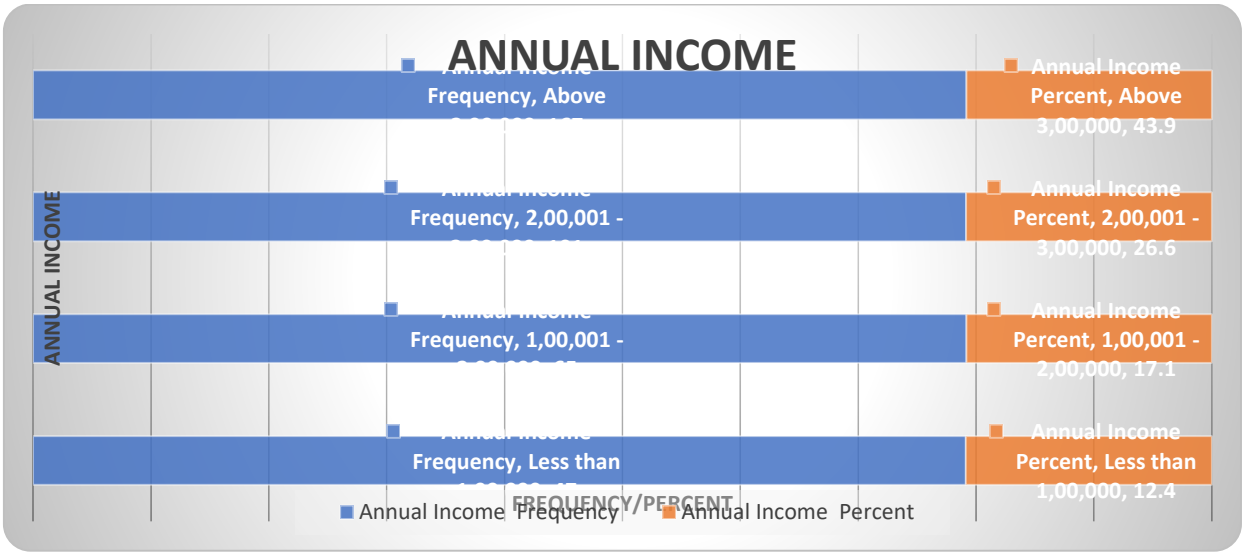
Income plays an important role in the farming community since cultivation and output go through a cyclic process based on the crops cultivated.

**Table 4-12: Annual Income of the Respondents**

| | Frequency | Percent |
|---|---|---|
| **Less than 1,00,000** | 47 | 12.4 |
| **1,00,001 - 2,00,000** | 65 | 17.1 |
| **2,00,001 - 3,00,000** | 101 | 26.6 |

| | | |
|---|---|---|
| **Above 3,00,000** | 167 | 43.9 |
| **Total** | 380 | 100 |

**Figure 4-12: Annual Income of the Respondents**




The diagram 4-12 explains that most of the respondents are in Above 3,00,000 category with 43.9 % whereas the minimum is observed in Less than 1,00,000 category with 12.4 %.

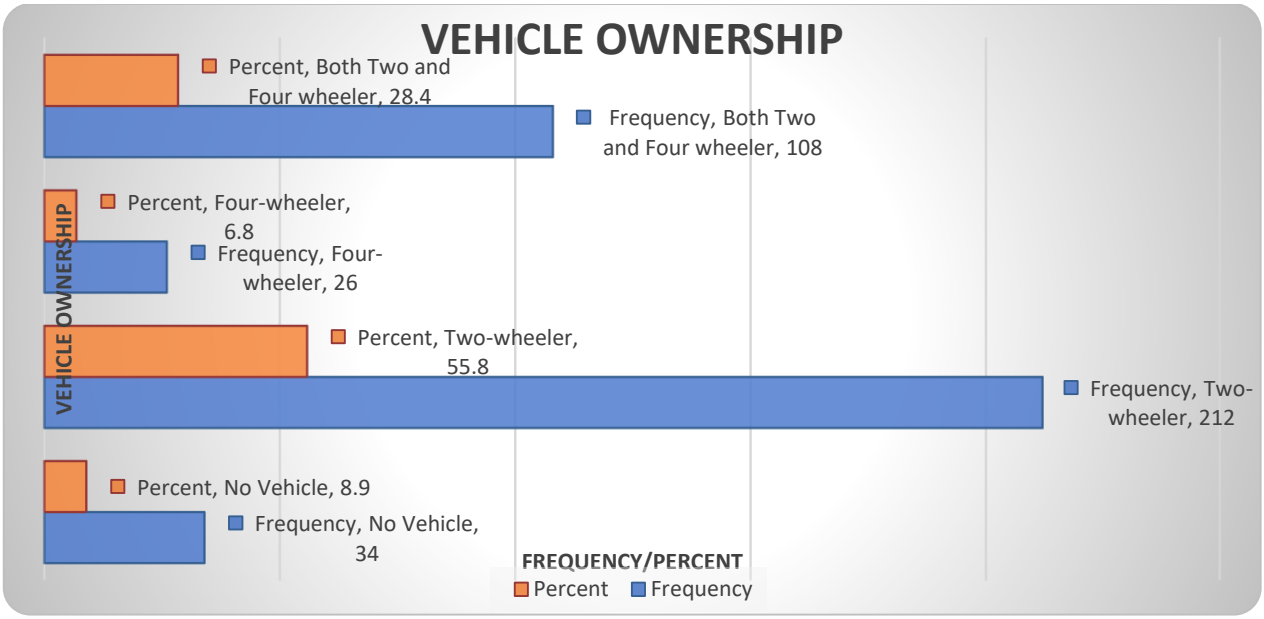
### 4.2.12 Vehicle Ownership of Respondents

As part of travel convenience for the respondents, a two-wheeler and four-wheeler were preferred in order to avail services through banks at a shorter time period. The table 4.13 discusses the Vehicle ownership of the respondents.

**Table 4-13: Vehicle Ownership**

| | **Frequency** | **Percent** |
|---|---|---|
| **No Vehicle** | 34 | 8.9 |
| **Two-wheeler** | 212 | 55.8 |
| **Four-wheeler** | 26 | 6.8 |
| **Both Two and Four-wheeler** | 108 | 28.4 |
| **Total** | 380 | 100 |

**Figure 4-13: Vehicle Ownership**




### 4.3 Inferential Analysis on Sample:

Inferential statistics are concerned to make perceptions dependent on sample relationships and relationships within the population. For example, inferential statistics enables to choose if, in the population as a whole, the comparison between groups signifies that the knowledge is sufficiently capable of supporting the inference that there are group differences.

Through considering the basic criteria of testing significance: the distribution of numbers, the p-value and the level of significance are evaluated through the analysis. It considers countless measurable tests and methods that help making opinions for different kinds of information and various kinds of exploration plans. For each statistical test which considers how it works, for what data it is proper and how results ought to be deciphered are studied by defining hypothesis in inferential statistics.

#### 4.3.1 ANOVA for term of loan and recovery of loan by bank officials

The one-way Analysis of Variance (ANOVA) was used to determine whether there were any statistically significant differences between the means of two or more independent groups. In this scenario, one-way ANOVA is used to understand whether term of loan differed based on recovery of loan by bank officials, dividing into three independent groups (e.g., liberal, strict and very strict). The variable term of loan is taken since term is based on farmer's cultivation

period and it takes time for processing the products and selling it. Recovery is totally based on bank officials because they know the farmers behaviour, amount of loan taken and their efforts in cultivating the land for agriculture.

$H_{01}$: There is no significance difference between term of loan and recovery of loan by bank officials in agricultural financing.

**Table 4-14: ANOVA Table for Term of loan and Recovery of loan**

| ANOVA | | | | | |
|---|---|---|---|---|---|
| | **Sum of Squares** | **df** | **Mean Square** | **F value** | **p - value** |
| **Between Groups** | 5.011 | 2 | 2.506 | 3.612 | 0.028* |
| **Within Groups** | 261.544 | 377 | 0.694 | | |
| **Total** | 266.555 | 379 | | | |

Note: * denotes Significance at 5% level

The table 4-14 shows the output of ANOVA analysis and whether there is a statistically significant difference between the two groups. The significance value is 0.028 (i.e., $p$ = 0.021), which is below 0.05. and therefore, there is a statistically significant difference in term of loan and recovery of loan by bank officials through agricultural financing.

### 4.3.2 ANOVA for loan sufficiency and recovery of loan by bank officials

In this study, one-way ANOVA is used to understand whether the loan is sufficient for the purpose based on recovery of loan by bank officials, dividing into three independent groups (e.g., liberal, strict and very strict). The variable loan sufficiency is considered because each farmer's purpose is different as per the land and type of crop invested. Some farmer may take higher amount of loan because the growth and maintenance of crop is costly. Hence it becomes difficult to get the estimated amount of loan through banks. Recovery of loan by bank officials is taken for this analysis since some farmers may take loan and mis-utilise it due to certain cost related factors.

$H_{02}$: There is no significance difference between loan sufficiency and recovery of loan by bank officials in agricultural financing.

**Table 4-15: ANOVA Table for Loan sufficiency purpose and Recovery of loan**

| | **Sum of Squares** | **df** | **Mean Square** | **F value** | **p value** |
|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| **Between Groups** | 3.89 | 2 | 1.945 | 3.114 | 0.046* |
| **Within Groups** | 235.436 | 377 | 0.624 | | |
| **Total** | 239.326 | 379 | | | |

Note: * denotes Significance at 5% level

The table 4-14 shows the output of ANOVA analysis and whether there is a statistically significant difference between the two groups. The significance value is 0.046 (i.e., $p$ = 0.046), which is below 0.05. and therefore, there is a statistically significant difference between loan sufficiency and recovery of loan by bank officials through agricultural financing.

### 4.3.3 Chi-Square test for loan sanctioning process and problems faced in loan sanctioning process

The Chi-square analysis is preferred for two categorical variables, loan sanctioning process and problems faced in loan sanctioning process. Each variable has four possible values: 'Easy', 'Proper', 'Time consuming' and 'Complicated' for loan sanctioning process whereas 'No problems at all', 'Bank timings', 'Need influence' and 'Others' for problems faced in loan sanctioning process. The reason for testing loan sanctioning process and problems faced is preferred because the process involves formalities which are verified with certain documents and there are problems since the documents may have certain errors regarding land ownership, unpaid property tax etc. Hence, it takes time for sanctioning the proposed amount of loan.

$H_{03}$: There is no significance association between loan sanctioning process of banks and problems faced in loan sanctioning process.

**Table 4-16: Crosstabs for loan sanctioning and problems faced in loan sanctioning process**

| | **Problems faced in loan sanctioning process** | | | | | **Total** |
|---|---|---|---|---|---|---|
| **Loan sanctioning process of banks** | | **No problems at all** | **Bank timings** | **Need influence** | **Others** | |
| | **Easy** | 23 | 19 | 28 | 23 | 93 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | **Proper** | 20 | 32 | 25 | 19 | 96 |
| | **Time consuming** | 17 | 26 | 31 | 29 | 103 |
| | **Complicated** | 29 | 16 | 14 | 29 | 88 |
| | **Total** | 89 | 93 | 98 | 100 | 380 |

Table 4-16 is the crosstabs table and it provides information that is useful for interpreting the chi-square test result. The row total and column total are described on basis of variables taken.

**Table 4-17: Chi-square Tests**

| | **Value** | **df** | **Asymptotic Significance (2-sided)** |
|---|---|---|---|
| **Pearson Chi-Square** | 19.004 | 9 | 0.025* |
| **Likelihood Ratio** | 19.228 | 9 | 0.023 |
| **Linear-by-Linear Association** | 0.039 | 1 | 0.844 |
| **N of Valid Cases** | 380 | | |

Note: * denotes Significance at 5% level

The chi square statistic appears in the value column immediately to the right of "Pearson Chi-Square". In this analysis, the value of chi-square statistic is 19.004. The p-value 0.025 appears in the same row in the "Asymptotic Significance (2-sided)" column. The result is significant if this value is equal to or less than the designated alpha level of 0.05.

In this case, the p-value is smaller than the standard alpha value and hence the null hypothesis is rejected. To put it simply, the result is significant – the data suggests that the variables loan sanctioning and problems faced in loan sanctioning are associated with each other.

### 4.3.4 Chi-Square test for days required in loan sanctioning and problems faced in loan sanctioning process

The Chi-square analysis is tested for the variables; days required in loan sanctioning and problems faced in loan sanctioning process. Days required contains four possible values: '8 days', '15 days', '1 month' and 'More than 1 month' whereas 'No problems at all', 'Bank timings', 'Need influence' and 'Others' are values for problems faced in loan sanctioning process. The variable days required is considered since it depends on farmers detail submitted and the proposed amount. If the documents are proper, the days required for sanctioning will be less. On the other hand, the variable problems faced are taken for this analysis because

there are some cases where in spite of proper documents, the loan processing takes time. Hence the association for both variables is tested through chi-square test.

$H_{04}$: There is no significance association between days required for loan sanctioning and problems faced in loan sanctioning process.

**Table 4-18: Crosstabs for day required in loan sanctioning and problems faced in loan sanctioning process**

| | | Problems faced in loan sanctioning process | | | | Total |
|---|---|---|---|---|---|---|
| | | No problems at all | Bank timings | Need influence | Other | |
| Days required for loan sanctioning | 8 days | 19 | 33 | 23 | 17 | 92 |
| | 15 days | 27 | 22 | 32 | 30 | 111 |
| | 1 month | 24 | 14 | 25 | 35 | 98 |
| | More than 1 month | 19 | 24 | 18 | 18 | 79 |
| | Total | 89 | 93 | 98 | 100 | 380 |

Table 4-18 is the crosstabs table and it provides information that is useful for interpreting the chi-square test result. The row total and column total are described on basis of variables taken.

**Table 4-19: Chi-square Tests**

| | Value | df | Asymptotic Significance (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 18.079 | 9 | 0.034* |
| Likelihood Ratio | 18.131 | 9 | 0.034 |
| Linear-by-Linear Association | 0.302 | 1 | 0.582 |
| N of Valid Cases | 380 | | |

Note: * denotes Significance at 5% level

The chi square statistic appears in the value column immediately to the right of "Pearson Chi-Square". In this analysis, the value of chi-square statistic is 18.079. The p-value 0.034 appears in the same row in the "Asymptotic Significance (2-sided)" column. The result is significant since the value is less than the designated alpha level of 0.05.

In this case, the p-value is smaller than the standard alpha value and hence the null hypothesis is rejected. The result is significant – the data suggests that the variables days required in loan sanctioning and problems faced in loan sanctioning are associated with each other.

### 4.3.5 T-Test for frequency of repayment of loan and responses regarding the repayment

The independent-samples t-test compares the means between two unrelated groups on the dependent variable. In this analysis, independent t-test is used to understand by creating a grouping variable 'Are you unable to repay the loan' called the independent variable and 'Frequency for loan repayment' differed based on two groups: 'Regular' and 'Irregular'. The two variables are considered for this analysis because some farmers may not be able to repay the loan on time due to financial difficulties whereas frequency of repayment may be regular or irregular based on due amount and period of payment (monthly, quarterly and half-yearly).

$H_{05}$: There is no significance difference between frequency of repayment and respondents who are unable to repay the loan.

**Table 4-20: Independent sample t- test table**

| | Unable to repay the loan | N | Mean | Std. Deviation | Std. Error | t value | p value |
|---|---|---|---|---|---|---|---|
| **Frequency for loan repayment** | **Yes** | 201 | 1.56 | 0.497 | 0.035 | 2.474 | 0.014* |
| | **No** | 179 | 1.44 | 0.497 | 0.037 | | |

Note: * denotes Significance at 5% level

The table 4-20 provides useful descriptive statistics for the two groups that are compared, including the mean, standard deviation and standard error. The group means are significantly different because the p-value is 0.014 which is less than 0.05.

Hence, by rejecting the null hypothesis it is concluded that there is significant difference between frequency of repayment and respondents who are unable to repay the loan.

### 4.3.6 Binary Logistic Regression

A binary logistic regression (often simply referred to as logistic regression) estimates the probability of an event falling into one of two types with a dichotomous dependent variable based on one or more independent variables that can either are continuous or categorical. The logistic regression model is simply a non-linear transformation of the linear regression. In this analysis, the dependent variable is 'Does banks grant proposed amount of loan?' and the independent variables taken are: 'Whether bank employee has given information of different loan scheme?' and 'Opinion regarding behaviour of bank executives'. Since, providing information about various schemes of agricultural loan is the primary objective of the bank employee with regard to agricultural financing. Despite the fact that proper information is provided by bank employees, the outcome is whether the proposed amount is given to farmers as per the information. Hence the following variables are analysed using binary logistic regression.

$H_{06}$: There is no significance difference between banks granting proposed amount of loan with regard to information provided by bank employees and behaviour of bank executives.

**Table 4-21: Model Summary of logistic regression**

| -2 Log likelihood | Cox & Snell R Square | Nagelkerke R Square |
|---|---|---|
| 513.806[a] | 0.034 | 0.045 |

The table 4-21 contains the Cox & Snell R Square and Nagelkerke R Square values, which are both methods of calculating the explained variation. These values are sometimes referred to as pseudo $R^2$ values and will have lower values than in multiple regressions. Therefore, the explained variation in the dependent variable based on our model ranges from 3.4% to 4.5%, depending on whether the reference is Cox & Snell $R^2$ or Nagelkerke $R^2$ methods, respectively.

**Table 4-22: Classification Table**

| Observed | | Predicted | | |
|---|---|---|---|---|
| | | Does Banks grants proposed amount of loan | | Percentage Correct |
| | | Yes | No | |
| Does Banks grant proposed | Ye | 116 | 75 | 60.7 |

| | | | | |
|---|---|---|---|---|
| **amount of loan** | **s** | | | |
| | **No** | 86 | 103 | 54.5 |
| **Overall Percentage** | | | | 57.6 |

Binary logistic regression estimates the probability of an event (in this case, does banks grant proposed amount of loan) occurring. If the estimated probability of the event occurring is greater than or equal to 0.5, the event is occurring. If the probability is less than 0.5, the event is classified as not occurring (e.g., no proposed amount of loan is granted). It is very common to use binary logistic regression to predict whether cases can be correctly predicted from the independent variables. The correct overall percentage obtained is 57.6 which is good.

**Table 4-23: Variables in the equation**

| | **B** | **S.E.** | **Wald** | **df** | **Sig.** | **Exp(B)** | **95% C.I. for Exp(B)** | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | **Lower** | **Upper** |
| **Whether bank employees has given information of different loan scheme of banks** | -0.422 | 0.209 | 4.075 | 1 | 0.044* | 0.656 | 0.435 | 0.988 |
| **What is your opinion regarding behaviour of bank executives and employees** | 0.585 | 0.21 | 7.799 | 1 | 0.005* | 1.795 | 1.191 | 2.707 |
| **Constant** | -0.658 | 0.347 | 3.595 | 1 | 0.058 | 0.518 | | |

Note: * denotes Significance at 5% level

The "Variables in the Equation" in the table 4-23 shows the contribution of each independent variable to the model and its statistical significance. The Wald test ("Wald" column) is used to determine statistical significance for each of the independent variables. The statistical significance of the test is found in the "Sig." column. From the results it is seen that ‘whether bank employee has given information of different loan scheme of banks’ (p = 0.044)

and ‘opinion regarding behaviour of bank executives’ (p = 0.005) added significantly to the model.

In general, a logistic regression is performed to ascertain the effects of information given by bank employees about different loan scheme and opinion regarding behaviour of bank executives on the likelihood that banks grant proposed amount of loan. The model explained 33.0% (Nagelkerke $R^2$) of the variance in banks granting proposed amount of loan and correctly classified 57.6 % of cases.

Hence, by rejecting the null hypothesis it is concluded that there is significant difference between banks granting proposed amount of loan with regard to information provided by bank employees and behaviour of bank executives.

### 4.3.7 Chi-square test for the reasons behind banks not proposing the said loan amount and causes for overdue

The Chi-square analysis is tested for the variables: ‘reasons behind banks not proposing the said amount’ and ‘causes for overdue’. Reasons behind banks not proposing includes four values: ‘land title issues’, ‘less mortgage’, ‘not submitted last 3 years audited statement’ and ‘others’ whereas causes for overdue includes four values: ‘monsoon failure’, ‘high input costs’, ‘low demand for agricultural products’ and ‘government policy’. The above variables are taken in this analysis because the loan amount is reduced due to land title issues and other problems associated with the documents. Due to this, the farmers need is not satisfied and factors like monsoon, low demand etc. tends to produce less return on cultivation causing overdue for farmers. Hence the association for both variables is tested through chi-square test.

$H_{07}$: There is no significance association between banks not proposing the said loan amount and causes for overdue.

**Table 4-24: Crosstabs for banks not proposing the said loan amount and causes for overdue**

| | Causes for overdue | | | | | Total |
|---|---|---|---|---|---|---|
| | Monsoon Failure | High Input Cost | Low demand for agricultural | Government Policy | Others | |

| | | | | products | | | |
|---|---|---|---|---|---|---|---|
| **What is the reason for banks not proposing the said amount?** | **Land title issues** | 25 | 23 | 16 | 16 | 24 | 104 |
| | **Less mortgage** | 24 | 27 | 17 | 11 | 16 | 95 |
| | **Not submitted last 3 years audited statement** | 14 | 19 | 13 | 15 | 18 | 79 |
| | **Others** | 13 | 21 | 18 | 34 | 16 | 102 |
| | **Total** | 76 | 90 | 64 | 76 | 74 | 380 |

Table 4-24 is the crosstabs table and it provides information that is useful for interpreting the chi-square test result. The row total and column total are described on basis of variables taken.

**Table 4-25 Chi-square Tests**

| | **Value** | **df** | **Asymptotic Significance (2-sided)** |
|---|---|---|---|
| **Pearson Chi-Square** | 22.529 | 12 | 0.032* |
| **Likelihood Ratio** | 21.935 | 12 | 0.038 |
| **Linear-by-Linear Association** | 3.458 | 1 | 0.063 |
| **N of Valid Cases** | 380 | | |

Note: * denotes Significance at 5% level

The chi square statistic appears in the value column immediately to the right of "Pearson Chi-Square". In this analysis, the value of chi-square statistic is 22.529. The p-value 0.032 appears in the same row in the "Asymptotic Significance (2-sided)" column. The result is significant since the value is less than the designated alpha level of 0.05.

In this case, the p-value of 0.032 is smaller than the standard alpha value and hence the null hypothesis is rejected. The result is significant – the data suggests that the variables banks not proposing the said loan amount and causes for overdue are associated with each other.

### 4.3.8 T-Test for comparison of banks by farmers and utilising the loan amount for same purpose

The independent-samples t-test compares the means between two unrelated groups on the dependent variable. In this analysis, independent t-test is used to understand by creating a grouping variable

‘Comparison of banks’ called the independent variable and ‘Utilising the borrowed amount for same purpose’ differed based on two groups: ‘Yes’ and ‘No’. The two variables comparison of banks and utilisation of borrowed amount are considered for this analysis because some farmers think that they should approach a convenient bank and banks with good service history to customers. On the other hand, it may happen that the farmer is approaching for loan other than agricultural reasons and hence the farmer is comparing banks where the formalities are simpler and he may get the loan easier for utilising the amount for other personal use.

$H_{08}$: There is no significance difference between comparison of banks by farmers and utilising the loan amount for same purpose.

**Table 4-26: Independent sample t- test table**

| | Have you compared other banks before taking loan from banks? | N | Mean | Std. Deviation | Std. Error | t value | p value |
|---|---|---|---|---|---|---|---|
| **Did you utilise borrowing for the same purpose?** | **Yes** | 198 | 1.54 | 0.500 | 0.036 | 2.296 | 0.022* |
| | **No** | 182 | 1.42 | 0.495 | 0.037 | | |

Note: * denotes Significance at 5% level

The table 4-26 provides useful descriptive statistics for the two groups that were compared, including the mean, standard deviation and standard error. The group means are statistically significantly different because the p-value is 0.022 which is less than 0.05.

Hence, by rejecting the null hypothesis it is concluded that there is significant difference between comparison of banks by farmers and utilising the loan amount for same purpose.

### 4.3.9 Multinomial Logistic Regression

Multinomial Logistic Regression was used to forecast a dependent variable given one or more independent variables (often called 'multinomial regression'). Often an extension of binomial logistic regression is considered to allow for a dependent variable of more than two categories. In this analysis, the dependent variable ‘Selection of banks’ has five categories: “Convenience”, “Bank executives are familiar”, “It is a leading bank”, “Reputation of the bank” and “Any other”. The independent variables were ‘Purpose of loan’ and ‘Asset securitised for loan’. The main reason behind choosing these variables are selection of banks depends on the service of banks and their reputation. On the other

hand, based on the selection the purpose of loan is stated and what asset can be securitised for attaining better loan facilities and services through the bank's information is noted clearly. For example, loan for agricultural activities through gold as a security has lower interest rates. The analysis will generate a few tables of output for a multinomial logistic regression analysis.

$H_{09}$: There is no significance difference between selection of banks with respect to asset securitised for attaining loan and purpose of loan.

The tables required to understand the results from multinomial logistic regression procedure, assuming that no assumptions have been violated as shown in table 4-27:

**Table 4-27: Goodness-of-fit table**

| | Chi-Square | df | Sig. |
|---|---|---|---|
| **Pearson** | 110.401 | 76 | 0.006** |
| **Deviance** | 119.433 | 76 | 0.001** |

Note: ** denotes Significance at 1% level

The first row, labelled "Pearson", presents the Pearson chi-square statistic. A statistically significant result (i.e., $p < 0.05$) indicates that the model fits the data well. From table 4-27, the p-value is 0.006 (from the "Sig." column) and is, therefore, statistically significant. Based on this measure, the model fits the data well. The other row of the table (i.e., the "Deviance" row) presents the Deviance chi-square statistic.

Another option to get an overall measure of the model is to consider the statistics presented in the Model Fitting Information table, as shown below in table 4-28:

**Table 4-28: Model Fitting Information**

| Model | Model Fitting Criteria | Likelihood Ratio Tests | df | Sig. |
|---|---|---|---|---|
| | -2 Log Likelihood | Chi-Square | | |
| **Intercept Only** | 388.553 | | | |
| **Final** | 344.808 | 43.745 | 20 | 0.002** |

Note: ** denotes Significance at 1% level

The "Final" row presents information on whether all the coefficients of the model are zero (i.e., whether any of the coefficients are statistically significant). Another way to consider this result is whether the variables added in the analysis significantly improves the model compared to the intercept alone. From the "Sig." column, the p-value = 0.002, which means that the full model statistically significantly predicts the dependent variable better.

In multinomial logistic regression, measures considered are similar to $R^2$ in ordinary least-squares linear regression, which is the proportion of variance that can be explained by the model. In multinomial logistic regression, Pseudo $R^2$ measures are taken and there is more than one, although none are easily interpretable. Nonetheless, they are calculated in the Pseudo R-Square table as shown in table 4-29:

**Table 4-29: Pseudo R-Square**

| | |
|---|---|
| **Cox and Snell** | 0.109 |
| **Nagelkerke** | 0.113 |
| **McFadden** | 0.036 |

of much greater importance are the results presented in the Likelihood Ratio Tests table, as shown below in table 4-30:

**Table 4-30: Likelihood Ratio Tests**

| **Effect** | **Model Fitting Criteria** | **Likelihood Ratio Tests** | | |
|---|---|---|---|---|
| | **-2 Log Likelihood of Reduced Model** | **Chi-Square** | **df** | **Sig.** |
| **Intercept** | 344.808[a] | 0 | 0 | . |
| **Asset securitised for the loan** | 360.384 | 15.575 | 4 | 0.004** |
| **Purpose of loan** | 374.199 | 29.391 | 16 | 0.021* |

Note: * denotes Significance at 5% level, ** denotes Significance at 1% level

The table 4-30 shows which of the independent variables are statistically significant. It is noted that asset securitised for the loan is statistically significant because p = 0.004 (the "Sig." column). On the other hand, purpose of loan is also statistically significant because p = 0.021. This table is mostly useful for independent variables because it is the only table that considers the overall effect of the variables.

Hence, by rejecting the null hypothesis it is concluded that there is significance difference between selection of banks with respect to asset securitised for attaining loan and purpose of loan.

### 4.3.10 Chi-square test for knowledge about banks agricultural financing and rate of interest regarding the loan

The Chi-square analysis is tested for the variables: whom you came to know about the banks agricultural finance and rate of interest for loan. Knowledge about banks agricultural finance includes four values: 'self-visit', 'relatives', 'gram panchayat' and 'advertisements' whereas rate of interest for loan includes four values: 'no interest', '1% to 5%', '6% to 10%' and 'more than 10%'. The variables such as knowledge about agricultural finance and rate of interest are prescribed for this analysis because banks provide certain offers for agricultural loan in order to improve their customer base and through this various bank provide different interest rate for loan to farmers based on the category of farmers and land owned.

$H_{10}$: There is no significance association between knowledge on banks agricultural finance and rate of interest for loan.

**Table 4-31: Crosstabs for knowledge about the Bank's Agricultural finance and Rate of Interest for loan**

| | | Rate of Interest for loan | | | | Total |
|---|---|---|---|---|---|---|
| | | No interest | 1 % - 5 % | 6 % - 10 % | More than 10 % | |
| Knowledge about the Bank's Agricultural finance | Self - visit | 20 | 27 | 33 | 21 | 101 |
| | Relatives | 20 | 24 | 17 | 27 | 88 |
| | Gram Panchayat | 22 | 17 | 30 | 27 | 96 |
| | Advertisement | 30 | 14 | 18 | 33 | 95 |
| | Total | 92 | 82 | 98 | 108 | 380 |

Table 4-31 is the crosstabs table and it provides information that is useful for interpreting the chi-square test result. The row total and column total are described on basis of variables taken for analysis.

**Table 4-32: Chi-square tests**

| | Value | df | Asymptotic Significance (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 18.062 | 9 | 0.034* |
| Likelihood Ratio | 18.263 | 9 | 0.032 |
| Linear-by-Linear Association | 0.076 | 1 | 0.783 |
| N of Valid Cases | 380 | | |

Note: * denotes Significance at 5% level

The chi-square statistic appears in the value column immediately to the right of "Pearson Chi-Square". In this analysis, the value of chi-square statistic is 18.062. The p-value 0.034 appears in the same row in the "Asymptotic Significance (2-sided)" column. The result is significant since the p-value is less than the designated alpha level of 0.05.

In this case, the p-value of 0.034 is smaller than the standard alpha value and hence the null hypothesis is rejected. The result is significant – the data suggests that the variables knowledge about banks agricultural finance and rate of interest for loan are associated with each other.

### 4.3.11 Chi-square tests for amount of loan taken and mode of repayment

In Chi-square analysis, the row variable considered is 'Mode of repayment' which has four categories: "Monthly", "Quarterly", "Half-yearly" and "Yearly" and column variable is 'Amount of loan taken' having five categories: 'Less than ₹ 1,00,000', '₹ 1,00,001 – ₹ 2,00,000', '₹ 2,00,001 – ₹ 3,00,000', '₹ 3,00,001 – ₹ 4,00,000', 'Above ₹ 4,00,000'. The primary reason behind choosing these variables was that based on the loan amount, the repayment mode is decided and it depends on borrower's ability to pay the principal amount with calculated interest.

$H_{11}$: There is no significance association between amount of loan taken and mode of repayment followed.

**Table 4-33: Crosstabs for amount of loan taken and mode of repayment**

| | | Mode of Repayment | | | | Total |
|---|---|---|---|---|---|---|
| | | Monthly | Quarterly | Half yearly | Yearly | |
| Amount of loan taken | Less than ₹ 1,00,000 | 13 | 20 | 18 | 15 | 66 |
| | ₹ 1,00,001 - ₹ 2,00,000 | 32 | 14 | 15 | 22 | 83 |
| | ₹ 2,00,001 - ₹ 3,00,000 | 26 | 24 | 22 | 12 | 84 |
| | ₹ 3,00,001 - ₹ 4,00,000 | 20 | 14 | 24 | 22 | 80 |
| | Above ₹ 4,00,000 | 14 | 20 | 12 | 21 | 67 |
| | Total | 105 | 92 | 91 | 92 | 380 |

Table 4-33 is the crosstabs table and it provides information that is useful for interpreting the chi-square test result. The row total and column total are described on basis of variables taken for analysis.

**Table 4-34: Chi-square tests**

| | Value | df | Asymptotic Significance (2-sided) |
|---|---|---|---|
| **Pearson Chi-Square** | 21.957 | 12 | 0.038* |
| **Likelihood Ratio** | 22.589 | 12 | 0.031 |
| **Linear-by-Linear Association** | 1.105 | 1 | 0.293 |
| **N of Valid Cases** | 380 | | |

Note: * denotes Significance at 5% level

The value of chi-square statistic obtained is 21.957. The p-value 0.038 appears in the same row in the "Asymptotic Significance (2-sided)" column. The result is significant since the p-value is less than the designated alpha level of 0.05.

In this case, the p-value of 0.038 is smaller than the standard alpha value and hence the null hypothesis is rejected. The data suggests that the variables amount of loan taken and mode of repayment followed are associated with each other.

### 4.3.12 ANOVA for types of crop cultivated and land ownership

In this analysis, one-way ANOVA is used to understand whether the types of crop cultivated are dependent on land ownership, dividing into three independent groups: commercial, non-commercial and both. Whereas the land ownership has three types: tenant, leased and self-owned. The variables types of crop and types of land ownership are considered because each farmer's motive is different based on the land ownership and type of crop cultivated. Some farmer may take higher amount of loan because their land may be self-owned and they have higher responsibility of the crops cultivated. If the land is under the control of landlord, then the farmer cannot make decisions on his own rather than follow the guidance of the landlord. Hence it becomes difficult to choose between commercial and non-commercial crops based on types of land ownership.

$H_{12}$: There is no significance difference between types of crops cultivated and land ownership in agricultural financing.

**Table 4-35: ANOVA Table for types of crops cultivated and land ownership**

| | Sum of Squares | df | Mean Square | F value | p - value |
|---|---|---|---|---|---|
| **Between Groups** | 4.649 | 2 | 2.325 | 3.485 | 0.032* |
| **Within Groups** | 251.485 | 377 | 0.667 | | |
| **Total** | 256.134 | 379 | | | |

Note: * denotes Significance at 5% level

The table 4-35 shows the output of ANOVA analysis and whether there is a statistically significant difference between the two groups. The significance value is 0.032 (i.e., $p$ = 0.032), which is below 0.05 clarifies that there is a statistically significant difference between types of crops cultivated and land ownership in agricultural financing.

Hence by rejecting the null hypothesis it is concluded that there is significance difference between types of crops cultivated and land ownership in agricultural financing.

### 4.3.13 Chi-square analysis for land owned in square meter and number of crops grown in a year

In Chi-square analysis, the row variable considered is 'land owned in square meter' which is divided into four categories: "less than 10,000 square meter", "10,001 – 20,000 square meter", "20,001 – 30,000 square meter" and "above 30,000 square meter". The column variable chosen is 'number of crops grown in a year' which is divided into 4 categories: 'less than or equal to 2', '3 – 4 crops', '5 – 6 crops' and 'above 6 crops'. The reason behind analysing these variables are land owned in square meter decides the cultivation of certain crops. If the land owned is huge, then more crops can be cultivated through proper technique such as advanced technological equipment's (sprinkle irrigation) for taking care of the crops.

$H_{13}$: There is no significance association between land owned in square meter and number of crops grown in a year.

**Table 4-36: Crosstabs for land owned in square meter and number of crops grown in a year**

| | Number of crops grown in a year | | | | Total |
|---|---|---|---|---|---|
| | Less than or equal to 2 | 3 - 4 crops | 5 - 6 crops | Above 6 crops | |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Land owned in square meter** | **Less than 10,000 square meter** | 17 | 17 | 31 | 22 | 87 |
| | **10,001 - 20,000 square meter** | 23 | 31 | 20 | 22 | 96 |
| | **20,001 - 30,000 square meter** | 30 | 33 | 16 | 24 | 103 |
| | **Above 30,000 square meter** | 16 | 21 | 30 | 27 | 94 |
| | **Total** | 86 | 102 | 97 | 95 | 380 |

Table 4-36 is the crosstabs table and it provides information that is useful for interpreting the chi-square test result. The row total and column total are described on basis of variables taken for analysis.

**Table 4-37: Chi-square tests**

| | **Value** | **df** | **Asymptotic Significance (2-sided)** |
|---|---|---|---|
| **Pearson Chi-Square** | 18.856 | 9 | 0.026* |
| **Likelihood Ratio** | 19.138 | 9 | 0.024 |
| **Linear-by-Linear Association** | 0.03 | 1 | 0.861 |
| **N of Valid Cases** | 380 | | |

Note: * denotes Significance at 5% level

The value of chi-square statistic obtained is 18.856. The p-value 0.026 appears in the same row in the "Asymptotic Significance (2-sided)" column. The result is significant since the p-value is less than the designated alpha level of 0.05.

In this case, the p-value of 0.026 is smaller than the standard alpha value and hence the null hypothesis is rejected. The data suggests that the variables land owned in square meter and numbers of crops grown in a year are associated with each other.

### 4.3.14 Chi-square analysis for revenue earning crops and reliable market price for the yield

In the analysis using Chi-square, the row variable considered is 'kind of revenue earning crops' which is divided into seven categories: "Vegetables", "Fruits", "Pulses", "Cashew", "Rice", "Coconut" and "Sugarcane". The column variable consists of 'reliable market price for the yield' which has two values: "yes" and "no". Both the variables revenue earning crops

and responses regarding market price for the yield are analysed with the view that understanding the best crops which is giving good revenue, the farmer may cultivate crops based on the seasonal demand for the same. On the other hand, it shows that whether the seven categories of crops reported revenue to the farmers through this study.

$H_{14}$: There is no significance association between revenue earning crops and reliable market price of the yield.

**Table 4-38 Crosstabs for revenue earning crops and reliable market price of the yield**

| | | Reliable market price for the yield | | Total |
|---|---|---|---|---|
| | | Yes | No | |
| Kind of crops to get revenue | Vegetables | 19 | 25 | 44 |
| | Fruits | 23 | 32 | 55 |
| | Pulses | 31 | 25 | 56 |
| | Cashew | 25 | 33 | 58 |
| | Rice | 26 | 31 | 57 |
| | Coconut | 38 | 18 | 56 |
| | Sugarcane | 33 | 21 | 54 |
| | Total | 195 | 185 | 380 |

Table 4-38 is the crosstabs table and it provides information that is useful for interpreting the chi-square test result. The row total and column total are described on basis of variables taken for analysis.

**Table 4-39 Chi-square tests**

| | Value | df | Asymptotic Significance (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 14.032 | 6 | 0.029* |
| Likelihood Ratio | 14.219 | 6 | 0.027 |
| Linear-by-Linear Association | 6.968 | 1 | 0.008 |
| N of Valid Cases | 380 | | |

Note: * denotes Significance at 5% level

The value of chi-square statistic obtained is 14.032. The p-value 0.029 appears in the same row in the “Asymptotic Significance (2-sided)” column. The result is significant since the p-value is less than the designated alpha level of 0.05.

In this case, the p-value of 0.029 is smaller than the standard alpha value and hence the null hypothesis is rejected. The data suggests that the variables revenue earning crops and reliable market price of the yield are associated with each other.

### 4.3.15 Categorical Regression analysis for method of cultivation adopted and types of farm land

In the analysis for method of cultivation adopted and type of farm land, categorical regression analysis is used. The variable 'method of cultivation' is divided into two types: "traditional" and "modern" whereas the dependent variable 'types of farm land' is categorised into two parts: 'irrigated' and 'non-irrigated'. The main motive behind choosing the variables method of cultivation and types of farm land is that based on the type of land, cultivation of the crop is decided. If the land is an irrigated land, then modern cultivation method can be used for better results. Land plays an important role in agricultural development. The regression analysis is done to obtain better results.

$H_{15}$: There is no significance relationship between method of cultivation adopted and types of farm land in agricultural financing.

**Table 4-40: Model Summaries**

| | Multiple R | R Square | Adjusted R Square |
|---|---|---|---|
| **Standardized Data** | 0.136 | 0.018 | 0.016 |

The Model Summary table 4-40 reports the value of R obtained with the regression analysis. The R value represents the simple correlation of 0.136 and the $R^2$ value shows that the model explains 1.8 % of the variation in the dependent variable which can be explained by the independent variable.

**Table 4-41: ANOVA table**

| | Sum of Squares | df | Mean Square | F value | p - value |
|---|---|---|---|---|---|
| **Regression** | 7.032 | 1 | 7.032 | 7.127 | 0.008** |
| **Residual** | 372.967 | 378 | 0.987 | | |
| **Total** | 380 | 379 | | | |

Note: ** denotes Significance at 1% level

The table 4-41 is the ANOVA table, which reports how well the regression equation fits the data or predicts the dependent variable. The table indicates the regression model predicting the dependent variable significantly well. The p- value is 0.008 which is less than 0.05 indicating that regression model statistically significantly predicts the outcome variable that is good fit for the data.

**Table 4-42: Coefficients table**

| | **Standardized Coefficients** | | | | |
|---|---|---|---|---|---|
| | **Beta** | **Estimate of Std. Error** | **df** | **F** | **Sig.** |
| **Method of Cultivation adopted** | 0.136 | 0.049 | 1 | 7.633 | 0.006** |
| Dependent Variable: Type of Farm land | | | | | |

Note: ** denotes Significance at 1% level

The coefficients table 4.42 provides with the necessary information to predict various types of farm land from method of cultivation adopted. Here the coefficient of $X_{01}$ is 0.136 represents the effect of cultivation method adopted on types of farm land. The positive assessed sign indicates that such effect is positive and the coefficient value is significant at 1 % level.
Hence, rejecting the Null hypothesis $H_{15}$, it is concluded that there exists a significant relationship between method of cultivation adopted and types of farm land in agricultural financing.

### 4.3.16ANOVA for medium of sale for crops and types of crop cultivated

In this analysis, one-way ANOVA is used to understand whether the medium of sale for crops is dependent on types of crop cultivated, dividing into three independent groups: self, middlemen and direct contact with the main party. Whereas the types of crop cultivated has three types: commercial, non-commercial and both. The variables medium of sale and types of crop cultivated are considered for this analysis because based on the sale of crops such as direct sales, third party sales or to middlemen what types of crop can be cultivated in the prescribed land according to the farmer.

$H_{16}$: There is no significance difference between medium of sale for crops and types of crop cultivated in agricultural financing.

**Table 4-43: ANOVA table**

| | | Sum of Squares | df | Mean Square | F value | p - value |
|---|---|---|---|---|---|---|
| **Medium of sale for crops * Types of crops cultivated** | **Between Groups** | 4.013 | 2 | 2.007 | 3.044 | 0.049* |
| | **Within Groups** | 248.542 | 377 | 0.659 | | |
| | **Total** | 252.555 | 379 | | | |

Note: * denotes Significance at 5% level

The table 4-43 shows the output of ANOVA analysis and whether there is a statistically significant difference between the two groups. The significance value is 0.049 (i.e., $p$ = 0.049), which is below 0.05 and, therefore, there is a statistically significant difference between medium of sale for crops and types of crop cultivated in agricultural financing.

Hence, by rejecting the null hypothesis it is concluded that there is significant difference between medium of sale for crops and types of crop cultivated in agricultural financing.

### 4.3.17Correlation analysis for monitoring the use of loan and recovery of loan by bank officials

In the analysis with correlation, the variables **'**monitoring the use of loan by bank executives' and 'recovery of loan by bank officials' were considered. Correlation defines the strength of relationship. According to bank officials, monitoring the loan usage is important because the loan should not be mishandled at any circumstances. On the other hand, recovering the principal amount with interest is the source of income for banks. Hence, proper monitoring and recovery of loan is primarily important.

$H_{17}$: There is no significant relationship between monitoring loan usage and recovery of loan by bank officials.

**Table 4-44: Correlation between monitoring loan usage and recovery of loan by bank officials**

| | | Monitoring the use of loan by Bank executives | |
|---|---|---|---|
| **Monitoring the use of loan by Bank executives** | **Pearson Correlation** | 1 | 0.104* |
| | **Sig. (2-tailed)** | | 0.044* |
| | **N** | 380 | 380 |

| | | | |
|---|---|---|---|
| **Recovery of loan by bank officials** | **Pearson Correlation** | 0.104* | 1 |
| | **Sig. (2-tailed)** | 0.044* | |
| | **N** | 380 | 380 |

*. Correlation is significant at the 0.05 level (2-tailed).

The above table 4-44 displays the result of the Pearson's correlation coefficient which is 0.104. There is sufficient evidence to conclude that by rejecting the null hypothesis of p-value less than 0.05 (p-value = 0.044), there is significant relationship between monitoring loan usage and recovery of loan by bank officials.

### 4.4 Factors affecting utilization of credit facilities by banks

In order to test Likert scale data for factors affecting utilization of credit facilities by banks, it is necessary to check the reliability of the data. For ensuring that the questions mentioned in the questionnaire reliably measure the same latent variable (i.e. factors affecting utilization of credit facilities by banks in the state of Goa), the Cronbach's alpha test is used to test the internal consistency.

**Table 4-45: Reliability test**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | Number of Statements |
|---|---|---|
| 0.852 | 0.874 | 10 |

Cronbach's alpha reliability coefficient normally ranges between 0 and 1. In the above table 4-45, the alpha value is 0.852 which is closer to 1. There is greater internal consistency of the variables in the scale. Cronbach's alpha coefficient increases either as the number of items (variables) increases, or as the average inter-item correlations increase. The following table 4-46 describes the Cronbach's alpha for all statements in order to check internal consistency of the variables.

**Table 4-46: Cronbach's Alpha Statement-wise**

| Sr. No. | Statements | Cronbach's Alpha |
|---|---|---|
| **1** | **Sanctioning of the loan** | 0.831 |
| **2** | **Inferior quality of Input** | 0.833 |
| **3** | **Market Conditions** | 0.830 |
| **4** | **Convenient location of banks** | 0.831 |
| **5** | **Quick disbursement of loans** | 0.824 |
| **6** | **Quality of service of bank staffs** | 0.833 |
| **7** | **Low interest rate** | 0.827 |
| **8** | **Convenient repayment method** | 0.845 |
| **9** | **Social factors** | 0.876 |
| **10** | **Weather conditions** | 0.843 |

In the above table 4-46, Cronbach's alpha for each item is displayed where the alpha value is more than 0.80 for all items defining greater internal consistency of the variables in scale.

### 4.4.1 Factor Analysis for components affecting utilization of credit facilities by banks

Factor analysis is used to reduce a larger number of variables to a smaller number of components or factors. They are interdependent procedures which mean that they do not assume the existence of a dependent variable. Hence, factor analysis is based on the assumption that all variables are correlated to some degree. Therefore, those variables that share similar underlying dimensions should be highly correlated, and those variables that measure different dimensions should yield low correlations.

**Table: 4-47: Bartlett's Sphericity**

| | | |
|---|---|---|
| **Kaiser-Meyer-Olkin Measure of Sampling Adequacy** | | 0.899 |
| **Bartlett's Test of Sphericity** | **Approx. Chi-Square** | 1400.194 |
| | **df** | 45 |
| | **Sig.** | 0.000 |

The table 4-47 shows that KMO value of the collected data set is 0.899, which indicates the presence of required sampling adequacy. The KMO value of 0.899 also represents the

adequacy of enough variations in the responses against the statements, which is a necessary condition. The test of sphericity is based on Chi-square transformation of determinant of correlation matrix. The results of Bartlett test indicate that p-value of chi-square statistic is 0.000, which is less than 5 percent level of significance. Hence, there exist significant correlations between different pairs of statements.

**Table 4-48: Initial and Extracted communalities of the Variables under study**

| SR. NO. | Statements | Initial | Extraction |
|---|---|---|---|
| **1** | **Sanctioning of the loan** | 1.000 | 0.571 |
| **2** | **Inferior quality of Input** | 1.000 | 0.739 |
| **3** | **Market Conditions** | 1.000 | 0.612 |
| **4** | **Convenient location of banks** | 1.000 | 0.600 |
| **5** | **Quick disbursement of loans** | 1.000 | 0.681 |
| **6** | **Quality of service of bank staffs** | 1.000 | 0.528 |
| **7** | **Low interest rate** | 1.000 | 0.674 |
| **8** | **Convenient repayment method** | 1.000 | 0.386 |
| **9** | **Social factors** | 1.000 | 0.970 |
| **10** | **Weather conditions** | 1.000 | 0.818 |
| Extraction Method: Principal Component Analysis. | | | |

The above table 4.48 shows that the extracted communalities of all variables are greater than 0.5 and in one case approaching 0.4. Hence the variables with the values of 0.5 can be included in the factor analysis. After calculating the Eigen values of the components, they are arranged in descending order with respect to calculated Eigen values. The results of factor analysis after applying principle component analysis are shown in the below table:

**Table 4-49: Total Variances Explained**

| Component | Initial Eigen values | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 4.590 | 45.897 | 45.897 | 4.590 | 45.897 | 45.897 | 3.601 | 36.006 | 36.006 |
| 2 | 1.011 | 10.115 | 56.012 | 1.011 | 10.115 | 56.012 | 1.944 | 19.438 | 55.445 |
| 3 | 0.982 | 9.822 | 65.834 | 0.982 | 9.822 | 65.834 | 1.039 | 10.389 | 65.834 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 4 | 0.726 | 7.260 | 73.093 | | | | | | |
| 5 | 0.566 | 5.656 | 78.749 | | | | | | |
| 6 | 0.524 | 5.243 | 83.992 | | | | | | |
| 7 | 0.475 | 4.754 | 88.746 | | | | | | |
| 8 | 0.436 | 4.364 | 93.111 | | | | | | |
| 9 | 0.383 | 3.832 | 96.943 | | | | | | |
| 10 | 0.306 | 3.057 | 100.000 | | | | | | |
| Extraction Method: Principal Component Analysis. | | | | | | | | | |

The results indicate that the 10 statements considered for the study can be reduced to 3 components. These 3 factors explain that 65.834 percent of the variation of included statements. Assumed that the explained variance is sufficient, the extracted factors will be used for further analysis.

In order to modify the extracted components representing the 10 statements, orthogonal rotation (Varimax) is applied. The Rotated Component Matrix (RCM) represents the factor loading of each variable to the extracted factors. The factor loadings can be defined as the correlation between the factors and the variables. It is assumed that every variable considered for the study must have significant factor loading to only one factor and insignificant factor loadings to all other extracted factors. The result of the rotated component matrix is shown in below table:

**Table 4-50: Rotated Component Matrix**

| Statements | Component | | |
|---|---|---|---|
| | 1 | 2 | 3 |
| **Low interest rate** | 0.79 | | |
| **Convenient location of banks** | 0.754 | | |
| **Market Conditions** | 0.752 | | |
| **Quick disbursement of loans** | 0.748 | | |
| **Sanctioning of the loan** | 0.718 | | |
| **Convenient repayment method** | 0.607 | | |
| **Quality of service of bank staffs** | 0.511 | | |
| **Weather conditions** | | 0.889 | |
| **Inferior quality of Input** | | 0.794 | |
| **Social factors** | | | 0.983 |
| Extraction Method: Principal Component Analysis. | | | |

Rotation Method: Varimax with Kaiser Normalization.

The result of Rotated component matrix (RCM) indicates that the 10 statements can be reduced to 3 extracted components. It is found that all the variables have significant factor loadings to only one factor and insignificant factor loadings to other extracted factors.

From the Factor analysis, we get three components: Component 1 consists of seven variables which are defined as "Quality Banking services". Component 2 consists of two variables which are defined as "External factors" and Component 3 consists of a single variable known as "Social factors".

### 4.4.2 Chi-square tests for social factors and related supporting business of respondents other than agriculture

In the analysis with Chi-square tests, the social factors component was obtained through factor rotation and it is tested with related supporting business other than farming. The objective behind taking the variables social factors and related supporting business are that farmers who have other business such as fishing, dairy farm etc. may not avail loan from banks for agricultural development.

$H_{18}$: There is no significance association between social factors and related supporting business of farmers in agricultural financing.

**Table 4-51: Crosstabs for social factors and related supporting business of farmers**

| | | Any supporting business | | | | |
|---|---|---|---|---|---|---|
| | | **Dairy** | **Service** | **Others** | **None** | **Total** |
| **Social factors** | **Strongly Disagree** | 1 | 4 | 6 | 1 | 12 |
| | **Disagree** | 4 | 3 | 4 | 2 | 13 |
| | **Neutral** | 8 | 5 | 4 | 5 | 29 |
| | **Agree** | 25 | 13 | 19 | 18 | 86 |
| | **Strongly Agree** | 46 | 54 | 48 | 32 | 240 |
| | **Total** | 84 | 79 | 81 | 58 | 380 |

Table 4-51 is the crosstabs table and it provides information that is useful for interpreting the chi-square test result. The row total and column total are described on basis of variables taken for analysis.

**Table 4-52: Chi-square tests**

| | **Value** | **df** | **Asymptotic Significance (2-sided)** |
|---|---|---|---|
| **Pearson Chi-Square** | 26.652 | 16 | 0.046* |
| **Likelihood Ratio** | 30.804 | 16 | 0.014 |

| | | | |
|---|---|---|---|
| **Linear-by-Linear Association** | 4.91 | 1 | 0.027 |
| **N of Valid Cases** | 380 | | |

Note: * denotes Significance at 5% level

The value of chi-square statistic obtained is 26.652. The p-value 0.046 appears in the same row in the "Asymptotic Significance (2-sided)" column. The result is significant since the p-value is less than the designated alpha level of 0.05. In this case, the p-value of 0.046 is smaller than the standard alpha value and hence the null hypothesis is rejected. The data suggests that the variables social factors and related supporting business of farmers are associated with each other.

### 4.4.3 ANOVA for external factors and causes for overdue

The analysis using ANOVA has two variables to be tested: external factors and causes for overdue. External factors were obtained through rotated components of factor analysis. The reason for choosing external factors and causes for overdue are: agriculture is dependent on climate whereas overdue of loan occurs if the output is not of superior quality and the estimated price is not met by farmers.

$H_{19}$: There is no significance difference between external factors and causes for overdue in agricultural financing.

**Table 4-53: ANOVA table**

| | **Sum of Squares** | **df** | **Mean Square** | **F value** | **p – value** |
|---|---|---|---|---|---|
| **Between Groups** | 3.321 | 4 | 0.830 | 1.103 | 0.354 |
| **Within Groups** | 282.138 | 375 | 0.752 | | |
| **Total** | 285.459 | 379 | | | |

The table 4-53 shows the output of ANOVA analysis and whether there is a statistically significant difference between the two groups. The significance value is 0.354 (i.e., $p = 0.354$), which is above 0.05 and, therefore, there is no significant difference between external factors and causes for overdue in agricultural financing.

Hence by accepting the null hypothesis, it is concluded that there is no significant difference between external factors and causes for overdue in agricultural financing.

## 4.5 Opinions regarding bank services

In order to test Likert scale data for opinions regarding bank services according to farmers, it is necessary to check the reliability of the data. For ensuring that the questions mentioned in the questionnaire reliably measure the same latent variable (i.e. opinions regarding bank

services according to farmers in the state of Goa), the Cronbach's alpha test is used to test the internal consistency.

**Table 4-54 Reliability test**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | Number of Statements |
|---|---|---|
| 0.810 | 0.821 | 12 |

Cronbach's alpha reliability coefficient normally ranges between 0 and 1. In the above table 4-54, the alpha value is 0.810 which is closer to 1. There is greater internal consistency of the variables in the scale. Cronbach's alpha coefficient increases either as the number of items (variables) increases, or as the average inter-item correlations increase. The following table 4-55 describes the Cronbach's alpha for all statements in order to check internal consistency of the variables.

**Table 4-55:Cronbach's Alpha Statement-wise**

| Statements | Cronbach's Alpha |
|---|---|
| **High Interest rates** | 0.787 |
| **Short loan term** | 0.794 |
| **Excessive collateral requirements** | 0.789 |
| **Lengthy application process** | 0.806 |
| **High costs associated with borrowing** | 0.811 |
| **High risks uncertain of own ability to pay interest and repay principal** | 0.811 |
| **Benefits by way of subsidy** | 0.792 |
| **Cattle Crop Insurance** | 0.789 |
| **Benefits by way of agricultural implements** | 0.797 |
| **Penal Interest waive** | 0.790 |
| **Increased Agricultural turnover due to financial assistance by banks** | 0.790 |
| **Increased Standard of living due to financial assistance by banks** | 0.795 |

In the above table 4-55, Cronbach's alpha for each item is displayed where the alpha value is more than 0.78 for all items defining greater internal consistency of the variables in scale.

### 4.5.2 Factor analysis for opinions regarding bank services according to farmers

Factor is a multivariate statistical system that is utilized to test how well the measured variables speak to the quantity of constructs. The objective of factor analysis is to decide the number and essentialness of elements that represent the difference and covariation between the indicators. Factor analysis is an essential analytical tool for certain aspects of psychometric evaluation, such as scale reliability assessments.

**Table: 4-56: Bartlett's Sphericity**

| | | |
|---|---|---|
| **Kaiser-Meyer-Olkin Measure of Sampling Adequacy** | | 0.841 |
| **Bartlett's Test of Sphericity** | **Approx. Chi-Square** | 1839.690 |
| | **df** | 66 |
| | **Sig.** | 0.000 |

The table 4-56 shows that KMO value of the collected data set is 0.841, which indicates the presence of required sampling adequacy. The KMO value of 0.841 also represents the adequacy of enough variations in the responses against the statements, which is a necessary condition. The test of sphericity is based on chi-square transformation of determinant of correlation matrix. The results of Bartlett test indicate that p-value of chi-square statistic is 0.000, which is less than 5 percent level of significance. Hence, there exist significant correlations between different pairs of statements.

**Table 4-57: Initial and Extracted communalities of the Variables under study**

| Statements | Initial | Extraction |
|---|---|---|
| **High Interest rates** | 1 | 0.762 |
| **Short loan term** | 1 | 0.584 |
| **Excessive collateral requirements** | 1 | 0.669 |
| **Lengthy application process** | 1 | 0.647 |
| **High costs associated with borrowing** | 1 | 0.670 |
| **High risks uncertain of own ability to pay interest and repay principal** | 1 | 0.582 |
| **Benefits by way of subsidy** | 1 | 0.639 |
| **Cattle Crop Insurance** | 1 | 0.699 |
| **Benefits by way of agricultural implements** | 1 | 0.608 |

| | | |
|---|---|---|
| **Penal Interest waive** | 1 | 0.711 |
| **Increased Agricultural turnover due to financial assistance by banks** | 1 | 0.684 |
| **Increased Standard of living due to financial assistance by banks** | 1 | 0.619 |
| Extraction Method: Principal Component Analysis. | | |

The above table 4-57 shows that the extracted communalities of all variables are greater than 0.5. Hence, the variables with the values greater than 0.5 can be included in the factor analysis. After calculating the Eigen values of the components, they are arranged in descending order with respect to calculated Eigen values. The results of factor analysis after applying principle component analysis are shown in the below table:

**Table 4-58: Total Variances Explained**

| **Component** | **Initial Eigenvalues** | | | **Extraction Sums of Squared Loadings** | | | **Rotation Sums of Squared Loadings** | | |
|---|---|---|---|---|---|---|---|---|---|
| | **Total** | **% of Variance** | **Cumulative %** | **Total** | **% of Variance** | **Cumulative %** | **Total** | **% of Variance** | **Cumulative %** |
| **1** | 4.040 | 33.670 | 33.670 | 4.040 | 33.670 | 33.670 | 3.284 | 27.370 | 27.370 |
| **2** | 2.663 | 22.192 | 55.862 | 2.663 | 22.192 | 55.862 | 2.871 | 23.922 | 51.293 |
| **3** | 1.171 | 9.755 | 65.617 | 1.171 | 9.755 | 65.617 | 1.719 | 14.324 | 65.617 |
| **4** | 0.676 | 5.635 | 71.252 | | | | | | |
| **5** | 0.619 | 5.159 | 76.411 | | | | | | |
| **6** | 0.582 | 4.852 | 81.263 | | | | | | |
| **7** | 0.532 | 4.435 | 85.697 | | | | | | |
| **8** | 0.399 | 3.321 | 89.019 | | | | | | |
| **9** | 0.364 | 3.032 | 92.051 | | | | | | |
| **10** | 0.360 | 3.003 | 95.054 | | | | | | |
| **11** | 0.345 | 2.872 | 97.926 | | | | | | |
| **12** | 0.249 | 2.074 | 100 | | | | | | |
| Extraction Method: Principal Component Analysis. | | | | | | | | | |

The results indicate that the 12 statements considered for the study can be reduced to 3 components. These 3 factors explain that 65.617 percent of the variation of included

statements. Assumed that the explained variance is sufficient, the extracted factors will be used for further analysis.

In order to modify the extracted components representing the 12 statements, orthogonal rotation (Varimax) is applied. The Rotated Component Matrix (RCM) represents the factor loading of each variable to the extracted factors. The factor loadings can be defined as the correlation between the factors and the variables. It is assumed that every variable considered for the study must have significant factor loading to only one factor and insignificant factor loadings to all other extracted factors. The result of the rotated component matrix is shown in below table:

**Table 4-59: Rotated Component Matrix**

| Statements | Component | | |
|---|---|---|---|
| | 1 | 2 | 3 |
| **Penal Interest waive** | 0.838 | | |
| **Cattle Crop Insurance** | 0.830 | | |
| **Increased Agricultural turnover due to financial assistance by banks** | 0.816 | | |
| **Benefits by way of agricultural implements** | 0.768 | | |
| **Increased Standard of living due to financial assistance by banks** | 0.768 | | |
| **High Interest rates** | | 0.829 | |
| **Lengthy application process** | | 0.787 | |
| **Excessive collateral requirements** | | 0.776 | |
| **Benefits by way of subsidy** | | 0.754 | |
| **High costs associated with borrowing** | | | 0.814 |
| **High risks uncertain of own ability to pay interest and repay principal** | | | 0.721 |
| **Short loan term** | | | 0.539 |
| Extraction Method: Principal Component Analysis.<br>Rotation Method: Varimax with Kaiser Normalization. | | | |

The result of Rotated Component Matrix (RCM) indicates that the 12 statements can be reduced to 3 extracted components. It is found that all the variables have significant factor loadings to only one factor and insignificant factor loadings to other extracted factors.

From the factor analysis, we get three components: Component 1 consists of five variables which are defined as “Premium financial services”. Component 2 consists of four variables

which are defined as “Collateral factors” and Component 3 consists of three variables known as “Risk factors”.

## 4.6 CONCLUSIONS

This chapter focused on the analysis of data and findings of the study related to the farmers. It presents the results of the quantitative study based on statistical tests followed by interpretations of results. The following table 4-60 summarises the statistical tests performed for the farmer’s data and factors impacting the utilization of agricultural credit in the state of Goa.

**Table 4-60: Summaries of results**

| Sr. No. | STATISTICAL TEST APPLIED | VARIABLES TESTED | p - value | RESULT | INTERPRETATION |
|---|---|---|---|---|---|
| 1 | **Analysis of Variance (ANOVA)** | Term of loan and Recovery of loan by bank officials. | 0.028 | p – value < 0.05 | Reject the null hypothesis. Significant difference between term loan and recovery of loan by bank officials. |
| 2 | | Loan sufficiency and Recovery of loan. | 0.046 | p – value < 0.05 | Reject the null hypothesis. Significant difference between loan sufficiency and recovery of loan |
| 3 | | Types of crops cultivated and Land ownership. | 0.032 | p – value < 0.05 | Reject the null hypothesis. Significant difference between types of crops cultivated and land ownership. |
| 4 | | Medium of sale for crops and Types of crop cultivated. | 0.049 | p – value < 0.05 | Reject the null hypothesis. Significant difference between medium of sale for crops and types of crop cultivated. |
| 5 | | External factors and Causes for overdue. | 0.354 | p – value > 0.05 | Accept the null hypothesis. No Significant difference between external factors and causes for overdue. |
| 6 | **Pearson Correlation Analysis** | Monitoring loan usage and Recovery of loan. | 0.044 | p – value < 0.05 | Pearson Correlation Coefficient is positive with value of 0.104. Hence Positive correlation between monitoring loan usage and |

| | | | | | |
|---|---|---|---|---|---|
| | | | | | recovery of loan. |
| 7 | **Chi – square Test** | Loan sanctioning and Problems faced in loan sanctioning. | 0.025 | p – value < 0.05 | Reject the null hypothesis. Significant association between loan sanctioning and problems faced in loan sanctioning. |
| 8 | | Days required for loan sanctioning and Problems faced in loan sanctioning. | 0.034 | p – value < 0.05 | Reject the null hypothesis. Significant association between days required loan sanctioning and problems faced in loan sanctioning. |
| 9 | | Banks not proposing the said loan amount and Causes for overdue. | 0.032 | p – value < 0.05 | Reject the null hypothesis. Significant association between banks not proposing the said loan amount and causes for overdue. |
| 10 | | Knowledge about banks agricultural finance and Rate of interest for loan. | 0.034 | p – value < 0.05 | Reject the null hypothesis. Significant association between knowledge of banks agricultural finance and rate of interest for loan. |
| 11 | | Amount of loan taken and Mode of repayment followed. | 0.038 | p – value < 0.05 | Reject the null hypothesis. Significant association between amount of loan taken and mode of repayment followed. |
| 12 | | Land owned in square meter and Number of crops grown in a year. | 0.026 | p – value < 0.05 | Reject the null hypothesis. Significant association between land owned in square meter and number of crops grown in a year. |
| 13 | | Revenue earning crops and reliable market price for the yield. | 0.029 | p – value < 0.05 | Reject the null hypothesis. Significant association between revenue earning crops and reliable market price for the yield. |
| 14 | | Social factors and Related supporting business of farmers. | 0.046 | p – value < 0.05 | Reject the null hypothesis. Significant association between social factors and related supporting business of farmers. |
| 15 | **Binary Logistic Regression** | Effects of information given by bank employees about | 0.044 & 0.005 | p – value < 0.05 | Reject the null hypothesis. Significant relationship between effects of |

| | | | | | |
|---|---|---|---|---|---|
| | | different loan scheme and opinion regarding behaviour of bank executives. | | | information given by bank employees about different loan scheme and opinion regarding behaviour of bank executives. |
| 16 | **Multinomial Logistic Regression** | Selection of banks with respect to asset securitised for attaining loan and purpose of loan. | 0.004 & 0.021 | p – value < 0.05 | Reject the null hypothesis. Significant relationship between selection of banks with respect to asset securitised for attaining loan and purpose of loan. |
| 17 | **Categorical Regression** | Method of cultivation adopted and types of farm land in agriculture. | 0.006 | p – value < 0.05 | Reject the null hypothesis. Significant relationship between method of cultivation adopted and types of farm land in agriculture. |
| 18 | **Independent sample t-test** | Frequency of repayment and Respondents unable to repay the loan. | 0.014 | p – value < 0.05 | Reject the null hypothesis. Significant difference between frequency of repayment and respondents who were unable to repay the loan |
| 19 | | Comparison of banks by farmers and Utilizing the loan amount for desired purpose. | 0.022 | p – value < 0.05 | Reject the null hypothesis. Significant difference between comparison of banks by farmers and utilising the loan amount for same purpose. |
| 20 | **Factor Analysis** | Factors affecting utilization of credit facilities by banks. | 0.000 | p – value < 0.05 | Significant correlation between different pairs of statements exists. The results indicated that the 10 statements considered for the factor study is reduced to 3 components. These 3 components explain 65.834 percent of the variation of included statements. Component 1 consists of seven variables which are defined as “Quality Banking services”. Component 2 consists of two variables which are defined as |

| | | | | | |
|---|---|---|---|---|---|
| | | | | | "External factors" and component 3 consists of a single variable known as "Social factors". |
| 21 | | Opinions regarding banks services. | 0.000 | p – value < 0.05 | A significant correlation between different pairs of statements exists. The results indicated that the 12 statements considered for the factor study is reduced to 3 components These 3 factors explain that 65.617 percent of the variation of included statements. Component 1 consists of five variables which are defined as "Premium financial services". Component 2 consists of four variables which are defined as "Collateral factors" and component 3 consists of three variables known as "Risk factors". |

From Table 4-60 above, it is evident that banks have risen as a major wellspring of institutional finance and the gap in the circulation of institutional finance across different groups of farmers still persists. Credit payment methodologies could be made easier. Providing farmers with training in all banks' procedural formalities may be helpful in extending their admittance to institutional finance.

Through the ANOVA test, there exists significant difference between term of loan and recovery of loan by bank officials through agricultural financing, loan sufficiency and recovery of loan by bank officials, types of crops cultivated and land ownership in agricultural financing, medium of sale for crops and types of crop cultivated whereas there was no significant difference between external factors such as weather conditions, inferior quality of input and causes for overdue in agricultural financing.

With regard to Independent sample t-test, the groups mean was significantly different between frequency of repayment and respondents who were unable to repay the loan. Also, there is significant difference between comparison of banks by farmers and utilising the loan amount for same purpose. There was sufficient evidence to conclude that by Pearson's correlation test, relationship between monitoring loan usage and recovery of loan by bank officials exists.

The Chi-square test of association was analysed and there was significant association between: loan sanctioning and problems faced in loan sanctioning, days required loan sanctioning and problems faced in loan sanctioning, banks not proposing the said loan amount and causes for overdue, knowledge of banks agricultural finance and rate of interest for loan, amount of loan taken and mode of repayment followed, land owned in square meter and number of crops grown in a year, revenue earning crops and reliable market price for the yield and finally social factors and related supporting business of farmers.

Through Binary logistic regression, the effects of information given by bank employees about different loan scheme and opinion regarding behaviour of bank executives on the likelihood that banks grant proposed amount of loan was analysed and both variables added significant relationship to the model. Through Multinomial logistic regression among selection of banks with respect to asset securitised for attaining loan and purpose of loan, there was significant relationship between selection of banks with respect to asset securitised for attaining loan and purpose of loan. Categorical Regression analysis between method of cultivation adopted and types of farm land had significant relationship.

Factor analysis for statements affecting utilization of credit facilities by banks was performed and there was significant correlation between different pairs of statements. The results indicated that the 10 statements considered for the factor study was reduced to 3 components. These 3 components explain 65.834 percent of the variation of included statements. Component 1 consists of seven variables which are defined as “Quality Banking services”. Component 2 consists of two variables which are defined as “External factors” and component 3 consists of a single variable known as “Social factors”.

On the other hand, factor analysis for opinions regarding banks services was performed and there were significant correlations among the different pair of statements. The results indicated that the 12 statements considered for the factor study was reduced to 3 components. These 3 components explain that 65.617 percent of the variation of included statements. Component 1 consists of five variables which are defined as “Premium financial services”. Component 2 consists of four variables which are defined as “Collateral factors” and component 3 consists of three variables known as “Risk factors”.

# CHAPTER 5

# PROBLEMS OF BANKERS IN THE STATE OF GOA

Agricultural credit must be convenient and ought to be imminent at the proper time and at reasonable rate of interest and terms. The Commercial Banks are by far the appropriate institutions for lending, considering their natural capacity to lend and their organization spread all through the nation and in the territory of Goa. In the dispensing of credit by Commercial Banks and Co-Operative Banks, two perspectives are included which include the quantitative aspect and the qualitative viewpoint. As to previous aspect, the quantum ought to be in the increasing pattern with the goal that the qualified agriculturists acquire and furthermore get higher loan amount taking into account cost acceleration and higher inputs utilized for intensive cultivation. In this chapter, bankers of different banking organizations who were associated in the credit process for agriculture shared their reviews through the questionnaire distributed by the researcher. The problems faced by bankers in the credit process are discussed in detail with regard to Goa state.

## 5.1 Introduction

In the Indian sense banks give their customers great types of assistance as opposed to profit making. Commercial banks lend credit, in particular, to all parts of the priority market, education, housing, Self Help Groups, farming, generating Small Scale Industries, etc. In order to investigate the bankers' attitude towards priority sector lending by commercial banks in Goa state, this thesis has been prepared and it is presumed that each bank provides priority agricultural loans and advances in this state. Be that as it might, banks don't likewise concentrate on all portions of need area at the same time. This relies on the bank official’s mind-set because it will help to the banks' NPAs (Non-Performing Assets) degree. In various sectors of finance, the dominant part of the bank offers higher measure of advance to some particular fields such as education, housing, Small Scale Industries administration segment, etc. The bankers focus on equal distribution of credits to all portions of the priority section mainly agriculture which is the backbone of Indian Economy.

To improve output, in the post-green revolution era cultivation has slowly become input-oriented, with farmers receiving increasing types of agricultural inputs. Farmers need credit to

buy agricultural inputs, despite the fact that this practice has a debatable long-term impact. Ideal use of these information sources is a critical factor in assessing the value of harvests. Accessibility of prompt, sufficient and fair credit for fostering practices is critical in this specific situation. Various studies have shown that access to finance takes on a major job in farm productivity. Profitable agriculture stimulates feasible farming.

There are numerous banks in Goa but out of which only 15 banks usually supported farmers with pure agricultural finance. Then again, other banks also gave finance to fishing, dairy and poultry business. State Bank of India headquartered in Panaji is the regional lead bank for both the districts in Goa. The information was collected from Directorate of Agriculture-Goa, via regional bank offices and Deputy General Managers/Assistant General Managers of fifteen banks that are taken as a sample for the examination. In this chapter, through the researcher's disseminated questionnaire, bankers of various banking organizations that are linked in the agricultural credit procedure share their reviews. The list of Banks includes:

**Table 5-1: List of Banks**

| Sr. No. | List of Banks |
|---|---|
| **1** | Bank of Baroda |
| **2** | Bank of India |
| **3** | Bank of Maharashtra |
| **4** | Canara Bank |
| **5** | Central Bank of India |
| **6** | Corporation Bank |
| **7** | Federal Bank |
| **8** | Indian Overseas Bank |
| **9** | State Bank of India |
| **10** | Syndicate Bank |
| **11** | The Goa State Co-operative Bank Ltd. |
| **12** | The Ratnakar Bank Ltd |
| **13** | UCO Bank |
| **14** | Union Bank of India |
| **15** | Vijaya Bank |

(Source: Primary source)

With regard to Objective of the study which illustrates to analyse the problems of bankers in providing credit to agricultural sector. It also examines the current financial policy of India which leads to misutilisation of loan with regard to bankers lending credit to borrowers.

## 5.2 Data Analysis

### 5.2.1 Reliability Testing

In analysing the data, for ensuring that the questions mentioned in the questionnaire reliably measure the same latent variable (i.e. problems of bankers through Agriculture financing in the state of Goa), the Cronbach's alpha test is used to test the internal consistency. Very possibly, individuals will find in an unpredictable manner, the various estimates will clash and the "speculative" estimation process is temperamental in this way.

**Table 5-2: Reliability Test**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | Number of Statements |
|---|---|---|
| 0.761 | 0.793 | 23 |

Cronbach's alpha reliability coefficient normally ranges between 0 and 1. In the above data, the alpha value is 0.761 which is closer to 1. There is greater internal consistency of the variables in the scale. Cronbach's alpha coefficient increases either as the number of items (variables) increases, or as the average inter-item correlations increase. Table 5-3 describes the Cronbach's alpha for all statements in order to check internal consistency of the variables.

**Table 5-3: Cronbach's Alpha Statement-wise**

| Sr. No | Statements | Cronbach's Alpha if item deleted |
|---|---|---|
| 1 | Induce borrowers to avail Agri loan | 0.783 |
| 2 | There is no proper utilisation of loan | 0.778 |
| 3 | Rigidity in lending rates | 0.768 |
| 4 | Cumbersome lending procedures | 0.765 |

| | | |
|---|---|---|
| 5 | Insufficient tangible security | 0.726 |
| 6 | Ineffective follow up | 0.772 |
| 7 | Misutilization of loan by borrowers | 0.747 |
| 8 | Lack of corrective action on misuse | 0.743 |
| 9 | Intentional failure of the borrowers | 0.757 |
| 10 | Natural calamity failure | 0.771 |
| 11 | Inadequate return of agricultural activity | 0.734 |
| 12 | Absence of subsidy for repayment | 0.734 |
| 13 | Complicated recovery procedures | 0.742 |
| 14 | High share of NPA | 0.747 |
| 15 | Lack of sufficient support from government agencies | 0.749 |
| 16 | Ineffective insurance | 0.739 |
| 17 | Social political influence | 0.739 |
| 18 | Large number of small Agri borrowers | 0.735 |
| 19 | Continuous renewal | 0.765 |
| 20 | Target based lending | 0.774 |
| 21 | Limited scope Agri expansion | 0.737 |
| 22 | Changed attitude of society | 0.734 |
| 23 | Small land holdings | 0.759 |

In the above table 5-3, Cronbach's alpha for each item is displayed where the alpha value is more than 0.70 for all items defining greater internal consistency of the variables in scale.

**5.3 Descriptive Statistics:**

Descriptive measurements are only the numerical procedures or graphical methods used to sort out the qualities or factors of a given sample and to represent it. Specific observations such as 'Mean' representing the midpoint of a scoring distribution often referred to as the central tendency proportion, Standard deviation known as the deviation from the mean and the distribution of errors known as standard error. The table 5-4 displays the Descriptive Statistics Mean, Standard Deviation and Standard Error of loan procurement factors with regards to bank officials:

**Table 5-4: Mean, Standard Deviation and Standard Error of Lending Procedures factors**

| Statements | Mean | Standard Error | Standard Deviation |
|---|---|---|---|
| **Rigidity in lending rates.** | 3.00 | 0.37 | 1.41 |
| **Cumbersome lending procedures.** | 3.27 | 0.41 | 1.58 |
| **Insufficient tangible security.** | 3.40 | 0.38 | 1.45 |
| **Ineffective follow up.** | 3.40 | 0.34 | 1.30 |
| **Misutilization of loan by borrowers.** | 3.73 | 0.36 | 1.39 |
| **Lack of corrective action on misuse.** | 3.00 | 0.37 | 1.41 |
| **Intentional failure of the borrowers.** | 3.47 | 0.35 | 1.36 |
| **Natural calamity failure.** | 3.47 | 0.27 | 1.06 |
| **Inadequate return of agricultural activity.** | 3.53 | 0.26 | 0.99 |
| **Absence of subsidy for repayment.** | 3.00 | 0.35 | 1.36 |
| **Complicated recovery procedures.** | 3.53 | 0.35 | 1.36 |
| **High share of NPA.** | 3.67 | 0.25 | 0.98 |
| **Lack of sufficient support from government agencies.** | 3.60 | 0.35 | 1.35 |
| **Ineffective insurance.** | 3.60 | 0.32 | 1.24 |
| **Social political influence.** | 3.13 | 0.35 | 1.36 |
| **Large number of small Agri borrowers.** | 3.07 | 0.27 | 1.03 |
| **Continuous renewal.** | 3.47 | 0.34 | 1.30 |
| **Target based lending.** | 3.27 | 0.34 | 1.33 |
| **Limited scope Agri expansion.** | 3.00 | 0.28 | 1.07 |
| **Changing attitude of society.** | 3.13 | 0.26 | 0.99 |
| **Small land holdings.** | 3.60 | 0.32 | 1.24 |

## 5.4 Descriptive Analysis

Descriptive analysis is a process of describing; presenting, summarizing and organizing the data (population), either through numerical calculations or graphs or tables. Frequency and percentage are the basic measurements in summarizing the data. Frequency indicates how much something occurred in the observation. The recurrence of an observation reveals the times that the information detected occurs. Percentage represents the occurrence of data by fraction of 100. There are various types of charts which can be formed by the data but it depends upon the data types. In order to display relationship between data in categories, a bar chart and column chart is used.

### 5.4.1 Bar chart on information required for eligible borrower with regard to Bank

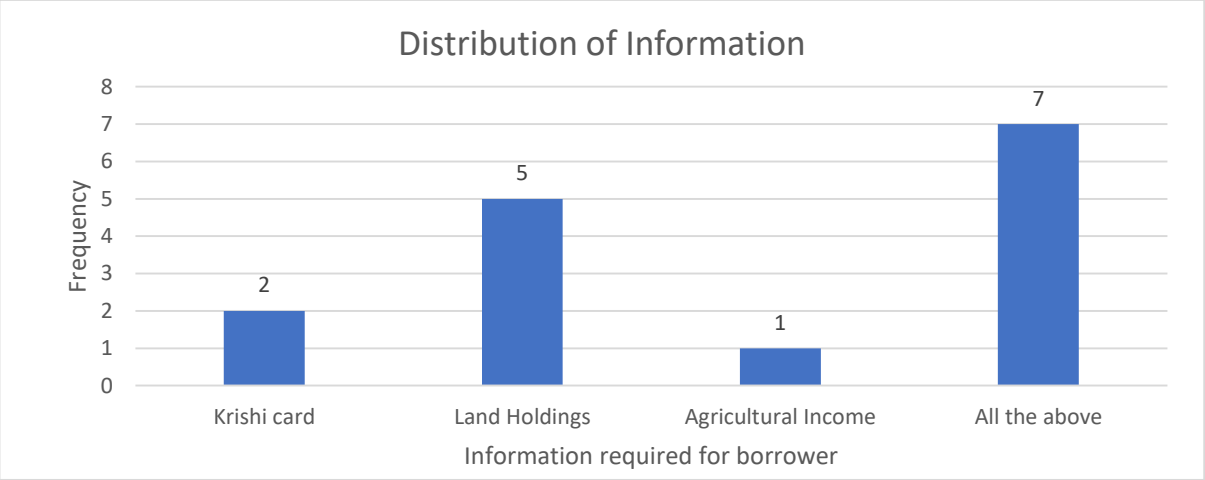
The information required for eligible borrower is based on Krishi card, farmers land holdings and agricultural income. The following table 5-5 displays the details:

**Table 5-5: Information required for eligible borrower**

| | **Frequency** | **Percent** |
|---|---|---|
| **Krishi card** | 2 | 13.3 |
| **Land Holdings** | 5 | 33.3 |
| **Agricultural Income** | 1 | 6.7 |
| **All the above** | 7 | 46.7 |
| **Total** | 15 | 100 |

(Source: Primary source)

**Figure 5-1: Information required for eligible borrower**




From the figure 5-1, the frequency is higher where the borrower has Krishi card, Land holdings and Agricultural income with 46.7 percent whereas it is less when only agricultural income is considered with 6.7 percent.

### 5.4.2 Bar chart for time lag in loan sanctioning process

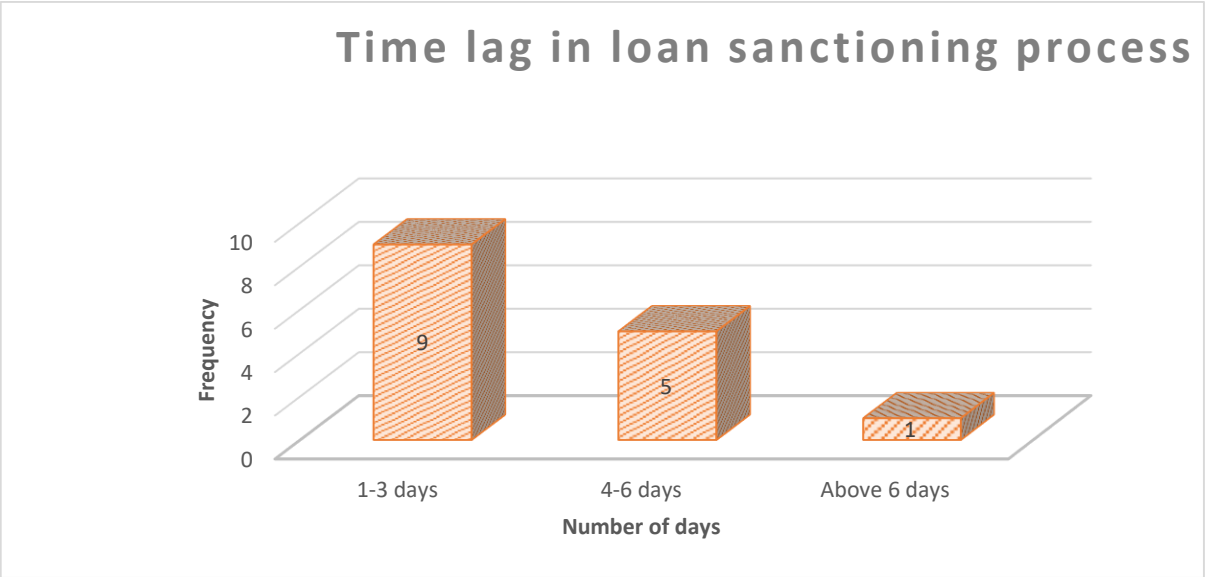
There is time lag in loan sanctioning process when a loan is authorised by officials in order to go through various inspection cycle, which is shown through a bar chart in table 5-6:

**Table 5-6: Time lag in loan sanctioning process**

| Number of days | Frequency | Percent |
|---|---|---|
| **1-3 days** | 9 | 60 |
| **4-6 days** | 5 | 33.3 |
| **Above 6 days** | 1 | 6.7 |
| **Total** | 15 | 100 |

(Source: Primary source)

**Figure 5-2: Chart for time lag in loan sanctioning process**




From the figure 5-2, it is clear that the maximum days required for sanctioning a loan is 1–3 days while it hardly takes 6 days and above for loan process.

### 5.4.3Bar chart for disbursement of loan amount:

In order to show the days required for loan amount dispersal, the bar-chart displays the variation limit with respect to days.

**Table 5-7: Time lag in disbursement of loan amount**

| Number of days | Frequency | Percent |
|---|---|---|
| **Within 2 days** | 9 | 60 |
| **Between 3 - 4 days** | 4 | 26.7 |
| **5 days & Above** | 2 | 13.3 |
| **Total** | 15 | 100 |

(Source: Primary source)

**Figure 5-3: Bar chart for time lag in loan sanctioning process**

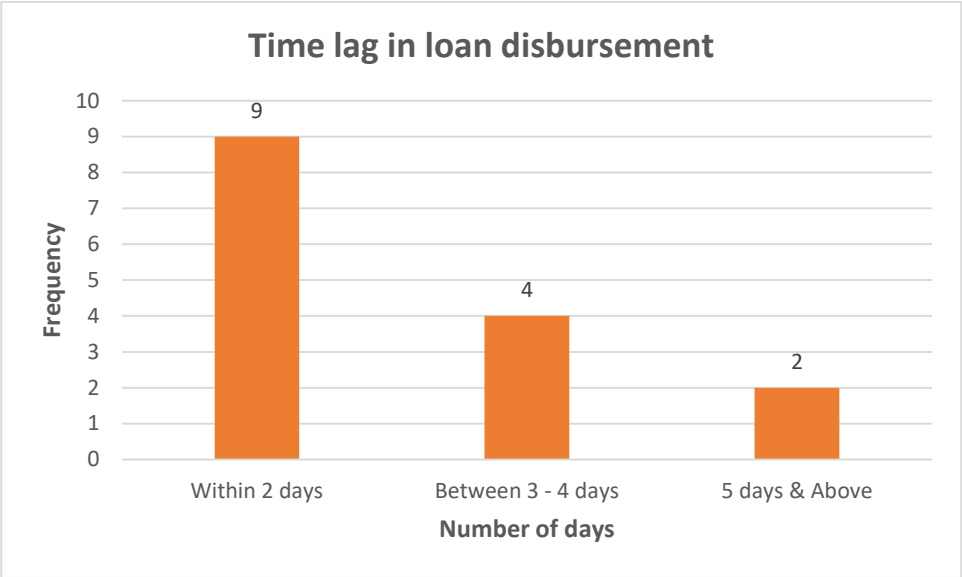



Figure 5-3 displays the number of days required for loan disbursement which is higher for the parameter within 2 days with 60 percent and it minimally takes 5 days and above with 13.3 percent.

### 5.4.4 Bar chart for proportion of crop loan to agricultural loan:

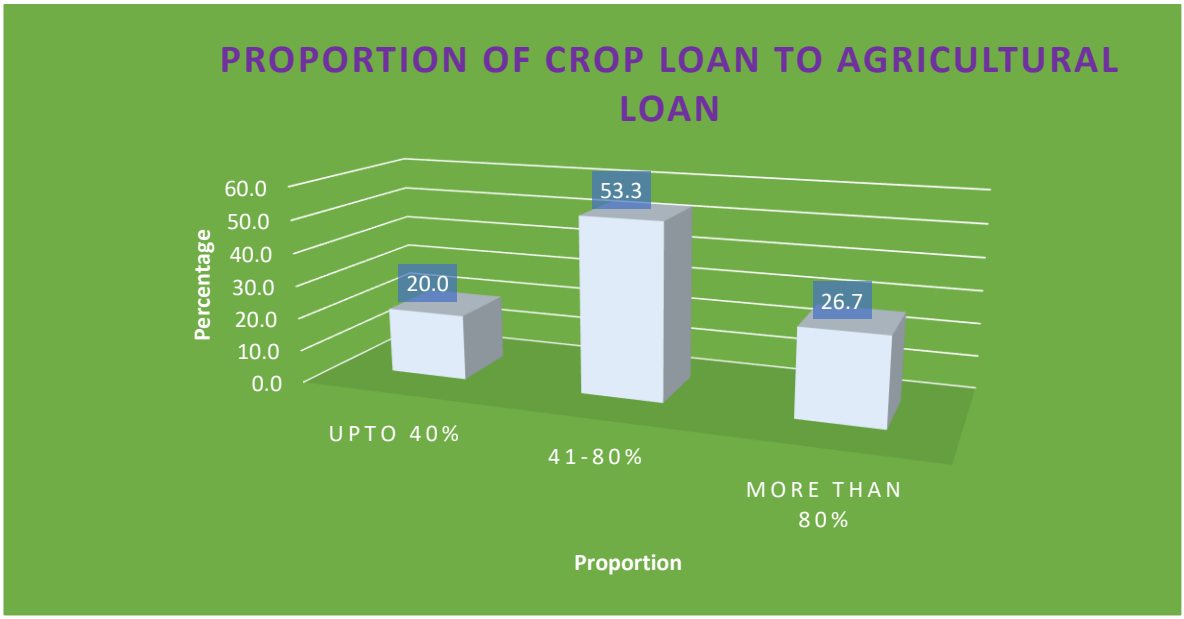
In table 5-8, there is a description of the proportion of crop loan to agricultural loan with a percentage displayed through a Bar Chart:

**Table 5-8: Proportion of crop loan to agricultural loan**

| Proportion | Frequency | Percent |
|---|---|---|
| **Up to 40%** | 3 | 20 |
| **41-80%** | 8 | 53.3 |
| **More than 80%** | 4 | 26.7 |
| **Total** | 15 | 100 |

(Source: Primary source)

**Figure 5-4: Bar chart for proportion of crop loan to agricultural loan**




From the 5-4bar chart, it can be noted that proportion of crop loan to agricultural loan is higher in the range of 41 – 80% which is 53.3 percent compared to range below 40% which is 20 percent.

### 5.4.5 Bar chart for percentage achievement in agricultural lending:

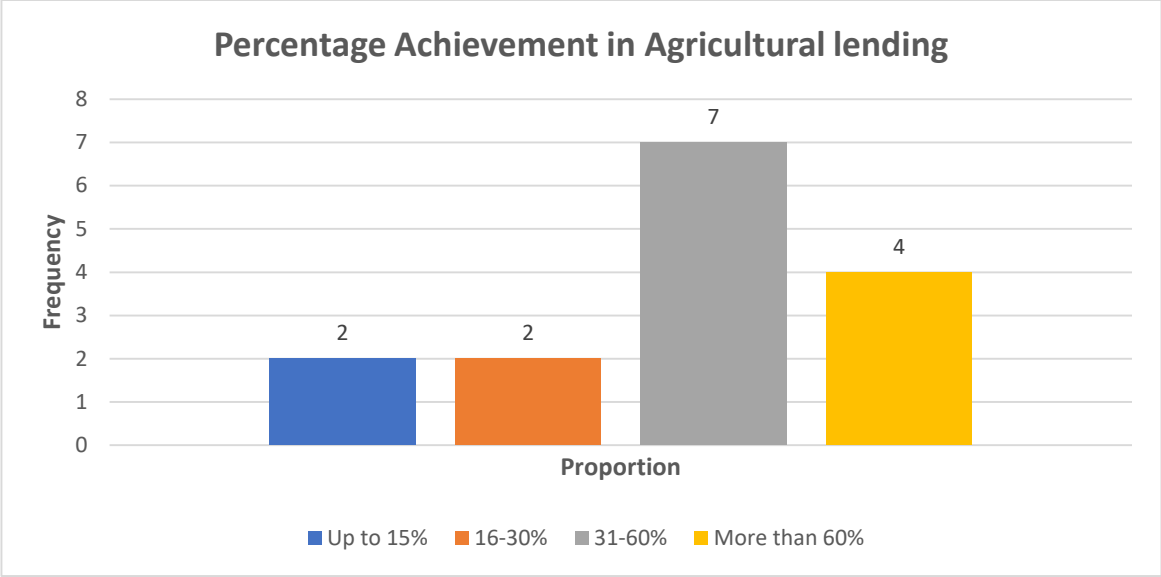
Table 5-9 shows the percentage achievement in Agricultural lending with respect to banker's data which is an important aspect of Agricultural finance to farmers by banking organizations.

**Table 5-9: Percentage achievement in agricultural lending**

| Proportion | Frequency | Percent |
|---|---|---|
| **Up to 15%** | 2 | 13.3 |
| **16-30%** | 2 | 13.3 |
| **31-60%** | 7 | 46.7 |
| **More than 60%** | 4 | 26.7 |
| **Total** | 15 | 100 |

(Source: Primary source)

**Figure 5-5: Chart for percentage achievement in agricultural lending**




From the bar chart 5-5, it is observed that the percentage achievement in agricultural lending is higher for the range of 31–60% with 46.7 percent compared to the range up to 30% with 13.3 percent.

### 5.4.6 Bar chart of percentage default in Agricultural lending:

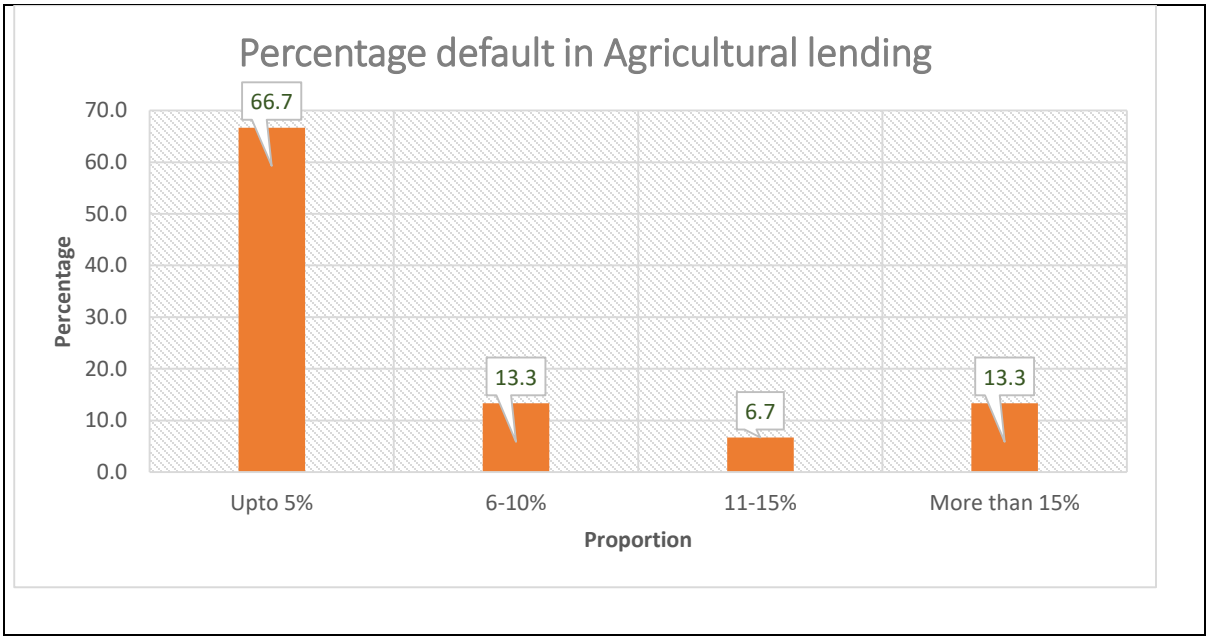
Table 5-10 shows the percentage default in agricultural lending which is mandatory with respect to bankers in agricultural financing in order to reduce defaulters in the future and also to reduce misutilisation of loan.

**Table 5-10: Percentage default in agricultural lending**

| Proportion | Frequency | Percent |
|---|---|---|
| **Up to 5%** | 10 | 66.7 |
| **6-10%** | 2 | 13.3 |
| **11-15%** | 1 | 6.7 |
| **More than 15%** | 2 | 13.3 |
| **Total** | 15 | 100 |

(Source: Primary source)

**Figure 5-6: Bar Chart for percentage default in Agricultural lending**




From 5-6 bar chart, it is observed that the percentage default in Agricultural lending is more in the range up to 5% with 66.7 percent of the cases compared to range 6–10% with 13.3 percent of the cases.

### 5.4.7 Bar chart for influencing borrowers to avail Agriculture loan by Bankers:

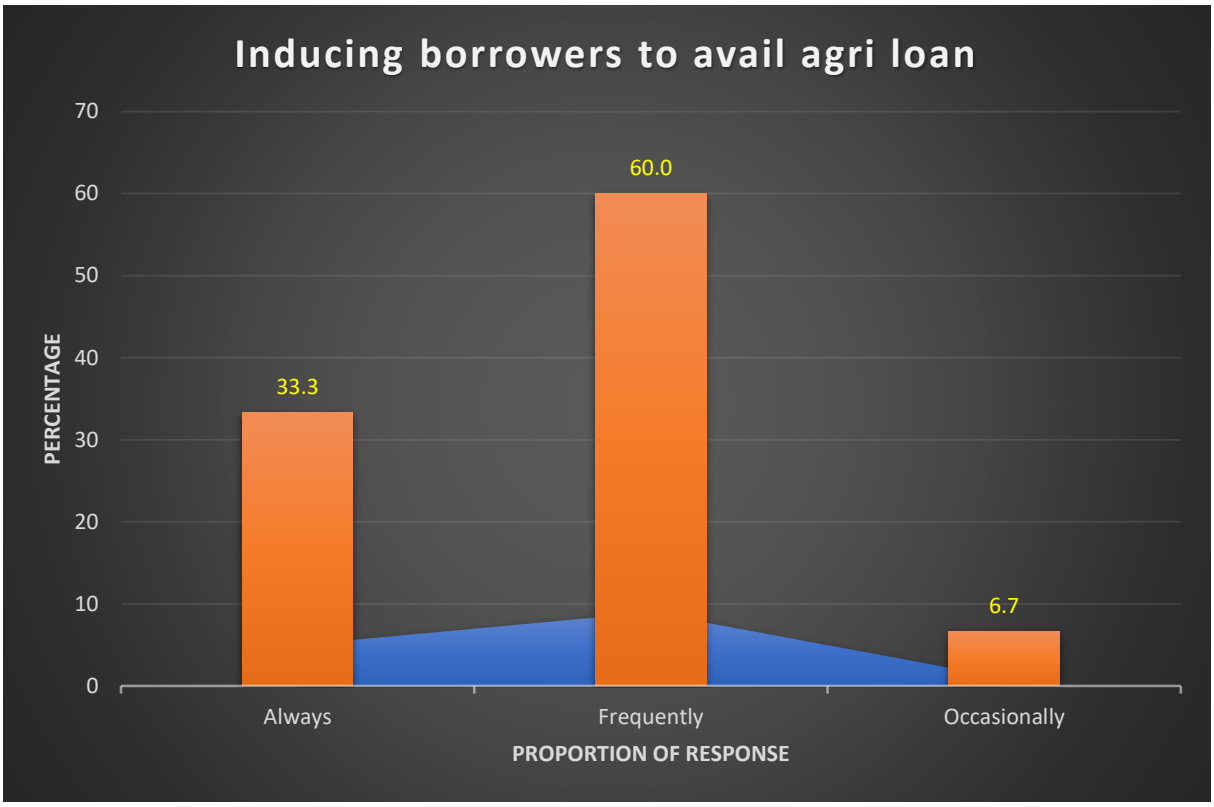
The following table 5-11shows the details of bankers influencing borrowers to avail Agriculture loan in order to improve agricultural credit and agricultural cultivation.

**Table 5-11: Percentage of bankers influencing borrowers to avail Agri loan**

| Responses | Frequency | Percent |
|---|---|---|
| **Always** | 5 | 33.3 |
| **Frequently** | 9 | 60 |
| **Occasionally** | 1 | 6.7 |
| **Total** | 15 | 100 |

(Source: Primary source)

**Figure 5-7: Bar Chart for bankers influencing borrowers to avail Agri loan**




From the figure 5-7, it is shown that the bankers frequently influence borrowers to avail Agri loan through the 15 banks listed in the study with a rate of 60% compared to occasional behaviour of 6.7% from the banker.

### 5.5 Factors Related to Agricultural Lending:

The Correlations estimate the linear relationship between two or more variables. Correlation coefficients ranges from -1.0 (perfect negative correlation) to positive 1.0 (perfect positive correlation). The closer correlation coefficients get to -1.0 or 1.0, the stronger is the correlation. Since non–parametric tests were used to test the correlation, Spearman's Rank Correlation test was used for analysing factors of Agricultural lending such as Rigidity in lending rates, Cumbersome lending procedures, Insufficient tangible security, Misutilization of loan by borrowers, Lack of corrective action on misuse, Intentional failure of borrowers, Natural calamity failures, Inadequate return of agricultural activity, Absence of subsidy for

repayment and Complicated recovery procedures as these factors affect the bankers perspective towards providing loan to farmers.

**Table 5-12: Correlation Analysis of factors related to Agricultural lending**

| Spearman's Rank Correlation | | Rigidity in lending rates | Cumbersome lending procedures | Insufficient tangible Security | Ineffective follow up | Misutilization of loan by borrowers | Lack of corrective action on misuse | Intentional failure of the borrowers | Natural calamity failure | Inadequate return of agricultural activity | Absence of subsidy for repayment | Complicated recovery procedures |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Rigidity in lending rates** | **Correlation Coefficient** | 1 | 0.790** | 0.456 | 0.691** | 0.818** | 0.738** | 0.788** | 0.684** | 0.704** | 0.570* | 0.581* |
| | **Sig(2-tailed)** | | 0 | 0.088 | 0.004 | 0 | 0.002 | 0 | 0.005 | 0.003 | 0.026 | 0.023 |
| | **N** | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| **Cumbersome lending procedures** | **Correlation Coefficient** | 0.790** | 1 | 0.567* | 0.608* | 0.781** | 0.575* | 0.524* | 0.799** | 0.817** | 0.695** | 0.643** |
| | **Sig(2-tailed)** | 0 | | 0.028 | 0.016 | 0.001 | 0.025 | 0.045 | 0 | 0 | 0.004 | 0.01 |
| | **N** | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| **Insufficient tangible Security** | **Correlation Coefficient** | 0.456 | 0.567* | 1 | 0.712** | 0.559* | 0.589* | 0.637* | 0.563* | 0.444 | 0.753** | 0.721** |
| | **Sig(2-tailed)** | 0.088 | 0.028 | | 0.003 | 0.03 | 0.021 | 0.011 | 0.029 | 0.097 | 0.001 | 0.002 |
| | **N** | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| **Ineffective follow up** | **Correlation Coefficient** | 0.691** | 0.608* | 0.712** | 1 | 0.577* | 0.708** | 0.657** | 0.693** | 0.455 | 0.791** | 0.683** |
| | **Sig(2-tailed)** | 0.004 | 0.016 | 0.003 | | 0.024 | 0.003 | 0.008 | 0.004 | 0.089 | 0 | 0.005 |
| | **N** | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| **Misutilisation of loan by** | **Correlation** | 0.818** | 0.781** | 0.559* | 0.577* | 1 | 0.758** | 0.794** | 0.627* | 0.842** | 0.633* | 0.621* |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **borrowers** | **Coefficient** | | | | | | | | | | | |
| | **Sig(2-tailed)** | 0 | 0.001 | 0.03 | 0.024 | | 0.001 | 0 | 0.012 | 0 | 0.011 | 0.013 |
| | **N** | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| **Lack of corrective action on misuse** | **Correlation Coefficient** | 0.738** | 0.575* | 0.589* | 0.708** | 0.758** | 1 | 0.826** | 0.547* | 0.684** | 0.637* | 0.627* |
| | **Sig0.(2-tailed)** | 0.002 | 0.025 | 0.021 | 0.003 | 0.001 | | 0 | 0.035 | 0.005 | 0.011 | 0.012 |
| | **N** | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| **Intentional failure of the borrowers** | **Correlation Coefficient** | 0.788** | 0.524* | 0.637* | 0.657** | 0.794** | 0.826** | 1 | 0.416 | 0.609* | 0.516* | 0.517* |
| | **Sig0.(2-tailed)** | 0 | 0.045 | 0.011 | 0.008 | 0 | 0 | | 0.123 | 0.016 | 0.049 | 0.048 |
| | **N** | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| **Natural calamity failure** | **Correlation Coefficient** | 0.684** | 0.799** | 0.563* | 0.693** | 0.627* | 0.547* | 0.416 | 1 | 0.774** | 0.669** | 0.736** |
| | **Sig0.(2-tailed)** | 0.005 | 0 | 0.029 | 0.004 | 0.012 | 0.035 | 0.123 | | 0.001 | 0.006 | 0.002 |
| | **N** | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| **Inadequate return of agricultural activity** | **Correlation Coefficient** | 0.704** | 0.817** | 0.444 | 0.455 | 0.842** | 0.684** | 0.609* | 0.774** | 1 | 0.604* | 0.681** |
| | **Sig0.(2-tailed)** | 0.003 | 0 | 0.097 | 0.089 | 0 | 0.005 | 0.016 | 0.001 | | 0.017 | 0.005 |
| | **N** | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| **Absence of subsidy for repayment** | **Correlation Coefficient** | 0.570* | 0.695** | 0.753** | 0.791** | 0.633* | 0.637* | 0.516* | 0.669** | 0.604* | 1 | 0.859** |
| | **Sig0.** | 0.02 | 0.004 | 0.001 | 0 | 0.011 | 0.011 | 0.049 | 0.00 | 0.017 | | 0 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **(2-tailed)** | 6 | | | | | | | 6 | | | |
| | **N** | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| **Complicated recovery procedures** | **Correlation Coefficient** | 0.581* | 0.643** | 0.721** | 0.683** | 0.621* | 0.627* | 0.517* | 0.736** | 0.681** | 0.859** | 1 |
| | **Sig0. (2-tailed)** | 0.023 | 0.01 | 0.002 | 0.005 | 0.013 | 0.012 | 0.048 | 0.002 | 0.005 | 0 | |
| | **N** | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| *. Correlation is significant at the 0.05 level (2-tailed). | | | | | | | | | | | | |
| **. Correlation is significant at the 0.01 level (2-tailed). | | | | | | | | | | | | |

Spearman's correlation determines the degree to which a relationship is monotonic. It determines whether there is a monotonic component of association between two ordinal variables. In table 5-12, there is a representation of Spearman's correlation, its significance value and the sample size that the calculation was based on. The correlation is stronger with Spearmen Rank Correlation Coefficient $r_s = 0.859$ which is absence of subsidy for repayment and complicated recovery procedures, and that it is statistically significant ($p = 0.000$).

## 5.6 Factors related to Bankers Attitude and Government Norms for Agricultural Lending:

Spearman's Rank Correlation test was used for analysing factors related to bankers' attitude and government norms for agricultural lending since certain rules and regulations of RBI are to be followed by banks with regards to agricultural loan. These factors include high share of NPA, Lack of sufficient support by government agencies, ineffective insurance, limited scope for agricultural expansions, social-political influence, changed attitude, small land holdings, Misutilization of loan by borrowers.

**Table 5-13: Correlation Analysis for factors related to Government norms for Agricultural lending**

| **Spearman Rank Correlation** | | **High share of NPA** | **Lack of sufficient support from government agencies** | **Ineffective Insurance** | **Limited scope for agri expansion** | **Social political influence** | **Changed attitude** | **Small land holdings** | **Misutilisation of loan by borrowers** |
|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **High share of NPA** | **Correlation Coefficient** | 1 | 0.636* | 0.699** | 0.594* | 0.582* | 0.559* | 0.621* | 0.773** |
| | **Sig. (2-tailed)** | | 0.011 | 0.004 | 0.02 | 0.023 | 0.03 | 0.013 | 0.001 |
| | **N** | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| **Lack of sufficient support from government agencies** | **Correlation Coefficient** | 0.636* | 1 | 0.218 | 0.686** | 0.576* | 0.404 | 0.522* | 0.449 |
| | **Sig. (2-tailed)** | 0.011 | | 0.435 | 0.005 | 0.025 | 0.135 | 0.046 | 0.093 |
| | **N** | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| **Ineffective Insurance** | **Correlation Coefficient** | 0.699** | 0.218 | 1 | 0.369 | 0.579* | 0.661** | 0.556* | 0.641* |
| | **Sig. (2-tailed)** | 0.004 | 0.435 | | 0.175 | 0.024 | 0.007 | 0.031 | 0.01 |
| | **N** | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| **Limited scope for agri expansion** | **Correlation Coefficient** | 0.594* | 0.686** | 0.369 | 1 | 0.769** | 0.411 | 0.555* | 0.713** |
| | **Sig. (2-tailed)** | 0.02 | 0.005 | 0.175 | | 0.001 | 0.128 | 0.032 | 0.003 |
| | **N** | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| **Social political influence** | **Correlation Coefficient** | 0.582* | 0.576* | 0.579* | 0.769** | 1 | 0.674** | 0.776** | 0.707** |
| | **Sig. (2-tailed)** | 0.023 | 0.025 | 0.024 | 0.001 | | 0.006 | 0.001 | 0.003 |
| | **N** | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| **Changed attitude** | **Correlation Coefficient** | 0.559* | 0.404 | 0.661** | 0.411 | 0.674** | 1 | 0.639* | 0.447 |
| | **Sig. (2-tailed)** | 0.03 | 0.135 | 0.007 | 0.128 | 0.006 | | 0.01 | 0.095 |
| | **N** | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| **Small land holdings** | **Correlation Coefficient** | 0.621* | 0.522* | 0.556* | 0.555* | 0.776** | 0.639* | 1 | 0.627* |
| | **Sig. (2-tailed)** | 0.013 | 0.046 | 0.031 | 0.032 | 0.001 | 0.01 | | 0.012 |
| | **N** | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| **Misutilisation of loan by borrowers** | **Correlation Coefficient** | 0.773** | 0.449 | 0.641* | 0.713** | 0.707** | 0.447 | 0.627* | 1 |
| | **Sig. (2-tailed)** | 0.001 | 0.093 | 0.01 | 0.003 | 0.003 | 0.095 | 0.012 | |
| | **N** | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |

| |
|---|
| *. Correlation is significant at the 0.05 level (2-tailed). |
| **. Correlation is significant at the 0.01 level (2-tailed). |

Spearman's correlation determines the degree to which a relationship is monotonic. It determines whether there is a monotonic component of association between two ordinal variables. In the table 5-13, there is a representation of Spearman's correlation, its significance value and the sample size that the calculation was based on. Spearman's correlation coefficient i.e. the correlation is stronger between small land holdings and social political influence with Spearman Correlation coefficient $r_s$, is 0.776, and that this is statistically significant ($p = 0.001$).

## 5.7 Kruskal –Wallis Test for Time Lag in Loan Sanctioning and Loan Disbursement Process:

The Kruskal-Wallis test is a non-parametric test, which means that it does not assume that the data come from a distribution that can be completely described by two parameters, mean and standard deviation the way a normal distribution can. Like most non-parametric tests, it is performed on ranked data, so there is conversion of the measurement observations to their ranks in the overall data set: the smallest value gets a rank of 1, the next smallest gets a rank of 2, and so on. In this data, the largest rank is 3. While Kruskal-Wallis does not assume that the data are normal, it does assume that the different groups have the same distribution and groups with different standard deviations have different distributions.

$H_{01}$: There is no significance difference between time lag in loan sanctioning process and time lag in disbursement of loan amount.

**Table 5-14 Ranks for Time lag in disbursement of loan amount**

| | Time lag in disbursement of loan amount | N | Mean Rank |
|---|---|---|---|
| **Time lag in loan sanctioning process** | **Within 2 days** | 6 | 8.00 |
| | **Between 3 - 4 days** | 6 | 10.33 |
| | **5 days & Above** | 3 | 3.33 |
| | **Total** | 15 | |

**Table 5-15: Ranks for Time lag in disbursement of loan amount**

| Test Statistics | |
|---|---|
| | **Time lag in loan sanctioning process** |
| **Chi-Square** | 5.717 |
| **df** | 2 |
| **Asymp. Sig.** | 0.05 |
| **Exact Sig.** | 0.043 |

The test statistic which is labelled as Chi-square is known as Kruskal-Wallis test. A larger value indicates a larger difference between the groups which is in comparison. There is an approximation done with p-value in Chi-square distribution. If there is compare of k groups, there is k-1 degree of freedom, denoted by df in the output.

Asymptotic Sigma is the p-value based on the chi-square approximation. The p-value obtained is 0.05. If $p > 0.05$, it is concluded that the differences are not statistically significant. The exact p-value noted is 0.043 whereas the approximate p-value is 0.05.The official way for reporting the test results includes the chi-square value, df and p as in this study demonstrated the effect from Time lag in loan sanctioning and Time lag in disbursement of loan, $\chi 2(2) = 5.717$, Exact p- value = 0.043.

### 5.8 Kendall's Concordance Test for Percentage Achievement and Percentage Default:

Kendall's coefficient of concordance (W) helps to identify groups of significantly associated factors in survey data. An overall test of independence of all species is first carried out. If the null hypothesis is rejected, groups of correlated factors within each group test the contribution of each factor to the overall statistic. The test considered two variables i.e. percentage achievement in agricultural lending and percentage default in agricultural lending because achievement depends on stability and that there should be minimal default in lending. The table 5-18below describes the information:

$H_{02}$: There is no significance difference between percentage achievement and percentage default in agricultural lending.

**Table 5-16: Kendall's Concordance Test for Percentage Achievement and Percentage Default**

| | Mean Rank |
|---|---|
| **Percentage achievement in agricultural lending** | 1.80 |
| **Percentage default in agricultural lending** | 1.20 |

**Table 5-17: Test Statistics**

| Test Statistics | |
|---|---|
| **N** | 15 |
| **Kendall's W** | 0.490 |
| **Chi-Square** | 7.363 |
| **df** | 1 |
| **Asymp. Sig.** | 0.006 |

The p-value is 0.006which is less than 0.05 for percentage achievement and percentage default in agricultural lending which is significant. The Kendall's W value is 0.490 and it always lies between 0 and 1.

## 5.9 Marginal Homogeneity Test for Inducing Borrowers to Avail Loan and Misutilization of Loan:

In Marginal Homogeneity test, the variables can take on more than two categories. This assesses the marginal frequencies of different rows and the corresponding columns. The marginal homogeneity test is interpreted like: if the p-value is less than the desired significant value, then the dependent samples will be different and if the p-value is more than the desired significant value, the dependent samples will be the same. In this analysis, inducing borrowers to avail loan and misutilisation is considered because borrowers may take loan without proper information for other necessity rather than farm needs and mis-utilise it without paying the interest and principal amount to the bank.

$H_{03}$: There is no significance difference between inducing borrowers to avail loan and misutilisation of loan through agricultural lending.

**Table 5-18: Marginal Homogeneity Test for Inducing Borrowers and Misutilization of loan**

| Marginal Homogeneity Test | |
|---|---|
| | **Inducing borrowers to avail Agri loan & there is no proper utilisation of loan** |
| **Distinct Values** | 4 |
| **Off-Diagonal Cases** | 13 |
| **Observed MH Statistic** | 21.000 |
| **Mean MH Statistic** | 29.000 |
| **Std. Deviation of MH Statistic** | 3.082 |

| | |
|---|---|
| **Std. MH Statistic** | -2.596 |
| **Asymp. Sig. (2-tailed)** | 0.009 |

From table 5-19, it is observed that the p-value is less than 0.05 which is 0.009. Hence, the null hypothesis is rejected and can be concluded that there is significant difference between inducing borrowers to avail loan and Misutilization of loan by borrowers in agricultural lending is stated.

## 5.10 Chi – Square Test for Relationship between Levels of NPA in Agricultural Lending and Proportion of crop loan to agricultural loan

The Chi – square goodness of fit test compares the observed and expected frequencies in each category to test either that all categories contain the same proportion of values or that each category contains a specified proportion of values. In this analysis, proportion of crop loan to agricultural loan and NPA levels is considered since banks should minimise NPA levels and provide loans to agriculture to attain quarterly profits.

$H_{04}$: There is no significance difference between various level of NPA attained through agricultural lending and proportion of crop loan to agricultural loan.

**Table 5-19: Level of NPA in agricultural lending**

| Category | Observed N | Expected N | Residual |
|---|---|---|---|
| **Less than 2 %** | 10 | 5.0 | 5.0 |
| **Between 3 - 4 %** | 3 | 5.0 | -2.0 |
| **Above 4 %** | 2 | 5.0 | -3.0 |
| **Total** | 15 | | |

**Table 5-20: Proportion of crop loan to agricultural loan**

| | Observed N | Expected N | Residual |
|---|---|---|---|
| **Less than 40%** | 9 | 5 | 4 |
| **Between 41 - 80%** | 5 | 5 | 0 |
| **More than 81%** | 1 | 5 | -4 |
| **Total** | 15 | | |

**Table 5-21: Test statistics**

| | Level of NPA in Agricultural lending | Proportion of crop loan to agricultural loan |
|---|---|---|
| **Chi-Square** | 7.600 | 6.400 |
| **df** | 2 | 2 |
| **Asymp. Sig.** | 0.022 | 0.041 |

The p-value obtained is 0.022for NPA level and 0.041 for proportion of crop loan to agricultural loan which is less than 0.05. Hence it is significant and by rejecting the null hypothesis it is concluded that there is significant difference in the various levels of NPA in agricultural lending and proportion of crop loan to agricultural loan.

### 5.11 Jonckheere-Terpstra Test for large number of small agri borrowers and limited scope for agricultural expansion:

The Jonckheere-Terpstra test is a non-parametric, rank-based trend test. It is used to determine the significance of a trend in the data; whether an increase in one variable results in an increase or decrease in another variable. In this analysis, the relationship is discussed for large number of small agri borrowers and limited scope for agricultural expansion because borrowers mostly belong to small farming community and farming activity is reducing year by year due to losses faced by farmers which is a threat to expansion of agriculture.

$H_{05}$: There is no significance relationship between large number of small agri borrowers and limited scope for agricultural expansion.

**Table 5-22: Jonckheere-Terpstra Test**

| **Jonckheere-Terpstra Test** | |
|---|---|
| | **Large number of small Agri borrowers** |
| **Number of levels in limited scope for agricultural expansion** | 5 |
| **N** | 15 |
| **Observed J-T Statistic** | 63.000 |
| **Std. Deviation of J-T Statistic** | 8.762 |
| **Std. J-T Statistic** | 3.025 |
| **Asymp. Sig. (2-tailed)** | 0.002 |

The first column of this summary table (the "Null Hypothesis" column) expresses the null hypothesis in terms of the distributions of "limited scope for agriculture expansion" scores (i.e., the dependent variable) across the groups of "Large number of small Agri borrowers" (i.e., the independent variable).

This tests the "Independent-Samples Jonckheere-Terpstra Test for Ordered Alternatives"). The most important column is the "Sig." column, which displays the statistical significance value of the Jonckheere-Terpstra test (i.e., the p-value). Using this statistical significance value, it is possible to reach a decision with regard to whether to retain the null hypothesis or accept the alternative hypothesis. The decision made, based on this p-value, is presented in the final column. Because of p-value less than 0.05 which is 0.002, the null hypothesis is rejected of no relationship between large number of small agri borrowers and limited scope for agricultural expansion.

**5.12 Independent Sample Median Tests for lack of support from government agencies and proportion of crop loan to agricultural loan:**

The Median test is a non-parametric method used to determine if two or more different variables were drawn from the same median population. In this analysis, lack of sufficient support from government agencies and proportion of crop loan to agricultural loan were considered since government play an important role in allotting funds to agriculture and support from government agencies will help in the betterment of proportion of crop loan to agricultural loan in state finance.

$H_{06}$: There is no significance difference between the medians of lack of sufficient support from the government agencies and proportion of crop loan to agricultural loan.

**Table 5-23: Frequencies for Median Test**

| Frequencies | | | | |
|---|---|---|---|---|
| | | Proportion of crop loan to agricultural loan | | |
| | | Less than 40% | Between 41 - 80% | More than 81% |
| Lack of sufficient support from government agencies | > Median | 4 | 0 | 1 |
| | <= Median | 1 | 6 | 3 |

**Table 5-24: Median Test Statistics**

| | Lack of sufficient support from government agencies |
|---|---|
| N | 15 |
| Median | 4.00 |
| Chi-Square | 8.025 |
| df | 2 |
| Exact Sig. | 0.013 |

From the table 5-24, the p- value obtained is 0.013 which is less than 0.05 concluding that the medians of lack of sufficient support from government agencies and proportion of crop loan to agricultural loan are significantly different.

### 5.13 Independent Sample Median Test for Absence of subsidy for repayment and Complicated recovery procedures:

The Median Test is performed to check whether the two variables were drawn from the same population median. In this analysis, absence of subsidy for repayment and complicated recovery procedures is taken into consideration because subsidy should be enabled for repayment of loan and the recovery procedures should be simplified in order to gain more customers in lending towards agriculture.

$H_{07}$: There is no significance difference between the medians Absence of subsidy for repayment and complicated recovery procedures.

**Table 5-25: Independent-Samples Median Test Summary**

| | |
|---|---|
| **Total N** | 15 |
| **Median** | 3 |
| **Test Statistic** | 10 |
| **Degree of Freedom** | 4 |
| **Asymptotic Sig.(2-sided test)** | 0.040 |

From the table 5-25, the p- value obtained is 0.040 which is less than 0.05 concluding that the medians for absence of subsidy in loan repayment and complicated recovery procedures are significantly different.

### 5.14 Conclusions

Commercial banks have become a significant source of account in rural areas since nationalization, and bank financing plays an important role in raising farmers' yield and farm business income as it empowers farmers to purchase quality inputs. The descriptive analysis of data illustrates the Information required for eligible borrower with regard to bank, Time lag in loan sanctioning and Loan disbursement, Proportion of crop loan to agricultural loan,

Percentage achievement and Percentage default in agricultural lending, inducing borrowers to avail Agri loan is also an initiative taken by regional managers of various banks. The table 5-26 discusses the following:

**Table 5-26: Summary of results**

| Sr. No. | STATISTICAL TEST APPLIED | VARIABLES TESTED | P -value | RESULT |
|---|---|---|---|---|
| 1 | **Spearman's Rank Correlation** | Factors related to agricultural lending. | 0.859 | Correlation Significant |
| 2 | | Factors related to bankers 'attitude and Government norms for Agricultural lending. | 0.776 | Correlation Significant |
| 3 | **Kruskal – Wallis Test** | Time lag in loan sanctioning and Time lag in loan disbursement. | 0.043 | Significant |
| 4 | **Kendall's Concordance Test** | Percentage achievement and Percentage default in agricultural lending | 0.006 | Significant |
| 5 | **Marginal Homogeneity Test** | Inducing borrowers to avail loan and Misutilisation of loan. | 0.009 | Significant |
| 6 | **Non-Parametric Chi-square test** | Various level of NPA attained through agricultural lending and Proportion of crop loan to agricultural loan. | 0.022 & 0.041 | Significant |
| 7 | **Jonckheere - Terpstra Test** | Large number of small agri borrowers and Limited scope for agricultural expansion. | 0.002 | Significant |
| 8 | **Independent Sample Median Test** | Lack of sufficient support from government agencies and proportion of crop loan to agricultural loan. | 0.013 | Significant |
| 9 | | Absence of subsidy in loan repayment and Complicated | 0.040 | Significant |

| | | | | |
|---|---|---|---|---|
| | | recovery procedures | | |

The Correlation analysis through Spearman's Rank Correlation associates the factors related to agricultural lending where absence of subsidy for repayment and complicated recovery procedures has stronger correlation. On the other hand, there is stronger correlation between Small land holdings and Social Political Influence where farmers with small land holdings are provided agricultural financing. The Bankers data also notifies that there is significance between time lag in loan sanctioning and loan disbursement process through Kruskal-Wallis test. The Kendall's coefficient of concordance identified groups of significantly associated factors such as percentage achievement in agricultural lending and percentage default in agricultural lending.

Through Marginal Homogeneity test, the two variables inducing borrowers to avail loan and misutilisation of loan is considered which implies that there is significant difference between Inducing borrowers and misutilisation of loan in lending finance. The Non – parametric Chi square denotes relationship between various level of NPA in agricultural lending and proportion of crop loan to agricultural loan through banker's data. The Jonckheere Terpstra test implies that large number of small Agri borrowers and limited scope for agricultural expansion are significant while considering agricultural loans through banks.

The Independent Sample Median Test concludes that there is lack of sufficient support from government agencies with regard to proportion of crop loan to agricultural loan. In addition, crop deceptions and family circumstances allow farmers to include in inefficient projects that reduce farmers' willingness to make crop investment. On the other hand, the medians for absence of subsidy in loan repayment and complicated recovery procedures are significantly different through Median test.

# CHAPTER 6

# FINDINGS, CONCLUSIONS AND SUGGESTIONS

## 6.1 Introduction

The primary reason for this section is to summarize the entire investigation review conducted in all of the previous chapters. In this, the researcher further tries to summarize the conclusions from the current study. In addition, efforts are being made to seriously make determinations based on the results. Finally, proposals that are worthy of consideration by all researchers are established to identify the issues raised by banks and farmers with a view to improving the financing of agriculture by the bank specifically in Goa state and the nation in general.

The Institutional finance has been seen as playing a crucial role in India's agricultural production. A large number of institutional organizations such as Scheduled Commercial Banks, Regional Rural Banks (RRBs), Co-operative Banks, Non-Banking Financial Institutions and Self-Help Groups etc. were concerned with meeting farmers' short- and long-term needs. In addition, few activities have been undertaken to improve the institutional rural credit system instrument. The fundamental destinations of these activities were to increase the admission of farmers to institutional finance.

Since the mid-sixties Indian agriculture has undergone technological change with the implementation of modern agricultural technologies. Owing to the spread of the green revolution, interest in modern inputs has risen dramatically, leading to a substantial rise in credit demand. The institutional organisations are not meeting the total credit prerequisites of the farmers, especially the small and marginal ones. In order to protect the farmers from the hands of informal loan specialists, centralised organisations were organised to offer farmers credit on sensible terms and conditions at cheaper interest rates. In order to improve the institutional credit system, the co-operative credit system was revised every now and then along this direction. In the field of agricultural credit, a few inadequacies of the co-operative credit system demanded the introduction of the multi-organisation method. Subsequently fourteen major banks were nationalised in 1969 and six additional banks in 1980 to smooth

out the farmers' institutional credit. NABARD was also established in 1982 as a leading public-level organization to channelize agricultural credit.

Agriculture contributes to the economic activity in Goa after Tourism and mining, with an unbalanced high share of the total workforce retained, but with a steadily decreasing share of the national product. The agricultural sector evolves as one with the dominance of self-employed small farms to the extent of land holdings and the production of recruited and casual labour; to anticipate the spread of effective innovation for an achievement towards greater profitability.

## 6.2 Findings of the study

### 6.2.1. Institutional Agricultural financing in India

- The Annual Growth Rates of Real Gross Value added at Basic prices by Agriculture, Poultry and Fishing Industry was steadily increasing. The financial year 2014 – 2015 had a steady decrease in the growth rate with 1.2 percent. But following year, 2015 – 2016 had an increased growth rate with 2.1 percent. There is an increase in the growth rate of real gross value with regard to annual growth rate from the year 2016 – 2017 with 6.8 percent and then decreasing at 5.0 percent in the preceding year 2017 – 2018. Again there was a steep decrease in the year following 2018 – 2020 with 2.7 and 2.6 percent.

- In the year 2018 – 2019, out of the 97,792 Co-operatives in India, Urban Co-operatives constitutes 1,544 branches in number whereas Rural Co-operatives have 96,248 branches. Within the Urban Co-operative banks, Scheduled Urban Co-operatives have 54 branches and Non-scheduled Urban Co-operatives have 1,490 branches. State Co-operatives banks have 33 branches, District Central Co-operative banks have 363 branches, Primary Agricultural Credit Societies have 95,238 branches, and State Co-operative Agricultural Rural Development banks have 13 branches and finally Primary Co-operative Agriculture Rural Development banks include 601 branches.

- The profitability of Urban Co-operative Banks, calculated in terms of Return on Equity (RoE), declined slightly, primarily due to Non-scheduled Urban Co-operative Banks'

below-performance. State Urban Co-operative banks reported losses during the period 2019-20. The overall performance of Urban Co-operative banks in the fiscal year 2017 – 2018 based on Net Interest Margin was 2.93 percent and during fiscal year 2018 – 2019, it was 3.12 percent.

- The share in credit flow (in percent) for Co-operative Banks was 16.4 percent in the financial year 2014 – 2015 and it has steadily decreased to 12.1 percent in the financial year 2018 – 2019. With regard to Regional Rural Banks, the share in credit flow was 12.1 percent in the financial year 2014 – 2015 and after five years, it is declined to 11.9 percent in the financial year 2018 – 2019. Scheduled Commercial Banks which comes under Rural Co-operatives had a credit flow share of 71.5 percent in the financial year 2014 – 2015 and it has drastically increased to 76.0 percent in the financial year 2018 – 2019 which was a good sign for Rural Co-operatives performance.

- The Commercial Banks is divided accordingly into various sectors. With respect to the banking data of 2018 – 2019, the Public Sector Banks has a total of 87,580 branches throughout India with 28,797 branches concentrated in the rural area. The Regional Rural Banks has a total of 21,742 branches with 15,271 branches in the rural region. Private Sector Banks have 31,889 branches out of which 6,836 branches are situated in the rural area.

- Foreign Banks has a total of 300 branches with 12 branches in the rural region. Local Area Banks constitutes 93 branches with 14 branches concentrated in the rural area. The new entities in banking are Small Finance Banks and Payments Bank. Small Finance Banks constitute a total of 3,157 branches with 627 branches in the rural region for financing activities. The percentage of rural branches to total in case of Public Sector Banks is 32.9 percent, Regional Rural Banks is 70.2 percent, Private Sector Banks is 21.4 percent, Foreign Banks is 4.0 percent, Local Area Banks is 15.1 percent, Small Finance Banks is 19.9 percent and Payments Banks is 4.4 percent.

- With 79 per cent, Scheduled Commercial Banks contributed substantial share of agricultural and related credit. Co-operative organisations also played a key role in the

rural credit and a 15 percent share of all co-operative banks / foundations (such as StCBs, DCCBs and PACS) as per reported by NABARD, 2017. The RRBs contributed 5 per cent of the remaining agricultural loans. The Micro Finance Institution constituted only 1 percent of total agricultural credit agency share.

- The total direct financing by Co-operatives Direct Institutional Credit for Agriculture and Allied Activities in India for the review period from 2001 – 2016 notifies that compared to long-term credit, short term credit is much financially better as loans issued are stronger than that of long-term credit given by Co-operatives.

- The standard of bank reserves has improved, according to the RBI's semi-annual Financial Stability Reports, with the GNPA level of SCBs dropping from 11.5 percent in March 2018 to 10.8 percent in September 2018 and 9.3 percent in March 2019.An improvement in Non-Performing Assets position has advanced more institutional credit deployment. From 8.3 percent in 2016–17 to 8.6 percent in 2017–18 (RBI 2018), the share of Scheduled Commercial Banks' priority agricultural portion Non-Performing Assets in total NPAs was extended.

- In 2018–19, a limited number of states in India made a substantial portion of the budget (over 40%) for capital costs on agriculture and unified divisions. Andhra Pradesh (66.1%), Gujarat (58%), Odisha (46%), Jharkhand (42.6%), Karnataka (40.8%), and West Bengal (40%), respectively. Maharashtra (37.6 percent), Telangana (37 percent), Assam (36.9 percent), Madhya Pradesh (34.8 percent), and Bihar (31.1 percent) were states with a share of the capital outlay anywhere between 30 percent and 40 percent of the Agricultural and Partnered Financial Areas Programme. Capital expenditure on agriculture and allied activities was usually small in Uttar Pradesh, Rajasthan, Tamil Nadu, Chhattisgarh, Kerala, Punjab, and Goa.

- Agricultural households favoured institutional sources to take advantage of credit, as roughly 61 percent of them benefited from loans. In any case, credit from non-institutional sources, which is a cause for concern, is used by a critical proportion, for example about 30 percent of farm households, given all. On the other hand, because of

the easy availability of loans some agricultural households used both Institutional and Non-institutional source of loans with 9 percent households.

- The National Co-Operative Development Corporation (NCDC) was established by a Parliament demonstration in 1963 as a special development association tasked with preparing, encouraging and financing the enhancement of co-operative marketing programmes, processing and storage of agricultural products and supplying inputs. Its assistance applies to coordinated agribusiness systems in equal measure, viz. poultry, fishing, dairy farming; etc. In 1986-87, a formal co-operative development plan was adopted by the NCDC to include budget support to promote agribusiness and community projects, as well as non-farm measures to help craftsmen and landless workers. Finally, the Primary Co-operative Agricultural Societies for the successful implementation of government welfare programmes.

- In addition to its core funding and growth roles in accordance with the emerging challenges, National Bank for Agricultural and Rural Development (NABARD) has been developing novel rural strategies to ensure sustainable development and prosperity. The initial capital of NABARD was 100 Crore Rupees. NABARD's settled capital stood at 4700 Crore as of 31$^{st}$ March 2014 (₹ 4680 crore from the Indian Government and 20 crores from RBI). As on March 2018, the authorized capital for NABARD was ₹ 30,000 crores.

- NABARD's total disbursement is increased steeply from 90 crores in 1970-71 to 143.10 crore in 1990-91, the increased is 159 times in pre-reform period. In the post-reform period, there is an increase from ₹ 163.64 crores in 1991-92 to ₹ 2312.34 crore in 2015-16, the increase is 14.13 times.
- The launch of the Kisan Credit Card (KCC) Scheme in the year 1998-99 reinforced the credit distribution system, and more explicitly made timely and trouble-free crop loans accessible to farmers. According to 2019 results, there were complete 66.2 million operating KCC accounts, of which the shrewd portion share with regard to Co-Operative bank is 46 percent, Commercial Banks with 36 percent and Regional Rural Banks with 18 percent. The share in amount outstanding for KCC was 64 percent for

Commercial Banks and 18 percent each for Co-Operative Banks and Regional Rural Banks respectively.

- The number of Self Help Groups (SHGs) financed during the year 2001 – 2002 was 0.20 million and the amount disbursed was 0.05 billion. There was a steady rise in the number of SHG's financed during the year 2005 – 2006 which is 0.60 million and the amount disbursed was 60 billion. In the year 2009 – 2010, the number of SHG's financed was 1.55 million and the corresponding amount disbursed was 150 billion. The year 2014 – 2015 had SHG's financed at 1.60 million with the corresponding disbursed amount as 275 billion. According to the recent data of 2017 – 2018, the number of SHG's financed was 2.25 million and the amount disbursed was 475 billion which has doubled in a span of five years.

- According to the data of March 2019, the Farmer Producer Organisations promoted by NABARD for procurement and distribution was 8,85,759 for aggregation and marketing, 482 for procurement of production, 230 for seed production and marketing, 210 for agro processing, 200 for dairy units, 122 for agro services and custom hiring, 109 for poultry, 66 for organic agriculture, 62 for fisheries and finally 32 for honey processing and marketing.

- With regard to the financial year 2017 – 2018, the Non-institutional division was made up of indigenous traders, moneylenders, nidhis, chit funds, etc. Non-professionals including agriculturists, discount and retail merchants, commission agents and other Indigenous bankers receive deposits and deals in hundis. The paid interest rates range from 12 per cent to 37.5 per cent and differ as indicated by the type of securities hurry with them. They offer short-term loans for the necessities of agricultural usage and production, and so on. Nidhis allude to mutual loan affiliations. Chit reserves are deliberate relationship to unlock the funds for rural investment.

- The overall production of food grains rose from 234.5 MT (2008–09) to 285 MT (2017–18) 2.12% Annual Compound Growth Rate (CAGR). During 2008 – 2009 fiscal year, production of major crops was 99.2 MT for rice, 80.7 MT for wheat, 40.0 MT for cereals and 14.6 MT for pulses. In the fiscal year 2013 – 2014, there was a

steady increase in the production with rice contributing to 106.7 MT, wheat contributing to 95.9 MT, cereals contributing to 43.3 MT and pulses contributing to 19.3 MT. With respect to the financial year 2018 – 2019, rice production was 115.6 MT, wheat was produced at 101.2 MT, cereals at 43.3 MT and pulses contributed to 23.2 MT with total food grains production at 283.4 MT.

- The fiscal year of 2014 – 2015 had an agency distribution of ₹ 6.04 lakh crores for Commercial Banks, ₹ 1.02 lakh crores for Regional Rural Banks and ₹ 1.38 lakh crores for Co-operative Banks as per the report by NABARD. In the following fiscal year 2015 – 2016, the agency distribution was ₹ 6.42 for Commercial Banks, ₹ 1.19 lakh crores for Regional Rural Banks and ₹ 1.53 lakh crores for Co-operative Banks. In fiscal year 2018–19, banks disbursed ₹ 12.55 lakh crore as a ground-level loan to agriculture (farming and related operations, agri-infrastructure and ancillary operations) and exceeded the annual Rs.111 lakh crore targets.

- Commercial banks (76 per cent) tend to dominate disbursement of agricultural credit. The share of Regional Rural Banks (RRBs) remained constant at 12 percent with ₹ 1.51 lakh crores, while Co-operative Banks slowly lost their share of credit flow from ₹ 1.53 lakh crores to Commercial Banks and decreased over the years to 12 percent in 2018–19 with ₹ 9.49 lakhs.

### 6.2.2. Institutional Agricultural Financing in Goa

- Goa is one of the competitive states of the country, with a predominantly controlled economy contributing about 63 per cent of the state's total GDP. Goa is divided into North Goa and South Goa. The chief rivers of Goa are Chapora, Mandovi, Sal, Terekhol and Zuari.

- Goa gets substantial rain in the month of June to September from the winds of the South-West Monsoon. Summer temperatures range between 24 ° C and 36 ° C. The mercury swings between 21 ° C and 30 ° C in winter.

- Goa's soils are typically lateritic (81%). They are sandy topsoil, depleted and exceptionally acidic (5.5 to 6.5 pH) to residue soil in texture. These soils have moderate organic carbon, and are poor in potash.

- Goa has mainly three natural divisions of Land types such as Khazan Land, Ker Land and Morod Land. Khazan land is used for cultivation of monsoon paddy followed by Rabi Vegetables. Ker lands are used for multiple cropping and are cultivated with Rabi paddy crops, pulses, etc. Morod land is referred to suitable upland for plant crops and single rain-fed rice crops.

- Paddy is the State's transcendent crop then followed by Cashew and Coconut. Because of the better returns, lower risk and resistance of these yields for low maintenance cultivation, the production of agricultural harvests has gained significance.

- As per the 2011 Goa census, the primary workforce is divided into Cultivators, Agricultural labour, House hold Industries and Traders. North Goa has a population of 11,154 cultivators and South Goa has 12908 cultivators. Agricultural labour among the population of North Goa was 5243 while the count was 5515 in South Goa. North Goa household industries comprises of 6514 people, while South Goa has the number of 4266 people. The traders performing various activities include a total population of 4,30,453 individuals.

- As per the census report of Goa in 2011, the marginal workers in Goa constitute Marginal cultivators, Marginal Agricultural labour, Marginal Household Industries and marginal traders as per the 2018 data. North Goa has approximately 4248 marginal cultivators and South Goa has 3044 marginal cultivators. Marginal Agricultural labour in the population of North Goa was 8877, while the count in South Goa was 7125. When considering the number of Marginal Household Industries in North Goa the count was 2348 and the figure was 1580 in South Goa. The population of Marginal Traders was 42,748 in North Goa, and 31,225 in South Goa. The Non-worker population in North Goa was 4, 90,350 and in South Goa was 3, 90,947.

- According to the 2018- 2019 data by ResearchGate, Livestock is closely linked to agricultural production. The Cattle population is categorised into three types: Below 1

year, Between 1 – 3 years and Above 3 years. Cattle below one year has the total population of 12,388 in North Goa and South Goa combined, whereas the 1 – 3 years' cattle have the population of 12,698 and above 3 years' cattle comprise the total count of 45,461. The Buffalo population is also categorised into three types: Below 1 year, Between 1 – 3 years and Above 3 years. Buffaloes below one year has the total population of 7812 in North Goa and South Goa combined, whereas the 1 – 3 years' buffalo population have the total count of 6742 and above 3 years' buffalo count is 21,562. Other than cattle and buffaloes, sheep's and goat have established invalid extent in the state of Goa. The Sheep population is 122 in total and the Goat population is 9736 in Goa.

- The state's total geographical area according to the State Focus Paper of Goa, 2016 – 2017 is approximately 3,61,113 hectares. The total area reported in North Goa is 1,42,208 Ha. and that in South Goa is 2,18,905 Ha. The Forest land coverage in North Goa is 31,911 Ha and 92,010 Ha in South Goa. The area which is not available for cultivation is 18,120 Ha. in North Goa and 19,017 Ha. in South Goa. Permanent Pasture and Grazing and include 386 Ha. in North Goa and 919 Ha. in South Goa. Land under miscellaneous tree crops comprise of 221 Ha. in North Goa and 359 Ha. in South Goa. On the other hand, cultivable wasteland includes 16,436 Ha. in North Goa and 36,097 Ha. in South Goa. The Current Fallow land comprises of 8698 Ha. in North Goa and 6144 Ha. in South Goa. The Net sown area for agriculture incorporates 66,436 Ha. in North Goa and 62,807 Ha. in South Goa. The Gross cropped area comprises of 82,044 Ha. in North Goa and 75,658 Ha. in South Goa, The Area which is cultivated more than once include 15,608 Ha. in North Goa and 12,851 Ha. in South Goa. The Cropping density for agriculture is 123 Ha. in North Goa and 120 Ha. in South Goa.

- According to the State Focus Paper of Goa, 2016 – 2017, the numbers related to Holdings for small farmers were 59,900 in numbers and 28103 in Area (Ha). For Marginal Farmers the count was 9817 Holdings in numbers. and 17,591 in Area (Ha). Large farmers constitute 8303 in Holdings and 43,300 in Area (Ha).

- The marginal farmers whose holdings were very small with less than one-hectare account for 76.78 % in holdings and 31.58 % in area according to latest reports. With regard to small farmers who held more than one-hectare but less than two hectares' accounts for 12.58 % in holdings and 19.77 % in area. The top land holding size i.e. more than two hectares held by Large Farmers account for 10.64 % in holdings and 48.65 % in area.

- With regard to the state data for the fiscal year 2014 – 2015, the area under Rice was 37,990 Ha and the production is 1,68,334 MT. The Average yield kg/ha for Rice was 4431 in kg/ha. Cereals and Pulses account for 8563 Ha. in area and the production was 8074 MT. The Average yield for Cereals/Pulses is 944 in kg/ha.

- Cashew nut is the main crop in Goa with the area under Cashew nut being 56,079 Ha and the production being is 25,011 MT. The Average yield for Cashew nut was 446 in kg/ha.

- Oil Palm has an area of 834 Ha and the production being 2055 MT. The Average yield for Oil Palm is 2460 in kg/ha.

- Fruits like mango, banana and pineapple contribute an area of 1480 Ha with the production being 2715 MT. The Average yield for mango, banana and pineapple is 446 in kg/ha.

- Other garden crops have an agricultural area of 3165 Ha with the production being 33,754 MT. The Average yield for garden crops is 10,665 in kg/ha.

- In Goa, coconut is also produced at 127.8 m/nuts with average yield at 4955 kg/ha. The data is based on the Directorate of Agriculture in Goa.

- The total area sown under principal crops was 1,54,721 Ha according to the 2016 – 2017 agricultural data produced by the Directorate of Agriculture, Goa. Rice is the main crop with respect to agriculture in Goa. The total area under Rice – kharif was 27,630 Ha and percentage of total cropped area being 17.86 percent while Rice – rabi has 13,193 Ha with percentage of total cropped area being 8.53 percent.

- The total area under pulses was 5887 Ha and the percentage of total cropped area was 3.81 percent. Groundnut has a total area of 1689 Ha and the total cropped area percentage is 1.09 percent.

- Areca nut being another crop has a total area of 1809 Ha and the percentage of total cropped area being 1.17 percent. Coconut has a total area of 25,913 Ha and the percentage of total cropped area observed is 16.75 percent. Cashew nut is the primary crop in Goa with higher cultivated total area of 56,735 Ha which is the highest among all crops and the percentage of total cropped area is 36.67 percent. Sugarcane crop is harvested minimally in Goa with the total area of 897 Ha and percentage of total cropped area being 0.58 percent.

- Fruits like Mango and Banana constitute a total area of 7355 Ha and percentage of total cropped area observed is 4.75 percent. Vegetables cultivated in Goa have a total area of 7379 Ha and the percentage of total cropped area is 4.77 percent. Fruits such as Pineapple have a total area of 383 Ha and percentage of total cropped under pineapple is 0.25 percent. Other fruits cultivated in Goa have a total area of 3934 Ha with percentage of cropped area being 2.54 percent.

- Pepper is also cultivated in Goa with total area of 777 Ha and percentage of cropped area observed is 0.5 percent. Tree spices occupy an area of 205 Ha and corresponding percentage of cropped area is 0.13 percent. Sweet potato was been cultivated at a small scale with total area of 52 Ha and percentage of cropped area being 0.03 percent. Finally, Kokum is the crop with lower cultivated area of 47 Ha and percentage of cropped area is 0.03 percent.

- According to the Irrigation Coverage report produced by the Directorate of Planning, Goa, 2016-17 the total area available for irrigation was 57,846 Area in Ha. The Gross area irrigated in agricultural system of Goa was 44,421 Ha. With 59.06 per cent of the total, the area irrigated by Tanks was the largest. The region disturbed by canals is 18.09%. The region irrigated through wells is 17.71 percent and the region was just 5.14 percent irrigated by other means.

- There are 824 banking workplaces in the State as on 30.09.2019 which follows an upward pattern. In the financial year 2014 – 2015, the banking offices in Goa had the count of 753 branches. Following year of 2015 – 2016 saw a slight increase with number of banking branches counting to 787. The number of banking branches in the fiscal year 2016 – 2017 increased to 819. In the year 2017 – 2018, the number of banking offices had the count of 832. According to the latest data of 2018 – 2019, there is a slight decline with number of banking branches as 824.

- During 2019-20 (up to 30.09.2019), the credit dispensed was ₹23712 crores. State agricultural credit is provided by institutional as well as non-institutional organizations. In the financial year ending March 2015, the supply of credit is ₹ 16,643 crores. In the year 2016, the annual growth rate was 16.48 percent with the credit being ₹ 19,385 crores. There was a slight decrease in the annual growth rate of credit with -2.03 percent in 2017 and the corresponding credit being ₹ 18,991 crores. The financial year of 2018 saw an increase in the credit growth rate with 14.52 percent and the credit observed as ₹ 21,749 crores. In the financial year ending 2019, the credit was increased to ₹ 23,904 crores and the annual growth rate attained was 9.91 percent.

- The disbursement of crop loans under Kisan Credit Card was ₹ 31.62 crore as opposed to the ₹ 141.00 crore target i.e. Achievement of ₹ 22.43 per cent. The performance of crop loans was reduced by about ₹ 76.54 crore, as it was about ₹ 108.16 crore for the corresponding time frame in 2017. Agricultural term loan disbursement up to Kisan Credit Card was ₹ 166.27 crore as compared to Rs.199.70 crore's goal, i.e. 83.26 percent. The performance under Agricultural Term Loans is down by as much as ₹ 27.80 crore against as much as ₹194.07 crore for the corresponding time a year ago. The overall achievement under the Agriculture Sector is somewhat ₹ 294.42 crore up to 30.09.2019 as opposed to a focus of some ₹ 387.10 crore, for example 76.06 percent. The overall achievement under the Agriculture Sector is declined by ₹ 76.40 crore against some ₹370.82 crore for the related time frame a year ago.

- The State Co-operative Bank, Primary Agricultural Co-operative Societies, Commercial Banks and Other Co-operative Banks (counting Urban Co-operative Bank) provide short, medium, and long-term agricultural credit between institutional

organisations. The total count of banks was 134 with 862 branches segregated into 374 rural branches and 488 semi-urban branches. As per the report of Goa State Level Banker's Committee dated March 2015, the number of Commercial Banks was 42 in number with total number of branches as 631 divided into 254 branches in rural areas and 377 branches in semi-urban areas. There is only single State Co-operative bank with 59 branches divided into 34 rural branches and 25 branches in semi-urban areas. On the other hand, Primary Agricultural Co-operative Society has 78 societies with 78 branches categorised into 71 branches in rural areas and 7 branches in semi-urban areas. Other co-operative banks (including Urban Co-operative Banks) has 13 numbers of banks with total branches as 94 divided into 15 rural branches and 79 branches in semi-urban area.

- In Goa state, the Commercial Banks' branch expansion programme seems very satisfactory. The branch expansion data shows that the total number of Commercial Banks branches were more than 73.20 per cent of the major organisations, led by Other Coop. Bank (including UCBs) 10.90%. The state only has one State Co-operative Bank, i.e. Goa State Co-operative Bank, which has 59 branches in total. There are no Regional Rural Banks in the state. There are also numerous non-formal agencies which work in the state. Self-help groups and mutual liability organisations were closely aligned with Commercial Banks and remain with Co-operative Banks of the Goa state.

- Commercial bank deposits rose in the State from ₹ 36,48,872 to ₹ 50,28,528 for the period 2013 to 2015. In addition, the total per-branch deposits have also increased significantly. The number of Commercial Banks and other Co-operative Banks (including UCBs) rose, but the State Co-Operative Bank dropped by negative 5.2 percent.

### 6.2.3. Socio Economic Aspects of Farming Community in Goa

- Gender of the farming community was concentrated towards male farmers with 62.4 percent whereas female constitute 37.6 percent of the total sample of 380 farmers in Goa.
- The Age considered out of the 380 sample for the research was divided into four categories with the maximum reported in 41 – 60 years' category with 59.5 percent followed by 21 – 40 age category with 23.2 percent, 61 and above category with 16.6 percent whereas the minimum was observed in Less than 20 age group with 0.8 percent.
- With regards to the talukas of the farmers considered for the study of 380 sample sizes, Salcete taluka has the maximum count with 10.5 percent farmers followed by Canacona taluka with 9.5 percent and Ponda taluka with 10 percent farmers. Other talukas like Pernem has 9.2 percent farmers, Bardez has 8.9 percent, Dharbandora and Bicholim talukas has the same share with 8.2 percent, Sanguem and Quepem talukas also contribute to 7.2 percent farmer's population, Mormugao taluka has 7.1 percent farmers and Sattari taluka has 6.8 percent farmers. The minimum percentage is observed in Tiswadi taluka with 5.8 percent.
- The farming experience for 380 sample size of the respondents was categorised into four types with the maximum percentage observed in 16 – 30 years of experience at 42.9 percent followed by less than 15 years of experience with 30.8 percent. The farmers with 31 – 45 years of experience were 16.6 percent and the least was observed in Above 46 years' experience category with 8.9 percent.
- The educational qualification out of the 380 sample farmers was divided into five types with maximum of farmers completing at least their High school education at 46.8 percent followed by some farmers who are Post Graduates with 22 percent. Graduated farmers comprise of 19.5 percent and farmers who have completed their Primary education constitute 6.1 percent whereas minimum of the farmers belonging to Illiterate category represent 5 percent.
- The family size out of the sample size of 380 farmers was divided into three categories with maximum family size being under 4 members at 54.7 percent. Size of the family

under 5–8 members comprise of 41.3 percent whereas minimum family size being 9 and above members constitute 4 percent of respondents.

- The religion was divided into three categories with maximum number of farmers being Hindus at 83.7 percent. Christian contributes to 12.9 percent of respondents whereas the least was observed in Muslims with 3.4 percent respondents out of the 380 sample farmers.
- The community of the respondents out of 380 sample farmers was categorised into four types with maximum of the farmers belonging to General category at 60.8 percent followed by OBC category at 23.2 percent. Schedule Tribe contribute to 14.5 percent farmers whereas the minimum was observed among Scheduled Caste community farmers with 1.6 percent.
- The infrastructural facilities were divided into seven categories out of the 380 sample of farmers such as road, transportation, water, electricity, warehouse, modern agricultural equipment and mobile facilities. Road facilities was available for 85 percent of the farmers, Transportation was availed by 70.3 percent farmers, Water services was available for 88.4 percent farmers, Electricity facilities was available for 93.9 percent farmers, Warehouse was owned by 68.9 percent farmers whereas modern agricultural equipment was used by 67.4 percent farmers. Mobile facilities were availed by 95.8 percent farmers which show a good sign of digital transformation in agricultural sector.
- The information regarding House, Small savings in Bank, Life Insurance and Crop Insurance were mentioned in other personal information for 380 sample farmers. Shelter being an important aspect of farmer's property, Pakka house was observed among 74.7 percent of the farmers and Kutcha house has minimum count with 25.3 percent farmers. Farmers had a Small Savings in Bank with 93.4 percent positive response and 6.6 percent negative response. With regard to Life Insurance, there was only 40.8 percent positive response from farmers and 59.2 percent farmers with negative reply. On the other hand, farmers were well secured with Crop Insurance for their respective crops and there is 52.6 percent positive reply compared to 47.4 percent negative reply by farmers.

- The annual income of the farmers was divided into four categories with the maximum belonging to Above ₹ 3,00,000 categories at 43.9 percent. The annual income of ₹ 2,00,001 – ₹ 3,00,000 has a population of 26.6 percent farmers whereas farmers belonging to ₹ 1,00,001 – ₹ 2,00,000 annual income were 17.1 percent in number. The minimum was observed in Less than ₹ 1,00,000 category annual income with 12.4 percent farmers out of the total 380 sample size of farmers.
- Travel convenience for the farmers such as two-wheeler and four-wheeler were preferred in order to avail bank services. Out of the 380 sample of farmers, maximum of the farmers owned a two-wheeler with 55.8 percent followed by some farmers who own both two-wheeler and four-wheeler with 28.4 percent. Farmers who own a four-wheeler constitutes 6.8 percent in number whereas no vehicle ownership constitutes 8.9 percent farmers.

### 6.2.4. Hypothesis related Findings

Distinctions in mean scores of variables between two groups were examined using independent t-test is discussed in this section. ANOVA, followed by the Chi-square test, Factor Analysis, Correlation Analysis, Binary Regression, Categorical Regression and Multiple Logistic Regression Analysis were also used to validate the hypothesis mentioned in the second chapter.

- The significance value was 0.028 (i.e., $p = 0.028$), which is below 0.05. and, therefore, the null hypothesis is rejected at 5 % level concluding that there is a statistically significant difference among term of loan and recovery of loan by bank officials through agricultural financing.
- The significance value was 0.046 (i.e., $p = 0.046$), which is below 0.05. and, therefore, the null hypothesis is rejected at 5 % level concluding that there is a statistically significant difference between loan sufficiency and recovery of loan by bank officials through agricultural financing.
- The significance value was 0.032 (i.e., $p = 0.032$), which is below 0.05. and, therefore, the null hypothesis is rejected at 5 % level concluding that there is a statistically significant difference between types of crops cultivated and land ownership in agricultural financing.
- The significance value was 0.049 (i.e., $p = 0.049$), which is below 0.05. and, therefore, the null hypothesis is rejected at 5 % level concluding that there is a statistically significant difference between medium of sale for crops and types of crop cultivated in agricultural financing.
- The significance value was 0.354 (i.e., $p = 0.354$), which is above 0.05. and, therefore, the null hypothesis is accepted at 5 % level concluding that there is no significant difference between external factors such as weather conditions, inferior quality of input and causes for overdue in agricultural financing.

- The group means are significantly different because the p-value is 0.014 which is less than 0.05. Hence, by rejecting the null hypothesis at 5 % level it is concluded that there is significant difference between frequency of repayment and respondents who were unable to repay the loan.

- The group means are significantly different because the p-value is 0.022 which is less than 0.05. Hence, by rejecting the null hypothesis at 5 % level it is concluded that there is significant difference between comparison of banks by farmers and utilising the loan amount for same purpose.

- The value of Pearson Chi-square statistic was 19.004 for the variables loan sanctioning process and problems faced in loan sanctioning process. The p-value obtained is 0.025. The p-value is smaller than the standard alpha value of 0.05 and hence the null hypothesis is rejected at 5 % level. The result is significant and the data suggests that the variables loan sanctioning and problems faced in loan sanctioning were associated with each other.

- The value of Pearson chi-square statistic was 18.079 for the variables days required for loan sanctioning and problems faced in loan sanctioning process. The p-value obtained is 0.034. The p-value is smaller than the standard alpha value of 0.05 and hence the null hypothesis is rejected at 5 % level. The result is significant and the data suggests that the variables days required in loan sanctioning and problems faced in loan sanctioning were associated with each other.

- The value of Pearson chi-square statistic was 22.529 for the variables banks not proposing the said loan amount and causes for overdue. The p-value obtained is 0.032. The p-value is smaller than the standard alpha value of 0.05 and hence the null hypothesis is rejected at 5 % level. The result was significant and the data suggests that the variables banks not proposing the said loan amount and causes for overdue were associated with each other.

- The value of Pearson chi-square statistic was 18.062 for the variables knowledge about banks agricultural finance and rate of interest for loan. The p-value obtained is 0.034. The p-value is smaller than the standard alpha value of 0.05 and hence the null hypothesis is rejected at 5 % level. The result is significant and the data suggests that the variables knowledge about banks agricultural finance and rate of interest for loan are associated with each other.

- The value of Pearson chi-square statistic was 21.957 for the variables amount of loan taken and mode of repayment followed. The p-value obtained is 0.038. The p-value is smaller than

the standard alpha value of 0.05 and hence the null hypothesis is rejected at 5 % level. The result is significant and the data suggests that the variables amount of loan taken and mode of repayment followed were associated with each other.

- The value of Pearson chi-square statistic was 18.856 for the variables land owned in square meter and number of crops grown in a year. The p-value obtained is 0.026. The p-value is smaller than the standard alpha value of 0.05 and hence the null hypothesis is rejected at 5 % level. The result is significant and the data suggests that the variables land owned in square meter and numbers of crops grown in a year were associated with each other.

- The value of Pearson chi-square statistic was 14.032 for the variables revenue earning crops and reliable market price of the yield. The p-value obtained is 0.029. The p-value is smaller than the standard alpha value of 0.05 and hence the null hypothesis is rejected at 5 % level. The result is significant and the data suggests that the variables revenue earning crops and reliable market price of the yield were associated with each other.

- The value of Pearson chi-square statistic was 26.652 for the variables social factors and related supporting business of farmers. The p-value obtained is 0.046. The p-value is smaller than the standard alpha value of 0.05 and hence the null hypothesis is rejected at 5 % level. The result is significant and the data suggests that the variables social factors and related supporting business of farmers were associated with each other.

- The result of Pearson's correlation coefficient was 0.104. There is sufficient evidence to conclude that by rejecting the null hypothesis of p-value less than 0.05 (p-value = 0.044), there is significant relationship between monitoring loan usage and recovery of loan by bank officials.
- Through Binary logistic regression, the effects of information given by bank employees about different loan scheme and opinion regarding behaviour of bank executives on the likelihood that banks grant proposed amount of loan was analysed. Nagelkerke $R^2$ value is 0.045. The statistical significance of the test for the variable 'whether bank employee has given information of different loan scheme of banks' was p = 0.044 and 'opinion regarding behaviour of bank executives' was p = 0.005. Both variables added significant relationship to the model the p-value is smaller than the standard alpha value of 0.05. The model explained 33.0% (Nagelkerke $R^2$) of the variance in banks granting proposed amount of loan and correctly classified 57.6 % of cases.

- Through Multinomial logistic regression among selection of banks with respect to asset securitised for attaining loan and purpose of loan, the measures considered are Nagelkerke $R^2$ value of 0.113 which is the proportion of variance that can be explained by the model. The p-value obtained through Model Fitting information is 0.002 for the variables selection of banks with respect to asset securitised for attaining loan and purpose of loan which means that the full model statistically significantly predicts the dependent variable better. It is analysed that asset securitised for the loan is statistically significant because p-value = 0.004. On the other hand, purpose of loan is also statistically significant because p-value = 0.021. Hence, by rejecting the null hypothesis at 5 % level it is concluded that there is significance relationship between selection of banks with respect to asset securitised for attaining loan and purpose of loan.

- Through Categorical Regression analysis for method of cultivation adopted and types of farm land, the R value representing the simple correlation is 0.136 and the $R^2$ value explains 1.8 % of the variation in the dependent variable which can be explained by the independent variable. The p- value obtained through ANOVA table is 0.008 which is less than 0.05, indicating that the regression model statistically significantly predicts the outcome variable that is good fit for the data. The coefficient representing the effect of cultivation method adopted on types of farm land is 0.136. The positive assessed sign of coefficient indicated that such effect is positive with p-value 0.006 which is significant at 1 % level. The null hypothesis is rejected at 1 % level concluding that there exists a significant relationship between method of cultivation adopted and types of farm land in agriculture.
- Testing Likert scale data for factors affecting utilization of credit facilities by banks such as Sanctioning of the loan, Inferior quality of Input, Market Conditions, Convenient location of banks, Quick disbursement of loans, Quality of service of bank staffs, Low interest rate, Convenient repayment method, Social factors and Weather conditions, the Cronbach's alpha test was used to test the internal consistency. The alpha value obtained is 0.852 and it indicates that there is greater internal consistency of the variables in the scale.
- Testing Likert scale data for opinions regarding bank services according to farmers such as High Interest rates, Short loan term, Excessive collateral requirements, Lengthy application process, High costs associated with borrowing, High risks uncertain of own ability to pay interest and repay principal, Benefits by way of subsidy, Cattle Crop Insurance, Benefits by way of agricultural implements, Penal Interest waive, Increased Agricultural turnover due to financial assistance by banks and Increased Standard of living due to financial assistance by banks, the Cronbach's alpha test was used to test the internal consistency. The alpha value

obtained is 0.810 and it indicates that there is greater internal consistency of the variables in the scale.

- The KMO value of 0.899 represented the adequacy of enough variations in the responses against the statements, which is a necessary condition. The test of sphericity based on chi-square transformation of determinant of correlation matrix has the results of Bartlett test indicating that p-value of chi-square statistic is 0.000, which is less than 5 % level of significance. Hence, a significant correlation between different pairs of statements exists. The extracted communalities of all variables tested were greater than 0.5 and in one case approaching 0.4. The results indicated that the 10 statements considered for the factor study is reduced to 3 components. These 3 components explain 65.834 percent of the variation of included statements. Component 1 consists of seven variables which are defined as "Quality Banking services". Component 2 consists of two variables which are defined as "External factors" and component 3 consists of a single variable known as "Social factors".
- The KMO value of 0.841 also represents the adequacy of enough variations in the responses against the statements, which is a necessary condition. The test of sphericity based on chi-square transformation of determinant of correlation matrix has the results of Bartlett test indicating that p-value of chi-square statistic is 0.000, which is less than 5 percent level of significance. Hence, a significant correlation between different pairs of statements exists. The extracted communalities of all variables are greater than 0.5. The results indicated that the 12 statements considered for the factor study is reduced to 3 components These 3 factors explain that 65.617 percent of the variation of included statements. Component 1 consists of five variables which are defined as "Premium financial services". Component 2 consists of four variables which are defined as "Collateral factors" and component 3 consists of three variables known as "Risk factors".

### 6.2.5. Problems of Bankers in the State of Goa

Distinctions in variables between two groups are examined using non-parametric tests in this section. Friedman test, Spearman's Rank Correlation, Non-parametric Chi-square test, Independent sample Median Tests, Jonckheere – Terpstra Test, Kruskal – Wallis Test and Marginal Homogeneity test were also used to validate the hypothesis mentioned in the second chapter.

- The sample size consisting of 15 bankers was taken for the study with the information required for eligible borrower being completely based on Krishi card, farmers land holdings and agricultural income. Farmers Land holdings contributed to 33.3 percent, Krishi card

contributed to 13.3 percent and Agricultural Income contributed to 6.7 percent. Bankers considering all the three-information constituted to 46.7 percent.

- The time lag in loan sanctioning process when a loan was authorised by bank officials in order to go through various inspection cycle was categorised into three types with number of days between 1 – 3 days being 60 percent followed by 4 – 6 days being 33.3 percent. The least possible was observed in above 6 days' category with 6.7 percent.
- The days required for loan amount dispersal was divided into three categories with time lag being within 2 days at 60 percent followed by time lag lying between 3 – 4 days at 26.7 percent. It was less in the case of 5 days and above with 13.3 percent as per the data obtained from 15 bankers.
- The proportion of crop loan to agricultural loan was categorised into three types with the maximum percentage observed in the 41 – 80 % category of 53.3 percent. More than 80 % percent category has a response of 26.7 percent whereas the minimum was observed in the range below 40 % category of 20 percent according to the banker's data of 15 samples.
- The percentage achievement in agricultural lending with respect to banker's data of 15 samples was divided into four categories with maximum count observed in the 31 – 60 % category of 46.7 percent followed by more than 60 percent category having a count of 26.7 percent. Both categories, below 15 % and within 16 – 30 % achievement share an equal percent of 13.3 which is less among the four categories.
- According to the banker's data of 15 samples, the percentage default in agricultural lending was categorised into four categories with maximum being observed in below 5 % category of 66.7 percent. Categories, 6 – 10 % and greater than 15 % category share an equal percent of 13.3. The minimum was observed among 11 – 15 % category with 6.7 percent of default in agricultural lending.
- The details of 15 bankers influencing borrowers to avail Agriculture loan in order to improve agricultural credit was divided into three responses such as Always, Frequently and Occasionally. Bankers who frequently influence borrowers to avail loan were more with 60 percent. Bankers who always influence borrowers constitute 33.3 percent whereas occasionally influencing borrowers consists of 6.7 percent.
- Testing Likert scale data for problems of bankers through Agriculture financing such as induce borrowers to avail Agri loan, no proper utilisation of loan, rigidity in lending rates, cumbersome lending procedures, insufficient tangible security, ineffective follow up, misutilisation of loan by borrowers, lack of corrective action on misuse, intentional failure of the borrowers, natural calamity failure, inadequate return of agricultural activity, absence of

subsidy for repayment, complicated recovery procedures, high share of NPA, lack of sufficient support from government agencies, ineffective insurance, social political influence, large number of small agri borrowers, continuous renewal, target based lending, limited scope agri expansion, changed attitude of society and small land holdings, the Cronbach's alpha test was used to test the internal consistency. The alpha value obtained is 0.761 and it indicates that there is greater internal consistency of the variables in the scale.

- The Correlation analysis through Spearman's Rank Correlation associates the factors related to agricultural lending where absence of subsidy for repayment and complicated recovery procedures has stronger correlation of $r_s = 0.859$.
- The Correlation analysis through Spearman's Rank Correlation associates the factors related to Bankers Attitude and Government Norms for Agricultural Lending. It signifies that there was stronger correlation between small land holdings and social political influence with $r_s$, is 0.776.
- The test statistic obtained through Chi-square is 5.717 for the variables time lag in loan sanctioning and time lag in disbursement of loan. The exact p-value is 0.043 and the official way of reporting the test results includes the chi-square value, df and p as in this study demonstrated the effect from Time lag in loan sanctioning and Time lag in disbursement of loan, $\chi 2(2) = 5.717$, Exact p- value = 0.043. By rejecting the null hypothesis at 5 % level, it can be said that there is significance between time lag in loan sanctioning and loan disbursement process through Kruskal-Wallis test.

- In order to identify groups of significantly associated factors in the data for the variables percentage achievement and percentage default in agricultural lending, Kendall's Concordance test was used and the value obtained is 0.490. The p-value is 0.006 which is less than 0.05 for percentage achievement and percentage default in agricultural lending. Hence by rejecting the null hypothesis at 5 % level, there is significant difference between percentage achievement and percentage default.

- In Marginal Homogeneity test, inducing borrowers to avail loan and misutilisation is considered with the MH statistic value obtained as 21.000. The p-value is 0.009 which is less than the standard alpha value of 0.05 and as a result, at a 5% level, the null hypothesis is dismissed, indicating that there is a substantial difference between inducing borrowers and misutilisation of loans in lending finance.

- Through Non-Parametric Chi-square test, the relationship among various level of NPA attained through agricultural lending and proportion of crop loan to agricultural loan was analysed. The p-value value obtained was 0.022 for NPA level and 0.041 for proportion of crop loan to agricultural loan which was less than the standard alpha value of 0.05. Hence, by rejecting the null hypothesis at 5 % level, it was concluded that there is significant association in the various levels of NPA in agricultural lending and proportion of crop loan to agricultural loan.

- The Jonckheere-Terpstra test was analysed for large number of small agri borrowers and limited scope for agricultural expansion. The observed J-T statistic value was 63.000. The decision made was based on the p-value which is 0.002. Since the p-value less than 0.05, the null hypothesis is rejected at 5 % level stating that there is significant relationship between large number of small agri borrowers and limited scope for agricultural expansion.

- Through Independent Sample Median test, variables such as lack of sufficient support from government agencies and proportion of crop loan to agricultural loan was analysed. The p-value obtained is 0.013 which is less than the standard alpha value of 0.05 concluding that the medians of lack of sufficient support from government agencies and proportion of crop loan to agricultural loan are significantly different by rejecting the null hypothesis.

- In the analysis for absence of subsidy for repayment and complicated recovery procedures, independent median test is tested with the p- value obtained as 0.040 which is less than standard alpha value of 0.05. Hence, by rejecting the null hypothesis, the medians for absence of subsidy in loan repayment and complicated recovery procedures are significantly different.

## 6.3. Conclusions

India, in reality, is an agricultural country. Nearly 40 per cent of the country's national income derives from agriculture and related activities. Indian agriculture is characterized by agro-ecological diversities within the framework of soil, precipitation, temperature, and crops. Despite having achieved national food security, the pattern of agriculture development has, as it may be, got its wake, lopsided turn of events, across different segments of the cultivating network and is portrayed by low degrees of profitability. Henceforth, the conclusions drawn from these investigations cannot be summed up for the nation in general. In this way, explicit investigations in Goa are more significant for decision making at the micro-level. The current

study was an effort to investigate the effects of institutional credit on agricultural advancement in Goa.

Approach of Green revolution, low savings of farmers, continuous crop disappointments, low costs of agricultural produces, delay among planting and harvesting period, presentation of modern innovation, improved strategies for agriculture, intensive utilization of inputs, farmers having debt as an ancestral property and so forth., are the foundations for higher demand for farm credit and builds the need of modest intuitional credit. The significant institutional organizations providing farm credit in India at the base level are Co-Operative Banks, Nationalized Banks, Commercial Banks and Regional Rural Banks.

The effectiveness of institutional agriculture finance as well as the factors that influence it has been documented. The investigation represented an expansion of the institutional finance flow to farming for as long as three decades. During the study period various patterns were observed in the development of agricultural finance. Banks have risen in the ongoing years as the significant source of institutional finance. The greater parts of the farmers in Goa were profited by agricultural finance. It is perceived that cultivation technology needs to be improved so as to build efficiency in the state of Goa. In addition, there is a degree to expand the use of modernized inputs to build the cultivation of major crops in the state of Goa. There is degree to proficiently expand yield using irrigation and technology with higher sources of information.

The researcher has made an effort to investigate some of the core issues identified with the institutional funding. In the investigation, it was found that the farmers face certain difficulties while receiving loans and advances from banks regarding the convenient payment of the loans for a plenty of reasons. These were the issues looked by the ranchers, for example,

1) A significant number of banks decrease the advancement of loans to farmers.

2) The loan applicants were approached to be available physically in the banks for the approval of agricultural credit.

3) The banks were operating with limited timings.

4) Banks do not consider social and individual commitments to authorise loans.

5) Some branches carefully follow reservation and social strata.

6) Banks provide inappropriate and inadequate loans.

7) Lack of awareness among farmers of various government schemes.

8) Among the category of farmers, marginal or small-scale farmers face more problems with lacking credit due to a credit sanction limit while operating land was more.

9) Under any conditions where the crop was a failure, the main victims were marginal and small-scale farmers as they belong to low-income group.

The farming community's capacity to reimbursement relies on the yield of the harvests. Because of the harvest disappointment, the farming community's reimbursement limit decreases, this leads to a weakening of the farmers' societal position.

The banks in Goa identified by the researcher in her discussions with bankers through questionnaire face the following problems:

1) During sanctioning of loan, problems like identification of genuine farmers, authenticity and monetary sufficiency of farmers, recognition of adequate security, lopsided economic resources, nature of loan, credit period, credit size and expedient implementation of new economic policies were faced by bankers of institutional organizations.

2) During post-sanctioning period of credit, problems like the lack of control on borrower for the best possible use of credit or not, the lack of control over non-performing resources, the conversion of the crop loan into a term loan due to harvest failure, the lack of adequate machinery for initiating and pursuing legal causes against the defaulters were other issues of convenient recuperation, the lack of legitimate training for managers and bank staff at the time of recovery.

Along these lines, it is obvious from the foregoing investigation that the presentation of banks in the state of Goa during the time of study was regarded satisfactory to some degree and issues were minimal contrasted with other states.

**6.4. Recommendations:**

1) Accordingly, a substantial amount of credit is obtained from institutional agencies; hence there is a requirement for quantitative and subjective improvement of the financing of agriculture by all state financing institutions.

2) In order to build productivity and reimbursement capacity, the loan disbursement should be offered appropriately to the farmers.

3) The quantum of loans to all financial institutions for related exercises should be expanded, resulting in higher income generation, thus increasing the repayment limit for farmers.

4) All financial foundations in the region should have an exacting follow-up activity to recover the credit sum from the farmers.

5) Effective methods of recovery should be introduced and the borrowers should acknowledge an ethical code to provoke the recovery of agricultural loans and, in addition, the financial institutions.

6) If the farmer is found to be known defaulter for an interminable time frame, any further advance should not be given to such farmer.

7) Positive incentives should be provided by those farmers who prompt the reimbursement of the credit sum in due time by minimally reducing the interest rate.

8) Agricultural loan insurance scheme or security insurance scheme should be updated as if due to monsoon disappointment or drought, floods, etc. Thus, insurance agency should pay that credit amount to banks and farmers should not become defaulters.

9) The Government of India should set support prices for a wide range of target crops to support crop enhancement.

10) The loss of production is high due to monsoon failure or droughts, floods and so on and hence some relief should be given to farmers. The merits of specific cases should be based on this. Short-term loans should be transformed into medium-term loans under this unique circumstance.

11) Improving and updating the database for land holdings are important since non-appearance of land records influences the progression of credit.

12) To avoid multiple financing, there should be a co-ordination between all the financial institutions. The financial should avoid nothing during cross-proposals to prevent double

financing and also should ensure that departing farmer of one financial institution might not get finance from another financial institution.

13) The banks should instruct the farmers and make them prone to standard and brief repayment of loan amount.

14) The banks should raise awareness among farmers regarding the utilisation of credit.

**6.5. Scope for Further Study:**

1) In different states of India, a comprehensive study can be performed to understand the proximity of the country-wide comparative issues related to agricultural financing, and a systematic methodology can be adopted to classify these issues.

2) An examination to assess the efficiency and commitment of various incentive schemes proposed for the growth and development of agricultural financing at the central and state level should be adopted.

3) A research can be attempted to explain and break down the difference in the funding methods and requirements that banks use to evaluate agricultural loan applications.

4) A comparative study of agricultural finance by private sector banks and public sector banks can be studied.

5) The role of Co-operative Banks and Regional Rural Banks in agricultural study can be studied.

6) It is possible to research the impact of shifting market conditions and unpredictable economic conditions on the financial requirements, financing trends and restrictions on access to bank finance for agricultural needs.

# BIBLIOGRAPHY


- A K Makar, S. G. (2009). Institutional Barriers in Tribal Hill Areas for Agricultural Finance: A Case Study in Nagaland. *Stud Tribes Tribals 7(2)*, 143-147.
- A. Narayanamurthy, S. S. (2005). Indebtness of Farmer's Household Across States: Recent Trends, Status and Determinants . *Indian Journal of Agricultural Economics*, 289-301.
- A.R. Reddy, C. S. (2004). Technical Inefficiency in Rice Production and Its Relationship with Farm-Specific Socio-Economic Characteristics. *Indian Journal Of Agricultural Economics, Vol. 59, No. 2*, 259-267.
- Adeleke Salami and Damilola Arawomo. (2013). *Empirical Analysis of Agricultural Credit in Africa: Any Role for Institutional Factors?* Working Paper Series N° 192 African Development Bank,Tunis, Tunisia.
- Anil Kumar Soni, H. P. (2013). Role Of Cooperative Bank In Agricultural Credit: A Study Based On Chhattisgarh. *Abhinav*, 106-113.
- Anjani Kumar, K. M. (2010). Institutional Credit to Agriculture Sector in India: Status,Performance and Determinants. *Agricultural Economics Research Review, Vol. 23*, 253-264.

- Anjani Kumar, P. K. (2011). Rural Poverty and Agricultural Growth in India: Implications for the Twelfth Five Year Plan.*Indian Journal Of Agricultural Economics*, 270-278.
- Arvind, S. (2013). Causes of Suicide of the farmers in Vidarbha Region. *International Indexed & Refereed Research Journal, ISSN 0975-3486*, 43-44.
- ASHOK GULATI, S. B. (2002). Institutional Credit to Indian Agriculture: Defaults and Policy Options. *Occasional Paper - 23, NABARD*.
- Bhaskaran, R. (2008). Beyond Waivers: Need to Redesign the Bank Loans and Offer Effective Hedge Products. *Indian Journal Of Agricultural Economics*, 159-168.
- Channaveer, M. C. (2012). Governance of Benefits from Developmental Programmes to Farmers in Karnataka. *Indian Journal Of Agricultural Economics, Vol.67, No.3*, 476-486.
- Chowdhury, T. A. (2011). Performance Evaluation of Agricultural Banks in Bangladesh. *International Journal of Business and Management, Vol. 6, No. 4*, 75-89.
- D.K. Singh, A. S. (2009). Association of Socio-economic Status with Economic Motivation of the Farmers. *Indian Res. J Ext. Edu. 9 (2 ),*, 53-56.
- Dalwai, A. (2012). Dynamics of Agricultural Growth in India. *Indian Journal Of Agricultural Economics*, 27-45.
- Deb, S. (2004). Terms of Trade and Investment Behaviour in Indian Agriculture: A Cointegration Analysis. *Indian Journal Of Agricultural Economics*, 209-230.
- Desai, B. M. (1978, June 24). Costs of Operations in Agricultural Financing by Formal Agencies. *Economic and Political Weekly, Vol. 13, No. 25*, pp. A70-A74.

- Dev, S. M. (2012). Small Farmers in India:Challenges and Opportunities. *Indira Gandhi Institute of Development Research, Mumbai*.

- Elumalai Kannan, S. S. (2011). *Analysis of Trends in India's Agricultural Growth.* Bangalore: The Institute for Social and Economic Change,.

- Elumalai, K. (2011). Relationship Between Agricultural Credit Policy, Credit Disbursements and Crop Productivity: A Study in Karnataka. *INDIAN JOURNAL OF AGRICULTURAL ECONOMICS, Vol.66, No.3*, 444-456.

- EZE CHRISTOPHER C., J. L. (2010). Agricultural Financing Policies And Rural Development In Nigeria.*The 84th Annual Conference of the Agricultural Economics Society.* Edinburgh.

- Gowhar Bashir Ahangar, A. H. (2013). A study on institutional credit to agriculture sector in India. *Interntional Journal of Current Research and Academic Review, ISSN: 2347-3215 Volume 1 Number 4*, 72-80.

- Gyanendra Mani, V. S. (2010). Credit Absorption Capacity of Farmers in Uttar Pradesh. *Indian Journal of Agricultural Economics, Vol.65, No.4*, 677-692.

- Jeromi, P. D. (2007). Impact of Agricultural Trade Liberalisation :Farmers' Indebtedness and Suicides in Kerala. *INDIAN JOURNAL OF AGRICULTURAL ECONOMICS, Vol. 62, No.2*, 159-175.

- Johan F. M. Swinnen, H. R. (1999). Agricultural credit problems and policies during the transition to a market economy in Central and Eastern Europe. *J.F.M. Swinnen, H.R. Gow/Food Policy 24*, 21–47.

- K Sivaiah, V. B. (2015). Need and importance of institutional finance for agricultural development. *International Journal of Multidisciplinary Research and Development, Volume: 2, Issue: 6*, 254-257.
- Kadidia, K. (2001). *Challenges To Agriculture Financing In Mali.* Mali: Department of Agricultural Economics.
- Karmakar, K. (2008). Trends in Rural Finance. *INDIAN JOURNAL OF AGRICULTURAL ECONOMICS*, 5-18.
- Kaur, P. (2015). Growth of Agriculture credit in India . *ZENITH International Journal of Business Economics & Management Research, Vol.5 (1)*, 247-256.
- Kewal Kumar, A. G. (2013). Financing Of Agriculture By Commercial Banks – Problems Faced By Farmers (An Empirical Study). *Abhinav, Volume No.1, Issue No.5*, 79-84.
- Khatkar, A. G. (2011). Institutional Credit to Agriculture Sector Across Different Regions of India. *Indian Journal of Agricultural Economics, Vol.66, No.3*, 474-488.
- Kristina Hedman Jansson, C. J. (2013). Agricultural Credit Market Institutions:A Comparison of Selected European Countries. *Factor Markets*.
- Kumar, R. (2005). Constraints Facing Indian Agriculture:Need for Policy Intervention. *Indian Journal Of Agricultural Economics*, 49-59.

- Kumari, R. V. (2005). An Economic Analysis of Rural Indebtedness in Northern Telangana Zone of Andra Pradesh. *INDIAN JOURNAL OF AGRICULTURAL ECONOMICS, VOL. NO. 60, NO. 3*, 302-308.
- Lekshmi Nair, D. D. (2016). A Stagnant Agriculture in Kerala: The Role of the State. *Centre for Public Policy Research*.
- M.L. Roy, N. C. (2013). Socio-economic Status of Hill Farmers: An Exploration from Almora District in Uttarakhand. *International Journal of Agriculture and Food Science Technology. ISSN 2249-3050, Volume 4*, 353-358.
- Menon, K. N. (2007). *DISTRESS DEBT AND SUICIDES AMONG AGRARIAN HOUSEHOLDS:FINDINGS FROM THREE VILLAGE STUDIES IN KERALA.* "Economic Globalization and State Decentralization: Coping Strategies of farm households in South India".
- Mishra, D. K. (2006). Institutional Specificities and Agrarian Transformation in Arunachal Pradesh: Changing Realities and Emerging Challenges. *Indian Journal of Agricultural Economics, Vol.61, No.3,*, 314-327.
- Mohan, R. (2004, November). Agricultural Credit in India: Status, Issues and Future Agenda. *Reserve Bank of India Bulletin*, pp. 993-1007.
- Mohan, R. (2006, March 18). Agricultural Credit in India:Status, Issues and Future Agenda. *Economic and Political Weekly*, pp. 1013-1021.
- Mohanty, B. B. (n.d.). Social Roots of Farmer's Suicides in Maharashtra. Pune, Maharashtra, India.

- Namboodiri, N. (2005). Agricultural Credit and Indebtedness. *INDIAN JOURNAL OF AGRICULTUAL ECONOMICS, Vol. 61, No. 1*, 77-80.

- Obilor, S. I. (2013). The Impact of Commercial Banks' Credit to Agriculture on Agricultural Development in Nigeria: An Econometric Analysis. *International Journal of Business, Humanities and Technology, Vol. 3 No. 1*, 85-94.

- PETERSIDE, A. J. (2014). ANALYSIS OF THE ROLE OF BANKS IN FINANCING THE AGRICULTURE AND MANUFACTURING SECTORS IN NIGERIA. *Impact Journals, Vol. 2, Issue 2*, 9-22.

- PRATAP, B. L. (2013). AGRICULTURE FINANCE: AN OVERVIEW. *Research Directions, Volume I, ISSN:-2321-5488*.

- Purnanand Nagappa Sangalad, M. G. (2011). Socio-Economic Conditions of Farmers' of Bagalkot District and their Impact on Suicides. *Journal of Experimental Sciences 2011, 2(7) ISSN: 2218-1768*, 01-03.

- R S Sohi, S. C. (2004). Interlinked Credit Transactions in Rural Punjab. *INDIAN JOURNAL OF AGRICULTURAL ECONOMICS, Vol. 59, No.1*, 1-16.

- R. Ramakumar, P. C. (2007, December 29). Revival of Agricultural Credit in the 2000s: An Explanation. *Economic and Political Weekly, Vol. 42, No. 52*, pp. 57-63.

- R. Thejeswini, V. K. (2014). Agricultural Credit in India – Innovations in Design and Delivery of Products and Services. *Agricultural Economics Research Review, Vol. 27*, 75-83.

- R.S. Sidhu, K. V. (2008). Dynamics of Institutional Agricultural Credit and Growth in Punjab: Contribution and Demand-Supply Gap. *Agricultural Economics Research Review, Vol. 21*, 407-414.
- Ramesh Chand, S. P. (2011). Historical and Spatial Trends in Agriculture: Growth Analysis at National and State Level in India. *Policy Options And Investment Priorities For Accelerating Agricultural Productivity And Development In India.* New Delhi: India International Centre.
- Ray, S. K. (2007). Economics of Change in Cropping Pattern in Relation to Credit: A Micro Level Study in West Bengal. *Indian Journal Of Agricultural Economics, Vol.62, No,2*, 216-231.
- Sahu, G. B. (2007). Supply Analysis of Institutional Credit to Agriculture for Major States in India. *Indian Journal of Agricultural Economics, Vol 62, No. 4*, 664-678.
- SANDHU, H. K. (2012). Doubling Of Agricultural Credit Its Efect On Farmers And Current Agriculture Senerio. *International Journal of Social Science & Interdisciplinary Research, Vol.1, ISSN 2277 3630*, 126-133.
- Sankaranarayanan, T. K. (2015, September 22). Regional Rural Banks and Rural Credit: Some Issues. *Economic and Political Weekly*, pp. 2157-2164.
- Satish, P. (2005). Agriculture Credit: Are there two distinct classes of borrowers? *Indian Journal of Agricultural Economics, Volume 60, No. 3*, 309-318.
- Satish, P. (2012). Innovations in Agricultural Credit Market –Rationalisation of Policy Response. *Indian Journal Of Agricultural Economics, Vol.67, No.1*, 79-96.

- Satpathy, A. R. (2011). Role of Institutional Finance For Agriculture Development. *Indian Journal of Applied Research* , 3-4.
- Shah, D. (n.d.). *Agricultural Credit Delivery System in Maharashtra:A Synthesis of Working of RFIs.*
- Shahidur R. Khandker, R. R. (2003). The impact of farm credit in Pakistan. *Agricultural Economics*, 197-213.
- Sharmishtha Matkar, A. J. (2015). AGRICULTURAL CREDIT IN INDIA: STATUS AND PROBLEMS. *RESEARCH FRONT Volume 3, No. 2*, 125-132.
- Simbakalia, C. (. (2012, 4). The Role of Financial Sector in Agriculture Development and Industrialization. *ESRF POLICY BRIEF*.
- Sukhpal Singh, M. K. (2009). Inadequacies of Institutional Agricultural Credit System in Punjab State. *Agricultural Economics Research Review, Vol. 22* , 309-318.
- Sukhpal Singh, M. S. (2005). Agarian crisis with special reference to indebtedness among Punjab Farmers. *Indian Journal of Agricultural Economics, Vol. 60, No. 3*, 335-346.
- Sukhpal Singh, T. D. (2011). The Status of Commission Agent System in Punjab Agriculture. *Indian Journal Of Agricultural Economics, Vol.66, No.4,*, 662-675.
- Suresh Pal, M. P. (2003). *Institutional Change in Indian Agriculture.* New delhi, india: national centre for agricultural economics and policy research.
- T.S., D. (2011). An Analysis of Institutional Financing and Agricultural Credit Policy in India.

- Talule, D. (2013). Political Economy of Agricultural Distress And Farmers Suicides In Maharashtra. *International Journal of Social Science & Interdisciplinary Research, ISSN 2277 3630, Vol.2 (2),*, 95-124.

- Terway, A. H. (2015). *Credit Policy for Agriculture in India - An Evaluation.*Indian Council For Research On International Economic Relations.

- Thorat, Y. S. (2006). Rural Credit in India: Issues and Concerns. *Indian Journal Of Agricultural Economics*, 1-10.

- Umdor, S. (2008). Behaviour of Rural Households in the Borrowing and Usage of Credit in North-East Uplands of India. *Indian Journal Of Agricutlural Economics, Vol. 63, No. 2,*, 211-223.

- V K Rawat, A. S. (2010). Emerging Scenario of Risks, Indebtedness and Farmers Suicides in Agrarian Food Security Crises of India. *Indian Journal Of Agricultural Economics, Vol.65, No.3*, 521-523.

## Research papers Publications

- P. Sriram and Deepali Naik (2018) “The Role of Financial Institutions for Agricultural Financing in India”, Ajanta- An International Multidisciplinary Quarterly Research Journal, Peer Reviewed Referred and UGC Listed Journal, Journal No. 40776, ISSN 2277-5730, Pg. No. 7-13, Volume- VII, Issue-III.
- Deepali Naik and P. Sriram (2019) “The Role of Financial Institutions for Agricultural Financing in the state of Goa”, International Journal of Advance and Innovative Research, UGC Journal No. 63571, ISSN 2397780, Pg. No. 86-90.

**"A STUDY ON AGRICULTURAL FINANCING IN THE STATE OF GOA"**

---

**Ms Deepali G. Naik, M.Com**

**Research scholar, Goa Business School, Goa University.**

---

Dear Respondents,

This questionnaire is framed for an academic work and you are requested to answer by placing a tick (√) mark in the appropriate response column on the right side of the questions. This information is meant for academic purpose and the response provided by you will be kept confidential. Your kind cooperation will contribute towards attaining the study of Agricultural Financing in the State of Goa.

## QUESTIONNAIRE FOR FARMERS

### SECTION A
### DEMOGRAPHIC PROFILE

**1. Name:** _____

**2. Gender** : (a) Male [ ] (b) Female [ ]

**3. Age (in Years)** : (a) Less than 20 [ ] (b) 21 – 40 [ ]

(c) 41 – 60 [ ] (d) 61 and above [ ]

**4. Which Taluka of Goa you belong to?**

| | | | | | |
|---|---|---|---|---|---|
| **i.** | **Bardez** | [ ] | **vii.** | **Canacona** | [ ] |
| **ii.** | **Bicholim** | [ ] | **viii.** | **Mormugao** | [ ] |
| **iii.** | **Pernem** | [ ] | **ix.** | **Salcete** | [ ] |
| **iv.** | **Sattari** | [ ] | **x.** | **Sanguem** | [ ] |
| **v.** | **Tiswadi** | [ ] | **xi.** | **Quepem** | [ ] |
| **vi.** | **Ponda** | [ ] | **xii.** | **Dharbandora** | [ ] |

**5. How long you are in farming business?**

(a) Less than 15 yrs. [ ] (b) 16 - 30yrs. [ ] (c) 31 – 45 yrs. [ ]

(d) 46 yrs. and above [ ]

**6. Educational Qualification:**

(a) Illiterate [ ] (b) Primary [ ] (c) High School [ ]

(d) Graduate [ ] (e) Post Graduate [ ]

**7. Size of the Family:**

(a) Up to 4 [ ] (b) 5– 8[ ] (c) 9 & Above [ ]

**8. Religion:**

(a) Hindu [ ] (b) Christian [ ] (c) Muslim [ ]

**9. Community:**

(a) General – [ ] (b) OBC [ ] (c) SC [ ] (d) ST [ ]

**10. Infrastructural Facilities Available:**

| | | |
|---|---|---|
| (a) Roadways | i)Yes [ ] | ii) No[ ] |
| (b) Transportation | i) Yes[ ] | ii) No[ ] |
| (c) Water | i) Yes[ ] | ii) No[ ] |
| (d) Electricity | i) Yes[ ] | ii) No[ ] |
| (e) Warehouse | i) Yes[ ] | ii) No[ ] |

**11. Annual Income**:

(a) Less than ₹ 1,00,000 [ ]
(b) ₹ 1,00,001 - ₹ 2,00,000 [ ]
(c) ₹ 2,00,001 – ₹ 3,00,000 [ ]
(d) Above ₹ 3,00,000 [ ]

**12. Income from Farming**

(a) No Income [ ]
(b) Less than ₹ 1,00,000 [ ]
(c) ₹ 1,00,001- ₹ 2,00,000 [ ]
(d) ₹ 2,00,001 - ₹3,00,000 [ ]
(e) Above ₹ 3,00,001 [ ]

**13. Other personal information**

| | | |
|---|---|---|
| a) House | **i) Yes** [ ] | **ii) No** [ ] |
| b) Vehicles | **i) Yes** [ ] | **ii) No** [ ] |
| c) Modern Agricultural Equipment | **i) Yes** [ ] | **ii) No** [ ] |
| d) Mobile | **i) Yes** [ ] | **ii) No** [ ] |
| e) Small Savings in Banks | **i) Yes** [ ] | **ii) No** [ ] |
| f) FD, Postal savings or any term deposits | **i) Yes** [ ] | **ii) No** [ ] |
| e) Life Insurance | **i) Yes** [ ] | **ii) No** [ ] |
| f) Crop Insurance | **i) Yes** [ ] | **ii) No** [ ] |

**SECTION B**

**LANDHOLDING PARTICULARS**

**1. Under which category you belong:**

(a) Marginal Farmer [ ] (b) Small Farmer [ ]

(c) Medium Farmer [ ] (d) Large Farmer [ ]

**2. How much land you own in square meter?**

(a) Less than 10,000 square meter [ ]

(b) 10,001 – 20,000 square meter [ ]

(c) 20,001-30,000 square meter [ ]

(d) Above 30,000 square meter [ ]

**3. Land ownership**

(a) Tenant [ ]
(b)Leased [ ]
(c)Self-Owned [ ]

**4. What method of Cultivation is adopted?**

(a) Traditional [ ] (b) Modern [ ]

**5. Type of Land:**

(a) Irrigated [ ] (b) Non-Irrigated [ ]

**6. Types of crop cultivated:**

(a) Commercial [ ] (b) Non-commercial [ ] (c) Both [ ]

**7. Number of crops grown in a year:**

(a) Less than or equal to 2 [ ]

(b) 3 – 4 [ ]

(c) 5 – 6 [ ]

(d) Above 6 [ ]

**8. What kind of crops you raise and get revenue from?**

(a) Vegetables [ ] (b) Fruits [ ] (c) Pulses [ ]

(d) Cashew [ ] (e) Rice [ ] (f) Coconut [ ]

(g) Sugarcane [ ]

**9. Are you getting reliable market price for your yield?**

(a) Yes [ ] (b) No [ ]

**10. What is the medium of sale for your crops?**

(a) Self [ ] (b) Middlemen [ ] (c) Direct contact with the main party [ ]

11. Do you have any supporting business?
(a) Fishing [ ] (b) Dairy [ ] (c) Service [ ] (d) Others [ ] (e) No [ ]

## SECTION C

## AGRICULTURAL FINANCING PARTICULARS

**1. From which bank you have taken the loan?**

| | | | |
|---|---|---|---|
| 1 | Bank of Baroda [ ] | 9 | State Bank of India [ ] |
| 2 | Bank of India [ ] | 10 | Syndicate Bank [ ] |
| 3 | Bank of Maharashtra [ ] | 11 | The Goa State Co-operative Bank Ltd. [ ] |
| 4 | Canara Bank [ ] | 12 | The Ratnakar Bank Ltd. [ ] |
| 5 | Central Bank of India [ ] | 13 | UCO Bank [ ] |
| 6 | Corporation Bank [ ] | 14 | Union Bank of India [ ] |
| 7 | Federal Bank [ ] | 15 | Vijaya Bank [ ] |
| 8 | Indian Overseas Bank [ ] | | |

2. Have you compared other banks before taking loan from above bank?
(a)Yes [ ] (b) No [ ]

**3. From whom you came to know about the Bank's Agricultural finance?**

(a)Self visit [ ] (b) Relatives [ ] (c) Gram Panchayat [ ] (d) Advertisement [ ]

4. Why have you selected the above bank?
(a) Convenient [ ]
(b) Bank Executives are familiar[ ]
(c) It is a Lead Bank[ ]
(d) Reputation of the Bank[ ]
(e) Any other [ ]

**5. Purpose of loan:**

(a) Minor Irrigation/Land development[ ]
(b) Farm Mechanization[ ]
(c) Diversified activities[ ]
(d) Sericulture Development[ ]
(e) Horticulture/ Plantation[ ]

**6. How much amount of loan you have taken?**

(a) Less than ₹ 1,00,000 [ ]
(b) ₹ 1,00,001 - ₹ 2,00,000 [ ]
(c) ₹ 2,00,001 - ₹ 3,00,000 [ ]
(d) ₹ 3,00,001 - ₹ 4,00,000 [ ]
(e) Above ₹ 4,00,000 [ ]

**7. What asset was securitised for the loan?**

(a) No security [ ] (d) Pledged [ ]
(b) Mortgaged [ ] (e) Any other [ ]
(c) Hypothecated [ ]

**8. What is the rate of interest for the loan?**

(a) No interest [ ]
(b) 1% to 5% [ ]
(c) 6% to 10% [ ]
(d) More than 10% [ ]

**9. Did you utilize borrowing for the same purpose?**

(a) Yes [ ] (b) No [ ]

**10. Mode of repayment:**

**(a)** Monthly [ ] b) Quarterly [ ] (c) Half Yearly (d) Yearly

**SECTION D**

**INFORMATION OF LOAN PROCESSING**

**1. Loan Status:**

(a) Loan applied [ ] (b) Loan sanctioned [ ] (c) Loan repaid [ ]

(d) Loan utilized for the purpose [ ]

**2. How is the loan sanctioning process of Bank?**

(a) Easy [ ] (b) Proper [ ] (c) Time consuming [ ] (d) Complicated [ ]

**3. After submission of application, how many days are required for loan sanctioning process?**

(a) 8 days [ ] (b) 15 days [ ] (c) 1 month [ ] (d) More than 1 month [ ]

**4. What was the term of loan?**

(a) Less than 5 years [ ] (b) 5 – 10 years [ ] (c) Above 10 years [ ]

**4. Whether Bank Employees has given information of different loan scheme of Banks?**

(a)Yes [ ] (b) No [ ]

**5. Whether Bank has given details of loan process to you?**

(a)Yes [ ] (b) No [ ]

**6. Is the loan sufficient for the purpose?**

(a) Not sufficient [ ] (b) Partially sufficient [ ] (c) Fully sufficient [ ]

**7. What is your opinion regarding behavior of bank executives andemployees?**

(a) Co-operative [ ] (b) Non co-operative [ ]

**8. Does Banks grants proposed amount of loan?**

(a) Yes [ ] (b) No [ ]

**9. If No, Why?**

(a) Land title issues [ ] (b) Less mortgage [ ]

(c) Not submitted last three years audited statement [ ] (d) Others [ ]

**10. What problems you faced in loan sanctioning process?**

(a) No problems at all [ ] (b) Bank Timings [ ] (c) Need Influence [ ] (d) Others [ ]

**11. How is the frequency for repayment of loan?**

(a)Regular [ ] (b) Irregular [ ]

**12. Are you unable to repay the loan for any reason?**

(a)Yes [ ] (b) No [ ]

**13. What were the Cause for overdue? If any**

(a) Monsoon Failure [ ] (b) High Input Cost [ ]

(c) Low demand for agricultural products [ ] (d) Government policy [ ]

(e) Others [ ]

**14. How is the recovery of loan by Bank officials?**

(a) Liberal [ ] (b) Strict [ ] (c) Very strict [ ]

**15. How do Bank Executives monitor the use of loan amount?**

(a) Often visits [ ] (b) Enquires [ ] (c) Enquires to local leaders [ ]

**SECTION E**

**FACTORS AFFECTING UTILIZATION OF CREDIT FACILITIES BY BANKS**

**Please indicate your level of agreement or disagreement with each of the statements on a five-point Likert scale as given below:**

| Sr. No. | Statements | Strongly Agree – (5) | Agree – (4) | Neutral – (3) | Disagree – (2) | Strongly Disagree – (1) |
|---|---|---|---|---|---|---|
| 1 | Sanctioning of the loan | | | | | |
| 2 | Inferior quality of Input | | | | | |
| 3 | Market Conditions | | | | | |
| 4 | Convenient location of banks | | | | | |
| 5 | Quick disbursement of loan (quick processing) | | | | | |
| 6 | Quality of service of bank staffs | | | | | |
| 7 | Low Interest rate | | | | | |
| 8 | Convenient repayment method | | | | | |
| 9 | Social Factors | | | | | |
| 10 | Weather Conditions | | | | | |

**SECTION F**

**OPINIONS REGARDING THE SERVICES THROUGH BANKS**

**Please indicate your level of agreement or disagreement with each of the statements on a five-point Likert scale as given below:**

| Sr. No. | Statements | Strongly Agree – (5) | Agree – (4) | Neutral – (3) | Disagree – (2) | Strongly Disagree – (1) |
|---|---|---|---|---|---|---|
| 1 | High Interest rates | | | | | |
| 2 | Short loan term (maturity). | | | | | |
| 3 | Excessive collateral requirements | | | | | |
| 4 | Lengthy application process | | | | | |
| 5 | High costs associated with borrowing | | | | | |
| 6 | High risks – uncertain of own ability to pay interest and repay principal | | | | | |
| 7 | Benefits by way of subsidy | | | | | |
| 8 | Cattle/Crop Insurance | | | | | |
| 9 | Benefits by way of agricultural implements | | | | | |
| 10 | Penal Interest waive | | | | | |
| 11 | Increased Agricultural turnover due to financial assistance by banks | | | | | |
| 12 | Increased Standard of living due to financial assistance by banks | | | | | |

**THANK YOU**

**"A STUDY ON AGRICULTURAL FINANCING IN THE STATE OF GOA"**

**Ms Deepali G. Naik, M.Com**

**Research scholar, Department of Commerce, Goa University.**

---

**QUESTIONNAIRE FOR - BANK OFFICIALS**

1. Name of the bank: _____

2. What information is requiredto identify eligible agricultural borrower?

1 Krishi Card
2 Land holdings
3 Income generated from Agriculture
4 All the above

3. What is the time- lag in sanction of loan?

1 1-3 days
2 4-6 days
3 Above 6 days

4. What is the time- lag in disbursement of loan amount?

1 a Within 2 days
2 b Between 3-4 days
3 c 5 days and above

5. What is the proportion of crop loan to total agricultural loan?

1 Up to 40%
2 41-80%
3 More than 80%

6. What is the percentage achievement of your bank in agricultural lending?

1 Up to 15 %
2 16-30%
3 31-60%
4 More than 60%

7. What is the percentage default in agricultural lending?

1 Up to 5 %
2 6-10%
3 11-15%
4 More than 15%

8. What is the level of NPA in agricultural lending?

1 a ≤ 2%
2 b 3-4%
3 c ≥ 5%

9. Do you induce the borrowers to avail the agricultural loan?

1 Always
2 Frequently
3 Occasionally

10. Do you think there is no proper utilization of agricultural loan?

1 a Always
2 b Frequently
3 c Occasionally
4 d Never

11. What is the extent of no proper utilization of agricultural loan?

1 a ≤ 10%
2 b 11-20%
3 c 21-30%
4 d ≥ 31%

**State your level of agreement or disagreement relating to the following problems in connection with agricultural financing.**

1) Lending and Monitoring Problems

| Problems | **Strongly Agree** | **Agree** | **Neutral** | **Disagree** | **Strongly Disagree** |
|---|---|---|---|---|---|
| | **1** | **2** | **3** | **4** | **5** |
| 1. Rigidity in Lending Rates | | | | | |
| 2. Cumbersome Lending Procedures | | | | | |
| 3. Insufficient Tangible Security | | | | | |
| 4. Ineffective Follow up | | | | | |
| 5. Misutilization of Loan by Borrowers | | | | | |
| 6. Lack of Corrective Action on Misuses | | | | | |

2. Repayment and related problems

| Problems | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree |
|---|---|---|---|---|---|
| | **1** | **2** | **3** | **4** | **5** |
| 1. Intentional Failure of the Borrowers | | | | | |
| 2. Natural Calamity and Crop Failure | | | | | |
| 3. Inadequate Return of Agricultural Activity | | | | | |
| 4. Absence of Incentive/ Subsidy for Prompt Repayment | | | | | |

3. Over Due and Related Problems

| Problems | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree |
|---|---|---|---|---|---|
| | **1** | **2** | **3** | **4** | **5** |
| 1. Complicated Recovery Procedures | | | | | |
| 2. High Share of Agricultural NPA | | | | | |
| 3. Lack of Sufficient Support from Govt. Agencies | | | | | |
| 4. Ineffective Insurance/ Compensation on Calamities | | | | | |
| 5. Social/ Political Influence on Recovery of Agricultural Loans | | | | | |

4. General Problems in Agricultural Lending

| Problems | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree |
|---|---|---|---|---|---|
| | **1** | **2** | **3** | **4** | **5** |
| 1. Large Number of Small Agriculture Borrower Accounts | | | | | |
| 2. Continuous Renewal and Enhancement of Loan Amount | | | | | |
| 3. Target Based Agricultural Lending | | | | | |
| 4. Limited Scope for Agricultural Expansion | | | | | |
| 5. Changed Attitude of Society Towards Agricultural Activity | | | | | |
| 6. Small and Scattered Land Holdings | | | | | |