

**A Study**  
**on**  
**Issues and Challenges in an Adaptation of Information and**  
**Communication Technology in Primary Agricultural Cooperative Societies**  
**(PACS) with Special Reference to Western Zone**

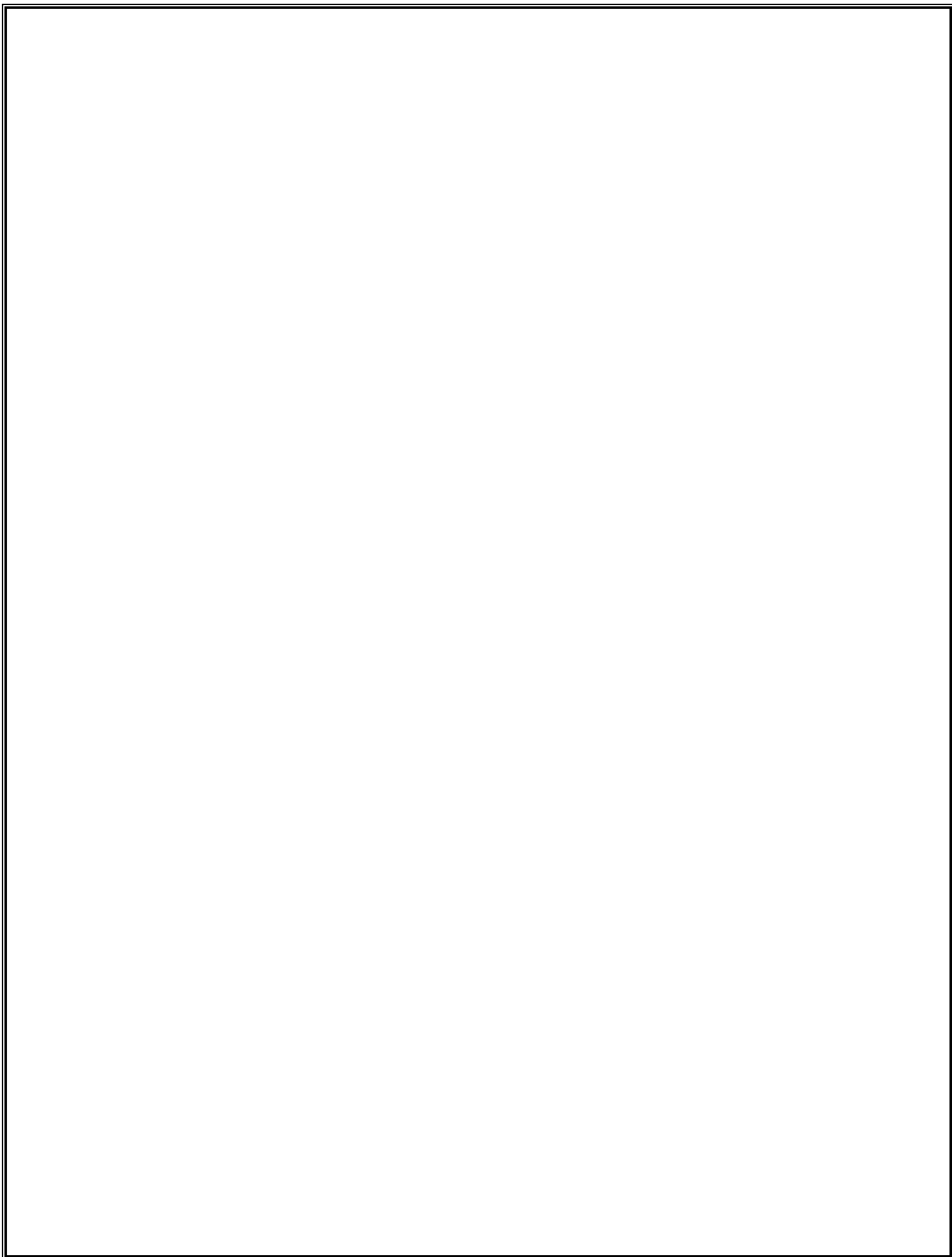


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Submitted to  
**NATIONAL COOPERATIVE UNION OF INDIA (NCUI)**  
**NEW DELHI- 110016**

**2022**



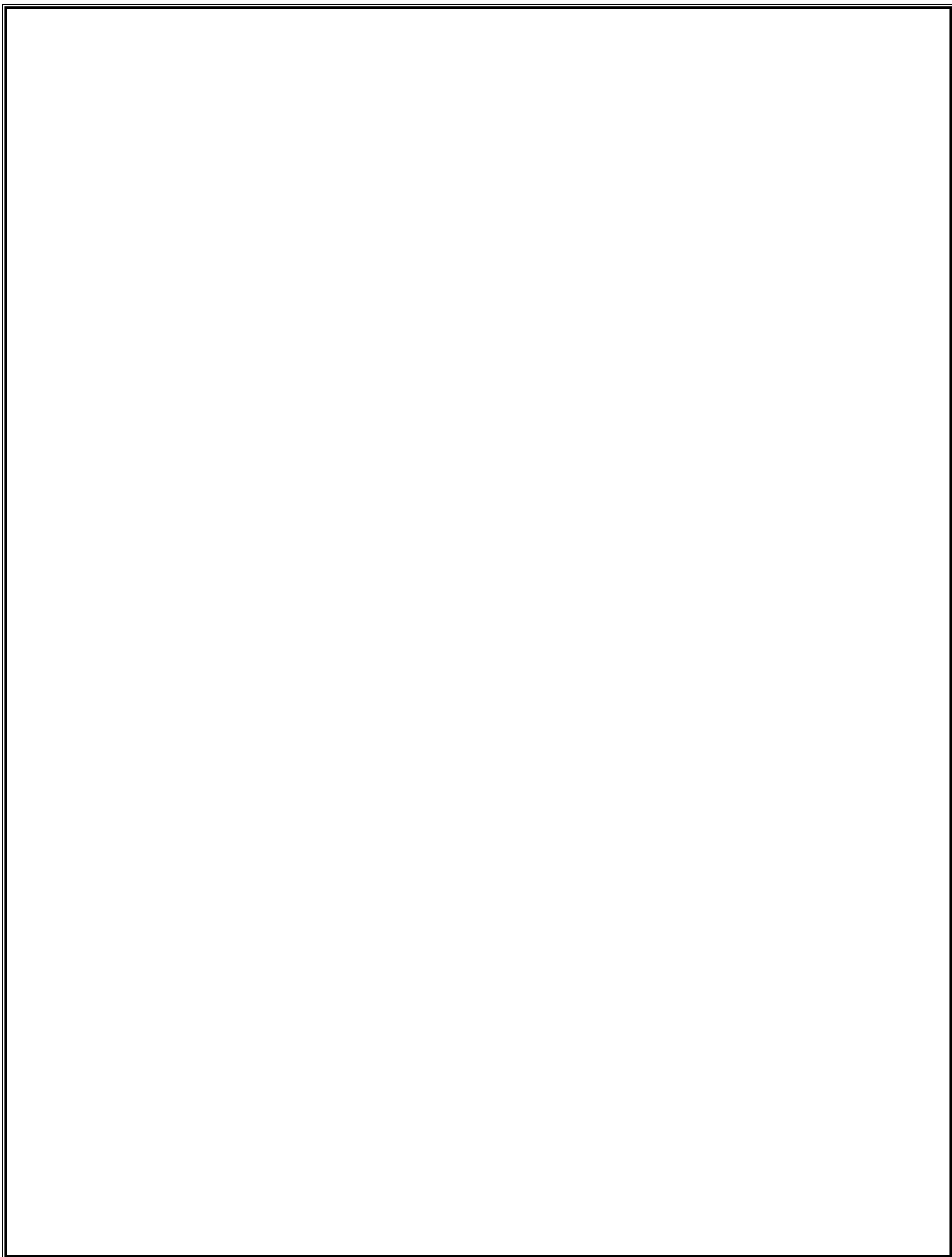
## **ACKNOWLEDGEMENT**

This study has been accomplished with the help, encouragement, co-operation and guidance of many people and we convey our heartfelt thanks to all of them. We thank National Cooperative Union of India (NCUI), New Delhi for giving us the opportunity to undertake this study on a critical topic in the area “Issues and challenges in an adaptation of information and communication technology in Primary Agricultural Cooperative Societies (PACS) with special reference to Western Zone” for the year 2021-22. We also thank our institute Vaikunth Mehta National Institute of Cooperative Management, Pune for providing us support and encouragement to complete this study.

The study could not have been completed without the cooperation, assistance and support of the respondents and its officials covered in the study.

We gratefully acknowledge the encouragement and support by Dr. Hema Yadav, Director, VAMNICOM, Pune and other Faculty members for extending their cooperation wherever required. We extend our heartfelt gratitude to policymakers, IT experts, bankers, academicians and PACS Officials who provided deep insights which helped in understanding of technology parameters. We acknowledge their support towards sparing valuable time for group discussions and questionnaire responses.

We also express our heartfelt thanks to all who directly or indirectly helped us and gave us constant inspiration and encouragement for the completion of this report.



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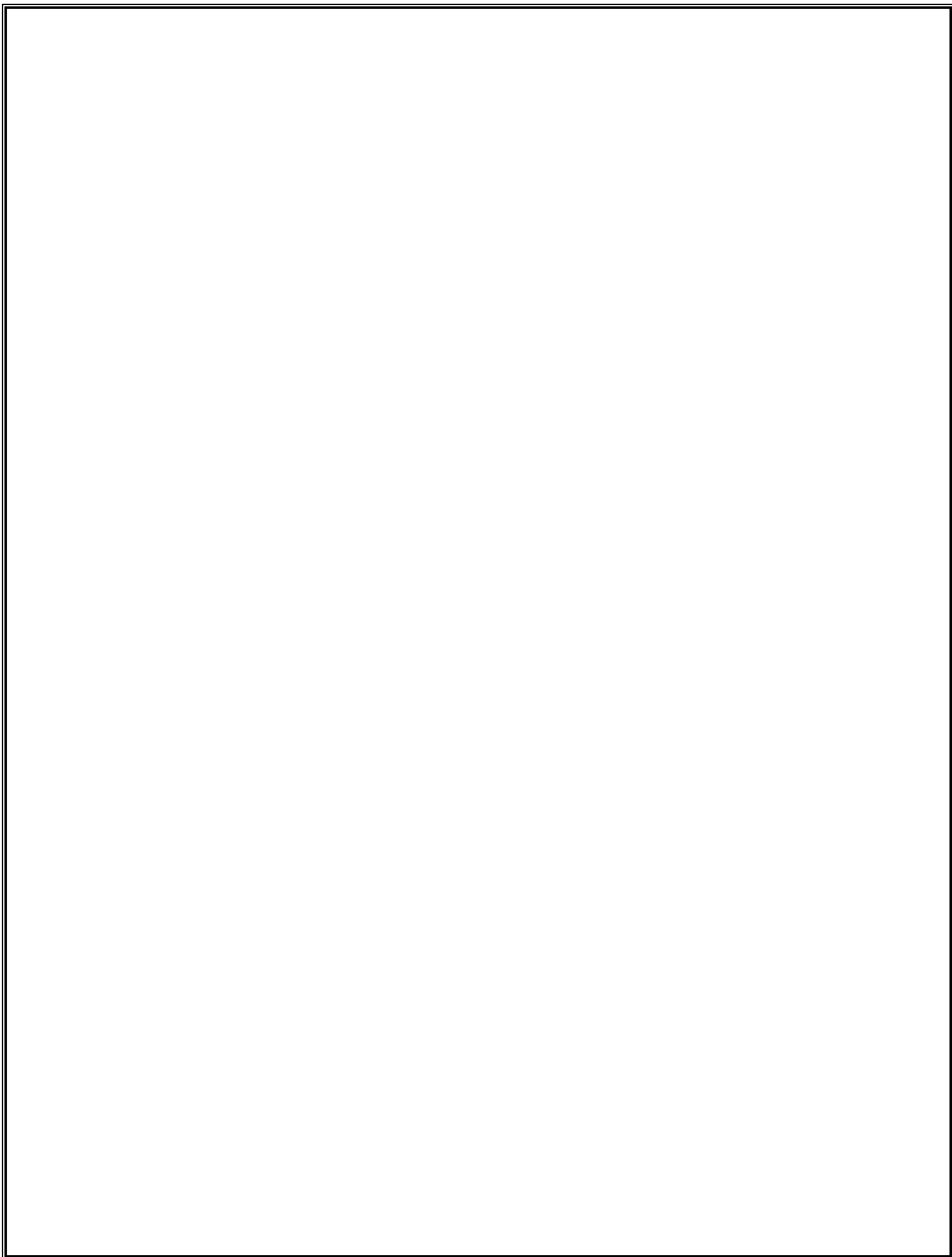
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## EXECUTIVE SUMMARY

**1.1 The Primary Agricultural Cooperative credit societies (PACS)** constitute the lowest tier of the three-tier short-term cooperative credit (STCC) in India comprising of nearly 13 crore farmers as its members.

PACS account for 41 % (3.01 Cr. farmers) of the KCC loans given by all entities in the country and 95 % of these KCC loans (2.95 Cr. farmers) through PACS are to the small and marginal farmers. The other two tiers viz. State Cooperative Banks (StCBs) and District Central Cooperative Banks (DCCBs) have already been automated by the NABARD and brought on Common Banking Software (CBS). However, majority of PACS have so far been not computerized and still functioning manually resulting in inefficiency and trust deficit. In some of the states, standalone and partial computerization of PACS has been done. There is no uniformity in the software being used by them and they are not interconnected with the DCCBs and StCBs.

ICT's are vital in the development of cooperatives but there are some challenges to be overcome, namely cost and infrastructure issues relating to access. Although access to telephone communications is now widely available all over the world, many rural communities still don't have reliable access to the internet and mobile broadband. In areas with little or no internet access, awareness of the benefits of ICT is also a challenge and getting smaller cooperatives to bridge the digital divide is important.

Historically, credit cooperatives have occupied a pre-eminent position in the provision of agriculture credit and primary agricultural cooperative societies (PACS) have been the building blocks of rural cooperative banking in India, for over a hundred years.

With the dwindling share of cooperatives in rural credit, the relevance of these institutions has been periodically questioned in policy circles in the backdrop of a fast-changing financial system where efficiency, profitability, technology and sustainability are emphasized. The refrain of some policy advocacy groups has been that only strong organizations that can deliver sustainable outcomes should be allowed to continue in the financial space.

## **1.2 Research Objectives**

The present study titled as “**Issues and challenges in adaptation of information and communication technology in Primary Agricultural Cooperative Credit Societies (PACs) with special reference to Western zone**” is conducted with the following objectives:

1. To review the present status of PACS in Western Zone states.
2. To measure the manpower and skill requirement of staff for ICT handling in PACS.
3. To examine the training strategy for the staff of PACS for smooth adaptation of ICT.
4. To make appropriate recommendations for PACS to grow.

## **1.3 Research Design**

The research design to be used in this study is survey design, the research is designed in such a way that it gives the major people to be interviewed to provide answers to the questionnaires raised by the study. The choice of this design was chosen due to the fact that it is flexible and best suited for gathering descriptive information. Its underlying principle is to seek the opinion of individuals on a particular problem, whereby the consensus of these opinions provides the needed solution to the problem at hand. (Nwogu, 2006).

## **1.4 Area of the Study**

The study commenced as per zones created by The National Federation of State Cooperative Banks Ltd. (NAFSCOB). Six zones were formed by NAFSCOB, namely Central Zone, Eastern Zone, North-Eastern Zone, Northern Zone, Southern Zone, Western Zone.

For this study, a Western Zone was considered. Western Zone consists of three states Goa, Gujarat, and Maharashtra. The total PACs in western zone are 29,052 as per 2019-20 data of NAFSCOB. Maharashtra state has the highest number of PACs in India (promoted by NABARD and the State Government) followed by Gujarat state. At India level Goa, state has very less PACS.

The area of the study is credit society in western zone with emphasis on the Impact of Information technology on Primary agriculture credit societies (PACS). In western zone study was conducted in Maharashtra and Goa state. 14 PACS were selected randomly from Maharashtra and 6 PACS were covered from GOA. In total, 20 registered Primary Agriculture credit Society (PACS) were selected for this research study. PACS from Aurangabad, Nashik and Pune Division of Maharashtra state were selected. The questionnaire filled by the officials and staff of PACS were administered, out of which reliable information was used for the data analysis after screening.

## **1.5 Method of Data Analysis**

Descriptive statistics such as frequency, percentage and mean was used to analyze the present Status of record keeping in PACS, Usage of technology in PACS, ICT systems that are currently used by PACS etc. Binary Logit model was used to determine the factors affecting adoption of IT facilities among the cooperatives.

## **1.6 Findings of the Study**

- As per the Binary Logit model, the Education level of official and literacy of the staff effect the adoption of ICT in PACS. But the age of PACS does not affect the ICT adoption.
- Findings show that manual operation is rife in PACS across the study area. It indicates that there is huge gap in adoption of computer in PACS. While generally, ICT uptake is lesser in PACS across the region, the usage of computers in PACS in Maharashtra state is far better than the goa state comparatively.
- It shows high manual operation in the society's administration and further survey reveals that majority of PACS data are manual. Data is lock in away in aged ledgers that are neither readily accessible, nor easily convertible in time to grab the opportunity. The solution of the manual mode of operations is automation of major processes through user-friendly ICT. Such automation will reduce error in data recording, increases transparency, improvise the efficiency of management and governance, and allows retrieval of data with just a click.
- The usage of Internet and LAN uptake at PACS is low. The degree of existing ICT lacks the robustness and flexibility required to manage a dynamic sector if it truly desires to meet the challenges of emerging in members' inclusive and exclusive needs, when and how to be served, timely.
- The degree of exposure differs with the setup, infrastructural availability, cost of ICT, computer literacy, and the structure of the cooperative added to the nature of the PACS's business, among others. Among PACS under study, ICT is still at its infancy. The statistics show that the major IT facility adopted by the societies was office phone line followed by computer system. The use of Database Management System (DBMS) software, Point of Sale and Broadband internet to provide online information was low. The low level of adoption might also be attributed to low level of finance for subscription or lack of adoption policy.

- Computerization of PACS, will serve the purpose of financial inclusion. It will lead to strengthening service delivery to farmers especially Small & Marginal Farmers (SMFs) also will become nodal service delivery point for various services and provision of inputs like fertilizers, seeds etc. The project will help in improving the outreach of the PACS as outlets for banking activities as well as non-banking activities apart from improving digitalization in rural areas.
- For accounting and record keeping purpose, excel software was used majorly followed by DCCB provided vendor software for the automation purpose. This explains that PACS in Maharashtra and Goa are yet to adopt full automation of their processes. It is also an indication that the available ICT tools in PACS have not been sufficiently sweated for desired result.
- While examining the prevailing ICT systems currently used and the purpose for their use, it was observe that most of the PACS accept basic utilities available. Most of the PACS that practice mediated operations as opposed to manual operations use Accounting Application. While the use of Accounting Application alone may not be sufficiently robust to meet the requirements, information management application conceived and developed for PACS will go a long way in alleviating administrative challenges and strengthen the fabrics of transparency and accountability.
- Adequate knowledge in computer operation is a prerequisite for adoption and effective use of computer system and other related facilities. Lack of ICT knowledge, technology expertise and implementation techniques; perceived cost and lack of financial resources were the major issues identified through the study. Amongst other barriers stated by some of the respondents are inability to identify ICT relevance, inability to identify suitable ICT platform from vendors, etc. has found as challenges in adoption of ICT.
- Responses elicited from respondents across various strata of the PACS underpin the importance of Training for a successful cooperative solution adoption and utilization. The high rate of training request may be indication of the users are willingness to update their knowledge about ICT. It is important to note that, success or failure of any society will depend largely on the members' perception of their ability to use the platform. Specific training which is deemed important by members to aid the adoption of workable ICT are "training on Computer Network". "training on Hardware vs software" and "training on Mobile phones; Uses training".

- Thus, it is imperative for cooperative management to adopt or increase their level of use of Information Technology (IT) so as to increase the financial performance and their impacts on economic development. Meanwhile, the high cost of procurement and maintenance, low level of computer literacy and low membership were the major constraints confronting the adoption of information technology by society. Therefore, PACS should ensure the fund availability to investment in IT facilities and updating.
- Overall, the adoption of ICT for data and process automation is relatively low, even though data and process automation possess a lot of advantages which can enhance the society's operations. It is also an indication that there is scarcity of flexible software that can cater for the variety of needs existing in the PACS. A major barrier cited for slow uptake of ICT is the perceived cost and lack of financial resources. To encourage the adoption of ICT, stakeholders are advised to facilitate the availability of ICT solutions at an affordable cost to PACS.
- It has been observed that about 40 % of PACS under study functions as a multi-service centers as they have necessary infrastructure for its members and take up allied agriculture activities for the value addition of the farm produce. But the computerization in most of the PACS is not done. Hence the PACS being the multi service have no relation with the computerization of PACS.
- Finally, the degree of willingness on the part of the cooperative members to make a financial commitment towards the deployment of a full automation process came to the fore. It is logical to infer here that majority of the respondent desire the growth of the PACS through the infusion of ICT even at their own expense. Perhaps, the respondent who disagrees might change their mind by enlightening with how ICT is the necessity to PACS operations.

## **Recommendations**

- Based on the above findings, it is recommended that members of PACS need to make awareness about importance of ICT in credit business. State Government and the cooperative unions should ensure implementation of cooperative education as a principle to include computer training of managers/ staff particularly in the use of DBMS, electronic spreadsheet and other software. Locally, CSR funds of corporate can be invited for computerization of PACS. As a part of CSR, companies can take up the responsibilities of training and maintenance.

- Similar to E-Shakti or Digitization of SHGs initiative by NABARD, the DCCBs can enroll themselves as one of the important options for taking up various government schemes (where credit and subsidy is involved) which can be implemented through PACS.

The above recommendations, if implemented, will go a long way in reducing or eliminating many problems confronting cooperative development in the study area and in the country as a whole.

# Chapter I

## INTRODUCTION

### 1.1 Introduction to Credit Cooperative

Voluntary involvement, self-responsibility, democracy, equality, and solidarity are the foundation of the cooperative. The cooperative members believe in social responsibility, openness, ethical values of honesty, and caring for others. Cooperative members approve policies that will develop their communities which will result in sustainable development. The credit cooperative sector was developed to support and provide banking services to disadvantaged groups of society. Usually, these low-income individuals face a lot of difficulties in getting loans because of the risk factor. They borrow funds from local financiers at higher rates. Credit cooperatives offer a broad variety of banking facilities like saving accounts, current accounts, loans, fixed deposits, recurring deposits, Insurance, etc.

Historically, credit cooperatives have occupied a pre-eminent position in the provision of agriculture credit and primary agricultural cooperative societies (PACS) have been the building blocks of rural cooperative banking in India, for over a hundred years.

With the dwindling share of cooperatives in rural credit, the relevance of these institutions has been periodically questioned in policy circles in the backdrop of a fast-changing financial system where efficiency, profitability, technology and sustainability are emphasized. The refrain of some policy advocacy groups has been that only strong organizations that can deliver sustainable outcomes should be allowed to continue in the financial space.

Many committees have pointed out various issues plaguing the cooperative system such as; lack of active participation by the members, lack of professionalism, absence of corporate governance, politicization, bureaucratization, ageing and unenthusiastic employees. However, cooperatives are unique as democratic member-controlled entities, with members as owners and customers of the institution.

Credit cooperatives had a dominant role in purveying agricultural credit, with a share of more than 60 per cent in the fifties which, over time, declined sharply to 14 per cent due to increasing share of commercial banks (74 per cent) and Regional Rural Banks (12 per cent).

With smaller share of 11 per cent of total agricultural credit, cooperatives are covering 19 per cent of farmers (2.60 crore accounts), reflecting better coverage of small and marginal farmers. The share of small and marginal farmers in total loan amount disbursed by cooperatives is 69.7 per cent as against 47.3 per cent in respect of commercial banks as on March 31, 2020. What is more

significant is, the number of members from marginal farmers category supported by cooperatives has gone up from 5.52 crore to 6.73 crore and borrowers from 2.20 crore to 2.28 crore in 2019 as compared to 2018.

With a total of 1,02,559 PACS, they have a huge membership of 132 million members, from more than six lakh villages. Today, India's cooperative credit structure, with over 130 million members (including sixty million borrowers), constitutes one of the largest rural financial systems in the world.

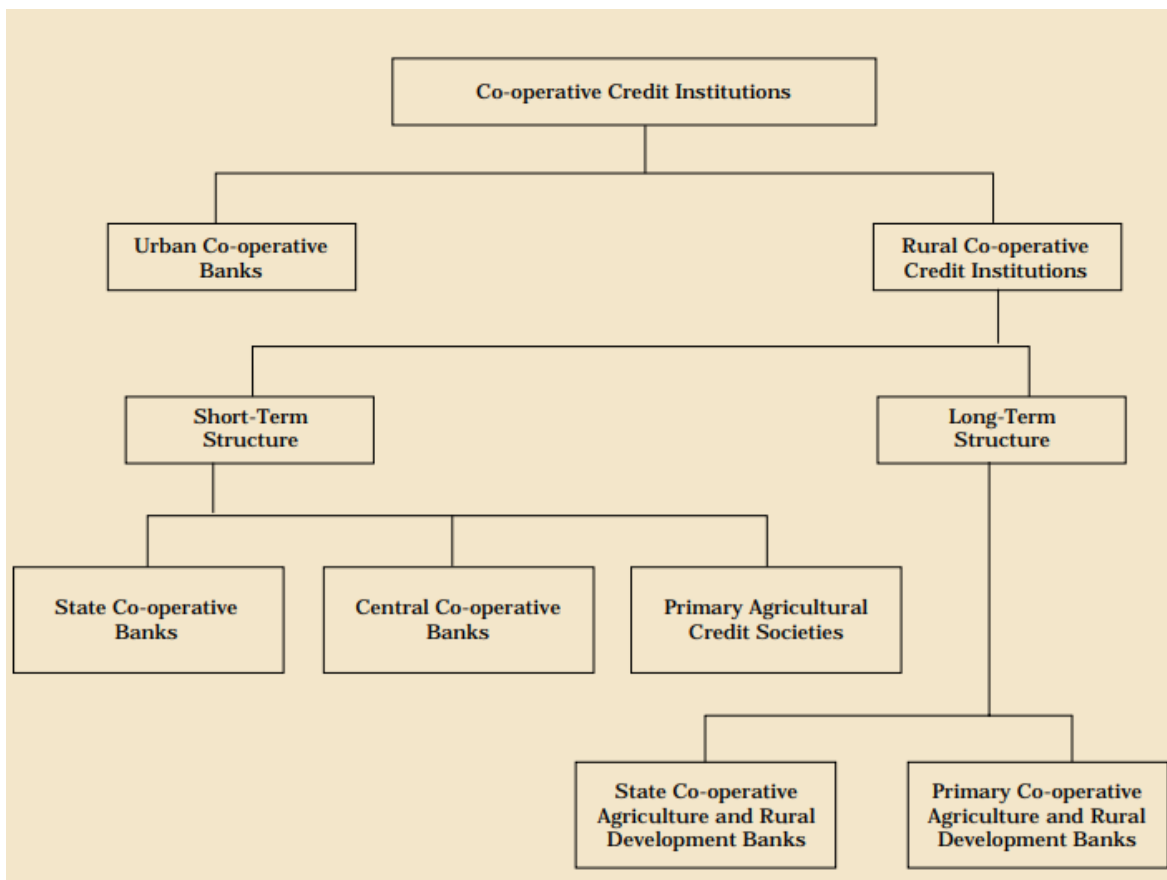
But the cooperative system has mostly not realized the enormous potential of its vast outreach, mainly because of financial weaknesses and impaired governance standards. The concept of mutuality (with savings and credit functions going together), that provided strength to cooperatives the world over, was not established strongly in India, with higher greater focus being given to borrowing and lending. This lending-centric approach, coupled with poor governance systems has led to dependence on higher financing agencies for resources, recurrent losses, deposit erosion, poor portfolio quality, etc.

While it is true that many of the primary societies are fraught with a range of organizational and managerial issues, especially on the governance front, it is also worth noting that 46,930 of them are profit-making as of March 31, 2019, with combined profit of Rs. 5,949 crore as per NAFSCOB data.

## **1.2 Overview of Indian Credit Cooperative**

The fig. no.1 shows the three-tier structure of cooperative societies. The Primary Agricultural Credit Societies (PACS) or Primary Agricultural Cooperative Banks (PACB) are the foundation of a whole cooperative credit structure. District Central Cooperative Bank (DCCB) is working as a federation of all societies. These DCCBs are formed at the district level. These DCCBs are federated to State Cooperative Bank (SCB). SCB is an apex institution and has a close link with the RBI and NABARD.





**Figure 1: Structure of Cooperative Credit Institutions**

*(Source: Report on Trend and Progress of Banking in India, 2003-04-RBI Publications- page no. 97)*

For more than a century the cooperatives are working for the development of a community. The cooperative banks have a great contribution to financial inclusion. The Cooperative Credit Institutions in India can be classified as under a three-tier structure- Primary Credit Societies at the bottom; Central Cooperative Bank at the middle; and State Cooperative Bank at the top.

In different towns and villages, the primary Credit societies (PAC) are functioning to render credit facilities to farmers and village people. At the district level, the Central Bank is a federation of primary societies in a specified area. Only primary societies are members of Central Cooperative Banks. State Cooperative Banks is working as the top cooperative banking structure. These banks are formed to welcoming deposits from the rich urban classes. These Banks are also serving as channels between the cooperative movement and the joint-stock banks.

The Reserve Bank of India assists the cooperative structure by providing concessional finance through NABARD in the form of General Lines of Credit for lending to agricultural &

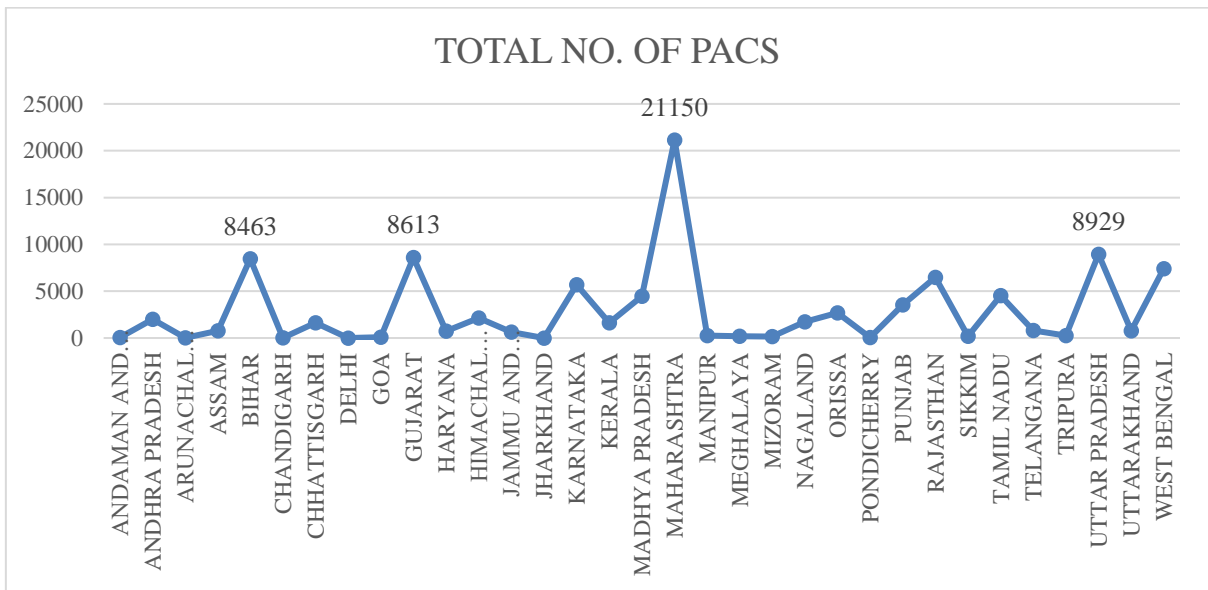
allied activities. Thus, the whole system is integrated with the banking structure of the country. As per record of government, currently 1367 multistate cooperatives societies are registered. ([https://mscs.dac.gov.in/Proposals/ALL\\_REG\\_MSCS.pdf](https://mscs.dac.gov.in/Proposals/ALL_REG_MSCS.pdf))

### 1.3 Status of Primary Agricultural Credit Societies (PACS) in India

Primary Agricultural Credit Societies (PACS) occupy a prime position in the cooperative credit structure and form its base. A PACS is established at the grassroots level of a village or a group of small villages. It is a fundamental unit that works directly with the rural (agricultural) borrowers, gives loans and collects repayments of loans. PAC serves as the link between the borrowers and the higher financing agencies like the SCBS, and the RBI/NABARD.

Many PACs are undertaking various activities like the sale of fertilizers and other agricultural inputs. The core functions of PACs are to provide short and medium-term loans, promote savings, supply agricultural inputs, provide marketing facilities, supply domestic products and to economic interests of the members.

The Graph no.1 indicated that Maharashtra has the highest PACs followed by Uttar Pradesh (8929) with Gujarat (8613).



**Figure 2: State-Wise Number of PACs**

**Table 1 -Details of Primary Agricultural Credit Societies**

<b>Details of Primary Agricultural Credit Societies</b>	
Total No. of PACs	1,02,559
Total Membership (In 000)	132029.47
Paid Up Share Capital (In 000)	2281655.4
Total Loans & Advances Issued (Amount In Lakh)	20589484
Total Loans & Advs. Outstanding (Amount In Lakh)	11504806
Total Demand (Amount In Lakh)	20390339
Total Collection (Amount In Lakh)	15195052
Total Balances (Overdues) (Amount In Lakh)	5195286
Percentage Of Overdues to Demand (%)	25.48
Number Of Societies In	
	Profit No. 46930
	Loss No. 37731
Societies Having Own Godowns (No's)	53601
No. of Villages Covered By PACs	644089
Total No. Of Staff	150963
Total Population in the State	1204077.6

The above table 1 represents details of Primary Agricultural Credit Societies working in India. Total number of Primary Agricultural Credit Societies working in India is 1,02,559. These PACs have paid-up capital of Rs. 2281655.4 thousand with a membership of 132029.47 thousand. In the year 2020-21 PACs have lent loans of Rs. 2589484 Lakhs. PACs have earned profit and 37,731 PACs have reported a loss. 53601 PACs have their own godowns to provide a facility. PACs are working in 6,44,089 villages all over the country.

### **1.3.2 Primary Agricultural Credit Societies – Significance**

Primary agriculture cooperative credit societies are financial institutions that play a critical role in the development of local communities at the grass roots level. They are multifunctional organizations that provide a variety of services such as banking, on-site supplies, marketing produce, and consumer goods trading. As a result, the effectiveness of primary agriculture cooperative credit societies is critical.

The Primary Agricultural Credit Society must play an important role in the socioeconomic development of the country's rural areas. They function as mini-banks to provide finance, as well as counters to provide agricultural inputs and consumer goods. These societies also provide warehousing services to farmers in order to preserve and store their food grains. Within the federal structure of the cooperative financing system, PACs are to be provided with adequate assistance in the form of subscriptions and grants by higher level institutions such as Central Cooperative Bank and State Cooperative Bank.

In 1904 the first Primary Agricultural Credit Society (PACS) was established. Since then, these societies have played an important role in providing farmers with short and medium-term credit. Until the early 1970s, this was the only institutional credit agency available to people living in rural areas.

An initiative has been launched to develop PACS as Multi Service Centers in order to enable them to provide more services to their members while also generating revenue for themselves. PACS will be able to provide ancillary services to their members as well as diversify their activities as a result of this.

The main Objectives of PACS are as follows:

- To raise capital for the purpose of making loans and supporting members' essential activities.
- To collect deposits from members with the goal of improving their savings habit.
- To supply agricultural inputs and services to members at reasonable prices,
- To arrange for the supply and development of improved breeds of livestock for members.
- To make all necessary arrangements for improving irrigation on land owned by members.
- To encourage various income-generating activities through supply of necessary inputs and services.

**The major deficiencies of the PACS and their credit are discussed briefly below:**

### **1. Organizational Weakness**

At the primary level, the cooperative credit structure has twofold weaknesses:

- (a) Inadequate coverage and
- (b) Weak units.

Though geographically, active PACS cover about 90% of 5.8 villages, there are parts of the country, especially in the north-east, where this coverage is very low. Further, the rural population covered as members is only 50% of all the rural households.

This inadequacy of coverage itself is attributable to the financial and organizational weakness of individual PACS. In a sense, they are caught in a vicious circle: they are weak because of inadequate membership and they do not attract enough membership because they are weak. This vicious circle must be broken through policy measures of reorganization of PACS.

### **Why is the borrowing membership low in the PACS?**

In the judgment of the Banking Commission, which still holds good, in most cases, one or more of the following reasons are responsible for the low borrowing membership:

- (i) Defaults of members in loan repayment and inability of societies to raise resources,
- (ii) Inability of the members to provide the prescribed security
- (iii) Lack of up-to-date land records or inalienable rights to land or inability to produce sureties,
- (iv) Ineligibility of certain purposes for loans
- (v) Inadequacy of credit limits prescribed, and
- (vi) Onerous conditions prescribed such as share capital contribution at 10 or 20 per cent of loans outstanding and compulsory thrift deposits.

### **2. Inadequate Resources**

The resources of the PACS are much too inadequate in relation to the short-and medium-term credit needs of the rural economy. The bulk of even these inadequate funds come from higher financing agencies and not through owned funds of 'societies or deposit mobilization by them. The resource-mobilization 'Capacity of the PACS will improve substantially, if through reorganization and related measures, they are converted into strong and viable units. Then, they should be able to attract both more deposits and more loans from higher financing agencies.

### **3. Over-dues**

Large over-dues have become a big problem for the PACS. They check the circulation of loanable funds, reduce the borrowing as well as lending power of societies, and give them the bad image of the societies of defaulting debtors.

are willful. Bigger landowners take undue advantage of their relatively stronger position in villages in both appropriating cheaper cooperative credit and not paying back their loans in time.

**According to the Banking Commission, in most states, over-dues are due to:**

- (a) Indifferent management or mismanagement of societies;
- (b) Unsound lending policies leading to over financing, or financing unrelated to actual needs, diversion of loans for other purposes;
- (c) Vested interests and group politics in societies and willful defaults;
- (d) Lack of adequate supervision over the use of loans by the borrowers and poor recovery effort;
- (e) Lack of adequate control of banks (CCBs) over the primary societies;
- (f) Lack of appropriate link between credit and marketing institutions;
- (g) Failure to take prompt action against willful defaulters; and
- (h) Uncertain agricultural prices.

**4. Inadequate and Restricted Credit**

Cooperative credit is inadequate in several senses. First, the PACS provide credit to only a small proportion of the total rural population. Second, the societies do not provide full credit even for all productive agricultural activities. The credit given is confined mainly to crop finance (seasonal agricultural operations) and medium-term loans for identifiable purposes such as the digging of wells, installation of pump sets, etc.

Most of the societies do not provide credit for other productive activities undertaken by the agriculturists. Even for approved productive activities, the credit given is usually not adequate to meet in full the need for credit. In most cases, non-agricultural credit needs even for productive purposes are not met at all Consumption loans are generally not given.

**5. Other Linked Inputs, Extension Service, and Marketing**

The provision of adequate and timely credit is only one of the necessary conditions for improving the productivity of farmers and others in villages. Additional facilities in the form of the supply of inputs (like better seeds, fertilizers, pesticides, etc.) extension and marketing service must also be provided to small and marginal farmers to enable them to make good use of the credit given to them.

Already a step in this direction has been taken in the form of Farmers Service Societies (FSS) for small and marginal farmers. But what is required is not the proliferation of new forms of societies, as of revitalizing weaker societies into stronger units, most possibly by reorganizing them into larger-sized multi-purpose cooperatives.

#### 1.4 Cooperatives in Maharashtra and Goa

The following statistics from National Cooperative Development Corporation (NCDC) gives the glimpse of the number of cooperatives in Maharashtra and Goa. The information not only includes details of PACS but also figures of other cooperatives.

##### Cooperatives in Maharashtra (2020-2021)

**Table 2: Category of Cooperative Societies in Maharashtra (2020-2021)**

Sr. No.	Category of Societies	Number
1	State Level Cooperative Organizations (representing Marketing, Dairy Handloom Weavers, Fishermen, Sericulture, Oilseed, Sheep & Goat, Credit and Banking)	5
2	District Central Cooperative Bank	31
3	Primary Agriculture Credit Cooperative Society	21061
4	Dairy Cooperative union	85
5	District/Central Marketing Cooperative	18
6	Fisheries Cooperative	3,500
7	Consumer Cooperatives Society(wholesale)	128
8	Primary Consumer Cooperatives Society	1702
9	Cooperative Sugar Mills	202
10	Spinning Cooperative	278
11	Women Cooperative	442
12	Primary Marketing Society	1,162
13	Dairy Cooperatives	14,921
14	Primary Cooperative Housing Societies	98,541
15	Cooperative Lift Irrigation Society	3,151

16	Cooperative industrial Estates	203
17	Primary Industrial Cooperative Society(other than weavers)	4,466
18	Forest Labours Cooperative Societies	261
19	Labour Contract Cooperative Societies	11,006
20	Primary Handloom Cooperative Societies	665
21	Primary Powerloom Cooperative Societies	1410
22	Cotton Ginning and Pressing Societies	83
23	Other Cooperative Societies	424
	<b>Total</b>	<b>163,745</b>

*(Source: NCDC, 2020-2021)*

The above table represents category and number of cooperatives present in Maharashtra during the year 2020-2021. It can be seen that, there are more number of primary cooperative housing societies i.e. 98,541, followed by primary agricultural credit cooperative societies (21,061), dairy cooperatives (14,921) etc. Primary agricultural credit cooperative societies play a very important role in financial inclusion and dairy cooperatives uplifts the livelihood by providing employment to dairy farmers especially small and marginal farmers and women

**Table 3: Category of Cooperative Societies in Goa**

Sr. No.	Category of Societies	Number
1	Apex bank- Goa State Cooperative Bank	1
2	Urban Cooperative Credit Societies	128
3	Consumer Cooperative Banks	85
4	Dairy Cooperative Societies	184
5	Farming Cooperative Societies	16
6	Fisheries Cooperative Societies	23
7	Marketing Cooperative Societies	10
8	Poultry Cooperative Societies	2
9	Processing Cooperative Societies	7
10	Labor Cooperative Societies	13
11	Sangh & Union Federation	3



12	Producers Cooperative Societies	10
13	Self Help Group Cooperative Societies	1405
14	Multipurpose Societies	66
	<b>Total</b>	<b>1953</b>

*(Source: NCDC, 2020-2021)*

Information about category and number of cooperatives present in Goa is presented in the table above. The table shows that, there are 1,405 self-help group cooperative societies in Goa followed by dairy cooperative credit societies (184), urban cooperative credit societies (124) etc.

The following statistics from National Cooperative Development Corporation (NCDC) gives the glimpse of the number of cooperatives Goa.

**Table 4: Number of PACS by Type (2020-2021)**

Number of PACS by Type	India	Maharashtra	Goa
<b>Total Number of PACS</b>	1,02,559	20,151	74
<b>Viable</b>	72,548	15,419	67
<b>Potentially Viable</b>	17,997	4,664	3
<b>Dormant</b>	2,341	54	3
<b>Defunct</b>	1,110	14	1
<b>Others</b>	8,563	0	0

*(Source: Indiatat.com (2020-2021))*

The total number of PACS present in India during the year 2020-2021 was 1, 02,559. It is seen from the information above that, Maharashtra has the highest number of PACS, contributing around 19 % of total PACS present in India whereas Goa is one of the states where PACS are less in number.

**Table 5: State-wise Membership of Primary Agricultural Credit Societies (PACS) by Type in India**

(In ' 000)						
States/UTs	Total Membership	Scheduled Caste	Scheduled Tribes	Small Farmers	Rural Artisans	Others and Marginal Farmers
Andaman & Nicobar Islands	12.67	0.00	0.00	12.67	0.00	0.00
Andhra Pradesh	7679.76	953.71	336.78	4545.81	131.02	1712.44
Arunachal Pradesh	41.06	0.00	19.38	19.38	2.30	0.00
Assam	3034.41	415.58	487.34	821.30	114.19	1196.00
Bihar	9765.00	0.00	0.00	0.00	0.00	9765.00
Chandigarh	2.22	0.59	0.00	0.41	0.00	1.22
Chhattisgarh	3513.96	325.90	736.72	1767.11	14.71	669.52
Delhi	0.00	0.00	0.00	0.00	0.00	0.00
<b>Goa</b>	<b>98.02</b>	<b>N.A.</b>	<b>N.A.</b>	<b>N.A.</b>	<b>N.A.</b>	<b>98.02</b>
Gujarat	2782.12	231.30	265.18	1150.90	171.87	962.87
Haryana	3254.00	496.00	0.00	1351.00	348.00	1059.00
Himachal Pradesh	1604.00	356.00	46.00	974.00	63.00	165.00
Jammu & Kashmir	372.38	31.50	41.56	179.95	41.56	77.81
Jharkhand	0.00	N.A.	N.A.	N.A.	N.A.	0.00
Karnataka	2865.03	430.00	260.02	1383.76	233.57	557.68
Kerala	31600.00	1617.00	196.00	N.A.	N.A.	29787.00
Madhya Pradesh	5249.47	699.70	1037.61	1936.71	278.21	1297.24
<b>Maharashtra</b>	<b>18747.00</b>	<b>869.00</b>	<b>858.00</b>	<b>3447.00</b>	<b>225.00</b>	<b>13348.00</b>

Manipur <sup>2</sup>	66.53	23.55	17.50	10.15	13.11	2.22
Meghalaya	102.18	3.45	67.09	25.15	0.00	6.49
Mizoram	0.00	N.A.	N.A.	N.A.	N.A.	0.00
Nagaland	5.21	0.00	5.21	0.00	0.00	0.00
Odisha	6478.96	783.26	1123.42	3300.75	160.33	1111.20
Puducherry	190.00	20.00	0.00	158.00	2.00	10.00
Punjab	3070.26	421.13	12.24	1419.15	391.90	825.84
Rajasthan	6178.00	N.A.	N.A.	N.A.	N.A.	6178.00
Sikkim	28.46	N.A.	N.A.	N.A.	N.A.	28.46
Tamil Nadu	12408.28	2017.77	231.33	6158.32	197.22	3803.64
Telangana	3033.59	445.55	273.92	1778.16	288.73	247.23
Tripura	41.96	6.00	10.48	0.00	7.75	17.73
Uttar Pradesh	2748.00	2230.00	117.00	401.00	0.00	0.00
Uttarakhand	40.00	7.00	1.00	24.00	2.00	6.00
West Bengal	12156.41	1798.72	2337.75	4642.20	544.34	2833.40
<b>India</b>	<b>137168.94</b>	<b>14182.71</b>	<b>8481.53</b>	<b>35506.88</b>	<b>3230.81</b>	<b>75767.01</b>

(Source: *Indiastat.com*, 2021-22)

The given table shows state-wise membership of Scheduled Caste, Scheduled Tribes, Small Farmers, Rural Artisans, Others and Marginal Farmers among total members of PACS throughout India.

**Table 6: State-wise Number of Villages and Villages Covered by Primary Agricultural Credit Societies (PACS) in India (2020-2021)**

<b>States/UTs</b>	<b>Total Number of Villages</b>	<b>Number of Villages Covered By PACS</b>	<b>Villages Covered as Percent to Total (%)</b>
Andaman & Nicobar Islands	556	128	23.02
Andhra Pradesh	17858	16845	94.33
Arunachal Pradesh	5616	N.A.	0.00
Assam	24590	23422	95.25
Bihar	45098	45098	100.00
Chandigarh	10	10	100.00
Chhattisgarh <sup>1</sup>	19719	19719	100.00
Delhi	0	0	0.00
<b>Goa</b>	<b>411</b>	<b>198</b>	<b>48.18</b>
Gujarat	18116	15452	85.29
Haryana	7110	7110	100.00
Himachal Pradesh	17882	17882	100.00
Jammu & Kashmir	7192	6607	91.87
Jharkhand	N.A.	N.A.	0.00
Karnataka	55442	31391	56.62
Kerala <sup>1</sup>	1017	N.A.	0.00
Madhya Pradesh	56568	54349	96.08
<b>Maharashtra<sup>1</sup></b>	<b>43664</b>	<b>28841</b>	<b>66.05</b>
Manipur <sup>2</sup>	2582	1810	70.10

Meghalaya	6839	2849	41.66
Mizoram	853	360	42.20
Nagaland	1280	N.A.	0.00
Odisha	51302	49200	95.90
Puducherry	323	323	100.00
Punjab	13132	9895	75.35
Rajasthan <sup>1</sup>	43264	43264	100.00
Sikkim	906	906	100.00
Tamil Nadu	19168	17734	92.52
Telangana	12190	10414	85.43
Tripura	901	901	100.00
Uttar Pradesh	112804	112804	100.00
Uttarakhand	14707	14543	98.88
West Bengal	101266	99117	97.88
<b>India</b>	<b>702366</b>	<b>631172</b>	<b>89.86</b>

(Source: *Indiastat.com*, 2021-22)

The table shows the total number of villages in India as well as the percentage of villages covered by PACS. It has been noted that PACS from 10 of the listed states have completely covered all of the villages inside those states, while 8 of those states have more than 90% of the villages covered. Goa has 48.18% of the villages covered, compared to Maharashtra's 66%.

### **1.5 The role of Information and Communication Technologies (ICTs) in Cooperatives**

Information and Communication Technologies (ICTs) are defined as technologies that facilitate communication and the processing of information by electronic means, and include

everything from: radio, satellite, television to telephones, computers and the Internet. Cooperatives are a identifiable group with an existing community of over a billion people and growing. They have unifying cooperative principles such as democratic member control, cooperation among cooperatives and concern for community which shape cooperatives approach to their members, their business and their communities.

The benefits of ICTs to cooperatives are numerous. Through fully utilizing ICTs cooperatives can cultivate new markets by reaching out to different customer bases on the web, they can keep up-to-date with developments and new innovations and receive training remotely. ICTs can help transform the management of co-ops by improving management practices, financial information and reporting and records management as well as create an online presence. These improvements help increase efficiency and lower operating costs.

The Primary Agricultural Cooperative credit societies (PACS) constitute the lowest tier of the three-tier short-term cooperative credit (STCC) in India comprising of nearly 13 crore farmers as its members.

PACS account for 41 % (3.01 Cr. farmers) of the KCC loans given by all entities in the country and 95 % of these KCC loans (2.95 Cr. farmers) through PACS are to the small and marginal farmers. The other two tiers viz. State Cooperative Banks (StCBs) and District Central Cooperative Banks (DCCBs) have already been automated by the NABARD and brought on Common Banking Software (CBS). However, majority of PACS have so far been not computerized and still functioning manually resulting in inefficiency and trust deficit. In some of the states, standalone and partial computerization of PACS has been done. There is no uniformity in the software being used by them and they are not interconnected with the DCCBs and StCBs.

ICT's are vital in the development of cooperatives but there are some challenges to be overcome, namely cost and infrastructure issues relating to access. Although access to telephone communications is now widely available all over the world, many rural communities still don't have reliable access to the internet and mobile broadband. In areas with little or no internet access, awareness of the benefits of ICT is also a challenge and getting smaller cooperatives to bridge the digital divide is important.

Historically, credit cooperatives have occupied a pre-eminent position in the provision of agriculture credit and primary agricultural cooperative societies (PACS) have been the building blocks of rural cooperative banking in India, for over a hundred years.

With the dwindling share of cooperatives in rural credit, the relevance of these institutions has been periodically questioned in policy circles in the backdrop of a fast-changing financial system where efficiency, profitability, technology and sustainability are emphasized. The refrain of some policy advocacy groups has been that only strong organizations that can deliver sustainable outcomes should be allowed to continue in the financial space.

### **1.5.1 Case of Computerization in Telangana and Uttarakhand**

In India, Telangana and Uttarakhand are the pioneer in computerization of PACS in state. Telangana and Uttarakhand model of PACS computerization provides a custom designed comprehensive ERP solution. The solution meets all the current business needs and scale up to meet its future business needs, governance and statutory (CAS & MIS prescribed by NABARD) requirements of PACS

The Telangana State Cooperative Apex Bank (TSCAB) had attracted the attention of the entire nation for emerging as a role model in the country for the computerization of the Primary Agricultural Cooperative Societies (PACS) in the entire Telangana State. There were a total of 906 PACS in the State including 798 affiliated to the DCCBs and 108 with commercial banks. The state had taken up the computerization of the PACS since 2015 onwards and emerged as a role model in the country in the computerization of the cooperative sector to ensure transparency and accountability.

Initially, they faced problems in the computerization due to lack of interest among the employees, non-availability of infrastructure, frequent power cuts, no internet facilities, non-availability of data etc. However, Telangana state overcome all the hurdles by providing several rounds of training to the staff and auditors and preparing standard operating procedures. After computerization, the state made it mandatory for the End of Day (EOD) report with all PACS. The PACS were also linked with the DCCBs and TSCAB for collection of daily transaction reports.

The benefit of this implementation has reduced the migration of customers to other banks and it had instilled confidence among them for transparent services and access to accurate data instantaneously.

The computerization had also increased the business activities without additional human resources. It has introduced micro-ATMs at all PACS to help customers make banking transactions in their respective villages. The TSCAB was also linking refinance to the computerized societies. The state attributed the success of computerization of all PACS due to collective teamwork of cooperative department, PACS, DCCBs, TSCAB and NABARD.

Further, Computerization helps in direct linkage of PACS with district banks, in turn district banks with state cooperative banks and state cooperative banks with NABARD. This helps in reaching out all NABARD promoted schemes directly to farmers through PACS. This will help increasing the transparency and bringing down frauds.



## **Chapter II**

### **REVIEW OF LITERATURE**

#### **2.1 Background Information**

Information and Communication Technology (ICT) has taken a center stage in all facets of human interaction in the 21st century; revolutionizing global capital flow, bilateral and multilateral trade, business interaction and social interaction through increased accessibility and transmission of information. At the firm level, the adoption of internet and other communication technologies has enabled businesses expand their market reach, improved the pace of innovation, process efficiency and profitability.

In this information age, successful businesses are those that better harness the power of information technology for superior performance. In this revolution, the need to examine the extent of adoption of ICT and its impacts on cooperative across the globe cannot be overemphasized. Hence, this review of literature will explore the impacts of ICT on businesses, the extent of its adoption and impacts on cooperatives businesses.

**Sreekrishna T. and Rao N. (2015)** described that the problems and prospects of the Primary Agricultural Credit Societies in Andhra Pradesh with Special Reference to Guntur District. It is assumed that the PACS have multiple issues in order to conduct the investigation on sound lines. Both primary and secondary sources have been used to gather statistical data. A questionnaire has been distributed in an attempt to obtain primary data. Additionally, for the study period, compound annual growth rates (CAGR) were calculated. A study from the time period showed that small farmers contribute the largest proportion of PACS subscription fees. Even though the number of marginal farmers is not negligible, it needs to be drastically increased. In 2003–2004, 99.86% of villages were covered, which is the highest number. 91.40 per cent was recorded in the study's last year. Despite being the smallest per cent age, it cannot be seen negatively. The highest simple growth rate for outstanding amount amounts was 610.45% in 2010–2011, and it was 15.03 in 2011–2012. These numbers indicate that the amount of past due debt is growing, and that it has increased from 2010–2011. According to this report, 78.40% (196) of respondents indicated that the loan was insufficient to cover their agricultural needs. They rely on non-institutional sources, to meet their agricultural needs. 130 (66.33%) of the 196 respondents relied on private lenders, 31 (15.81%) on banks, 25 (12.76%) on friends, and 10 (5.10%) on friends. According to the numbers, only 54

respondents (21.60 percent) indicated that the loan was adequate for agricultural purposes. Based on the data, it can be deduced that they are turning to non-institutional institutions for their agricultural needs because the loan amount is not enough to cover their needs. For their agricultural credit, PACS members do not rely on non-institutional organizations.

**Dr. Yashoda (2017)** conducted study on role of Primary Agricultural Cooperative Society (PACS) in agricultural development in India. In this research they have discussed about the objectives, functions, Reasons for Poor Recovery of Loans in PACS and Management, Membership and Share Capital of PACS. The study is based on secondary data. The study also made certain recommendations, such as the need for long-term loans to help PACS manage their financial requirements, it is important to arrange training for the rural unemployed in order to improve and develop self-employment. Farmers should receive the appropriate loan amount at the appropriate time, to encourage farmers, society should adopt simple methods for allocating and recovering loans from them, to improve the deposit mobilization, the society should conduct awareness programs from time to time. This will popularize the different schemes of the society and there by attract new customers and educating the farmers relating to different services provided by society. The study also mentioned some findings related to PACS. PACS has a significant role in rural finance, and rural credit is mostly concentrated on the agriculture sector. Only short- and medium-term loans are offered by the society. Due to a lack of knowledge among the populace regarding the many social initiatives. The participants make a deposit in order to satisfy the banker's demands that they open an account. Members received an insufficient amount of loans in a timely manner. In these societies, fewer people use computers.

**K. Mohit and Mehta V.P. (2018)** conducted study on performance and prospectus of Primary Agricultural Credit Societies (PACS) in Haryana during 2000-01 to 2014-15. It employs about 50% of the labor market and contributes 13% of the country's GDP. There are many issues with agriculture, but one of the major concerns in rural areas is agriculture loans. In order to analyze the data, tabular analysis has been used. The general conclusion for the objective of the paper has been achieved through basic statistical tools including averages, per cent ages, and regression analysis. The primary objective of this study is to evaluate the growth and trends in Haryana's Primary Agricultural Credit Societies. Compound annual growth rates (CAGR) were computed for the study period, from 2000-01 to 2014-15, in order to analyze the trend and growth. The number of societies in Haryana, which was 2466 in 2000–01 but only 663 in 2014–15, was also covered in the article. A

compound annual growth rate of 11.93% indicates a decline in the number of societies. One society typically covered three villages in 2000–01, but in 2014–15, that number increased to around 10 villages, showing that the area of activity per society had gone up dramatically. From Rs. 227.46 crore in 2000-01 to Rs. 615.08 crore in 2014-15, these PACS' share capital has increased. The deposits made by PACS increased from Rs 180.44 crore in 2000-01 to Rs 497.18 crore in 2014-15. As a result, the current study concentrates on a variety of aspects of primary agricultural credit societies. Over the course of the study period, fewer PACS were profitable while more were losing money.

**K. Alok *et.al.* (2020)** conducted study on critical Review on Cooperative Societies in Agricultural Development in India, “A cooperative is an autonomous association of persons united voluntarily to meet their common economic, social and cultural needs and aspirations through a jointly-owned and democratically-controlled enterprise” (United Nation 2012). As per the research paper, cooperatives are involved in the development of a variety of industries, including agriculture, agro processing, storage, forestry, banking, credit, marketing, dairy, fishing, and housing, and its network reaches 85% of rural families. However, this paper concluded that cooperative societies have the ability to serve as more than just a source of short- and medium-term loans; these can also help small and marginal farmers transform agriculture into an agribusiness enterprise by pooling resources to achieve economies of scale. Also infrastructure development, good governance, skill, legislative policy, restrictive guidelines, member’s education, market links, skilled staffing, and fair policies can all play a key role in transforming rural cooperatives into dynamic, effective models for farmers' socioeconomic prosperity in rural India.

**Bikkina *et. al* (2018)** stated that recovery performance of Primary Agriculture Credit Societies in India: An Assessment, as agricultural credit is one of the most essential inputs in all agricultural development programmes. The latest research examines at how well rural PACS loans are recovering after being distributed in six different Indian regions: the Central, Northern, Southern, Eastern, North-East, and Western. The study was based on secondary data which was collected from National Federation of State Cooperative Banks Ltd.(NFSCB) and Three Tier Short Term Cooperative Credit Structure Expert Committee Report from NABARD. And the analysis is carried out by taking the time period from 2002-03 to 2010-11. The study made the effort to pinpoint the variables responsible for the PACS's recovery performance's regional variation. From 2002-2003 until 2010-2011 southern region has proven consistent and upward development in recovery overall

performance, whereas, north- east location became having consistent overall performance until 2007-2008, however after that there's a sharp fall withinside the subsequent 3 years. Finally it is stated that even though the PACS has continued to stay the weakest link withinside the complete cooperative structure but it has a terrific significance for providing the significant amount of finances to the farmers at grass root level.

**Tripathi et al. (2021)** described about good Governance Practices and Competitiveness in Cooperatives: an analytical study of Kerala Primary Agricultural Credit Societies. In terms of financing and rural development, cooperatives are crucial. The descriptive-analytical methodology used in this study makes use of both primary and secondary data. For the field survey, a multi-stage purposive sampling method was used. The PACS Board of Directors (BoDs) are the respondents. The research study comes to the conclusion that, in the presence of a diversification, participation, accountability, and openness are the effective pillars of cooperative governance, which further results in increased competitive performance of Kerala's PACS. By extracting conclusions from field and desk research, this study evaluated the effectiveness of good governance in the cooperative administration and productivity of PACS in Kerala State.

Also study shows that, in the presence of various elements like development activity, marketing intensity, business model, etc., the increase in memberships was significant and beneficial in the study regions that were chosen.

**(Devi S. et al.2021)** discussed that productive efficiency of Primary Agricultural Credit Societies in Kerala, India. Because they are based on the ideals of equality and self-help, cooperatives are very relevant and significant in India. By having roughly 60% of its whole population be PACS members, Kerala has a stronger reliance on cooperative lending institutions than other states in India. The study has considered 168 PACS across the state of Kerala and found significant variation in the relative efficiency scores among them. 117 PACS under CRS assumption and 98 PACS under VRS assumption are not even 50% efficient in comparison with their most efficient peers. The principal focus of the study is to develop a version for estimating the effective performance of PACS in Kerala. The examiner has taken into consideration 168 PACS throughout the state of Kerala and discovered a substantial variation with inside the relative performance scores among them.

**Shah D. (2007)** conducted the study on the dwindling Viability of PACS during Period of Institutional Reforms: An Evidence from Maharashtra. The present study completed in Maharashtra attempts to deal with those questions and it comprehensively evaluates the organizational, operational and monetary fitness of the societies connected to district level institution.

The study was carried out in the Kolhapur district of Maharashtra. The study evaluates the performance of two selected Primary Agricultural Credit Cooperative Associations (PACS) under the Kolhapur District Central Cooperative Bank (KDCCB). The two cooperatives were randomly selected from two talikas ei. Karveer and Shirol from Kolhapur district. Time series records encompassing the duration from 1985 to 1998 with various aspects like membership pattern, funds-deposits, asset and legal responsibility position, profits and expenditure pattern, etc. The overall analysis drawn from this study has raised some doubts about the performance of selected companies. Not only selected companies show decline in current ratio, return on assets, return on equity and MEC but also greater reliance on lenders' capital for their financing.

**X. Fu et. al., (2006)** The paper of rural cooperative banks is examined in this research using non-parametric multi-output Data Envelopment Analysis (DEA) to examine the effects of various ICT forms and levels. The study's conclusions imply that current information technology helps to increase the rural lending institutions' efficiency and profitability. The use of moderate technology at the lower organisational level, such as standalone PCs at the branch level and cell phone usage at PACS and field level, considerably increased efficiency. Evidence from this study also reveals that the impact of information technology on organisational efficiency may not be fully shown by utilizing investment in ICT as a gauge of usage and advancement levels.

**A.K. Soni et. al., (2012)**, this paper explains extensive network of credit societies within the institutional credit system, cooperative banks have a greater reach into rural India than other major participants in the Indian banking sector. The nation's economy has benefited greatly from the cooperative sector, which has long been seen as a vital component of it. Cooperatives have an intellectual foundation, economic components, and social perspectives and methods. The cooperative provides services to practically all Indian villages. For the country's economically underdeveloped regions, the cooperative form of organization is ideal. In India, around 30% of microcredit is provided by Primary Agriculture Credit Societies (PACS), according to a recent

research by the World Bank and National Council for Applied Economic Research. This essay aims to examine the function of cooperative banks in agricultural finance.

**R. D. and Butler (2022)** This study indicates that agricultural product cooperatives have been slow adopt and integrate social media platforms and online communication channels into their communication strategy A two-phase, mixed-techniques evaluation changed into applied to discover this topic. The paper discussed about facebook is the most popular social media platform used by the cooperatives. Finally, they have depicted that future research is needed to investigate why cooperatives do not use social media platforms or online communication channels. The popularity of social media is found in almost every global industry except agricultural cooperatives.

**Hanitra, R. L. (2012)** discussed on Cooperatives and the Role of Information and Communication Technologies (ICTs) in this paper they depicted that with the help of improving connections between members: through cooperatives, farmers exchange market information and technical know-how to stay up-to-date on their activities & improved accounting and management: farmers' cooperatives are often responsible for managing very large amounts of money that can represent the cash income of thousands of farmers can work efficiently in agriculture cooperatives. Using some case studies, they found that many countries already have good practices that could develop further, for example Kenya, through mobile phone-based money transfer (MMT) services, in India: The Self-Employed Women's Association (SEWA) established Community Learning Centers (CLCs) In Niger: The Dimitra3 community listeners'. For the same they have mentioned some recommendations also More cooperative members, especially women and adolescents, should benefit from training on the use and application of ICT. Participatory needs assessments should also be conducted to better understand which ICT is most appropriate. There is a need to raise awareness of the benefits of ICT in accessing and communicating the latest market information. It is important to tackle the critical challenge of sustainability of ICT projects.

**A. KJR Nayak (2016)** the study is performed on Farmer producer Organizations in India: policy, performance and design issues. The study stated that the producer organization is a common name which speaks for self-help group (SHG), federation of SHGs, common interest groups (CIG), joint liability group (JLG), farmer's club, primary agricultural cooperative society (PACS), PC's, large cooperatives, etc. To overcome the local political structure in 2001 the PO's registered as PC's

under the Companies Act, 1956. In this study the highlighted issues of producer organizations by government, developmental organizations and civil society organizations are social capital formation, capital building, ecosystem services, climate-smart agriculture, basic physical infrastructure, knowledge and resources convergence, organizational design of PO's/PC's, market landscape, district wise institutional structure of PO's/PC's and financial capital formation.

**Karthikeyan (2021)** studied that A Study on Financial Statement Analysis of Primary Agricultural Cooperative Credit Society in Paiyanoor Branch at Chengalpattu District. A bank is a type of financial institution that provides banking and other financial services to its clients. A bank is a type of financial organisation that handles standard banking tasks including acceptance of deposits and distributing loans. Certain financial services are also offered by non-banking businesses while not meeting regulatory criteria. Information obtained through direct contact with the Paiyanoor, Primary Agricultural Cooperative Credit Society Limited's finance manager and staff. The Cooperative Credit Society Ltd.'s annual reports contained the majority of the financial data A study of the Paiyanoor Primary Agricultural Cooperative Credit Society Ltd's financial performance revealed that it was, on the whole, very strong. Debt-to-equity has performed admirably. The PACCS must take the necessary steps to effectively maintain and reduce operating expenses. The Primary Agricultural Cooperative Credit Society Ltd.'s financial statements demonstrate that the organisation had numerous financial challenges over the previous five years. The cooperative bank's finances and profitability experienced significant declines, particularly in the fiscal years 2014–2015, although it was nevertheless able to recover from the crisis and resume profitability. However, PACCS has steadily improved its financial performance over the past five years, from 2014 to 2019.

**Rao and Biradar** described about ICT Practices Of Banks: A Study Of Cooperative Banks In Belgaum, Karnataka The banking industry is regarded as the foundation of any nation's economy. Even now, 60% of India's rural areas rely on cooperative banks for their banking needs. The data was also collected from primary sources. The questionnaire was prepared and circulated to the top and middle level management of sample banks. Percentage method was used to analyse data. The research shows that, except from the staff and management of Belgaum District Cooperative Bank, sample bank respondents were not well-versed about the market's availability of banking and communication technology. The banks have internet connectivity and have digitised their branches. However, no one at the bank had created the webpage. The banks have installed CCTVs in its

branches as a security measure. It was discovered that banks were providing phone-in-link services such product and service inquiries, account address changes, stop check instructions, and status inquiries on remittance and bank balance, among others. However, aside from the ATM service, the majority of BDUCB respondents were not aware of these services. The majority of respondents from the tested bank weren't aware that their bank offered telebanking services.

**Misra, B. S. (2006)** studied about Performance of primary cooperatives in india: an empirical analysis. In India, cooperatives have existed as an institution for more than a century. They have a considerable footprint with more than lakh grassroots cooperatives. Despite the significant strides cooperatives have made in reaching small and marginal farmers in rural areas, their financial stability has been a source of concern. The study is an effort to investigate the variables that affect cooperatives' financial health as seen in their ability to recover. The study organized into five segments in the first they provides a quick evaluation of the evolution of the agricultural cooperatives in widespread and that of rural cooperative banking group where in the second part they have empirical analysis method to decipher the influence of different factors on the performance of the cooperative is discussed in the section. In fourth discusses the empirical effects. Concluding observations primarily based totally at the empirical effects are supplied in closing section.

**Oyebanjo, O et al. (2020)** stated that Adoption of Information Technology and its effect on Cooperative Performance in Egba Division, Ogun State, Nigeria Cooperative is a not unusual place platform for addressing current economic demanding situations in a quick developing economy. The guide accounting structures amongst cooperatives are very slow, go away excessive margin of mistakes and create possibilities for abuse with terrible effect on cooperative overall performance. The examine tested elements affecting records technology (IT) adoption and its impact on cooperative overall performance in Egba Division, Ogun State, Nigeria. Primary information had been gathered from 122 respondents through multi-level sampling strategies thru questionnaire. Data had been analysed through descriptive statistics, Binary Logit and Cobb-Douglas function. The findings found out that adoption of records technology (IT) with the aid of using the cooperatives turned into low. Majority of the societies (63.9%) use laptop machine even as most effective a few (27.9%) followed digital computation, processing and file keeping. There turned into very little adoption of IT centers like Skype, Point of sale (POS), E-banking and net or social media many of the cooperatives.



**Babu (2020)** depicts that Pathargama Primary Agriculture Credit Co – Operative Society A case for intense study with respect Transformations brought by Vaidyanathan Committee Recommendations in PACSs. The present examine is associated with the effect evaluation of Pathargama PACS in Godda district of Jharkhand. The PACS below examine has 1812 participants out of which 12 men and women are withinside the Board of Directors of the society consist of five ladies and 1 ST participants. Vaidyanathan examine group offers economic in addition to non-economic help to best eligible Societies. Eligibility standards include development is control and document keeping, efforts taken to enhance recuperation overall performance and aiming at beautify normal efficiency. The primary statistics concerning balance sheets/economic statements and so on and BDP have to be made to be had to the different PACS via net in order that they too might also additionally undertake the quality practices. There have to be uniformity in accounting practices, as anticipated through the CAS .The Staff have to gain knowledge of for Computer and MIS. Technical Guidance have to be supplied inside stipulated time from for people who ask for at a normal c programming language from a high-quality effect at the PACS.

**Fu X. (2013)** Using data from a survey on the use of various types of information technology in rural cooperative banks in India, this paper investigates the effects of computerization on the performance of rural cooperative banks. According to research, rural credit cooperatives are more efficient when they embrace appropriate technology, such as stand-alone PCs in their branches; on the other hand, employing cutting-edge local area networks has the opposite effect. The ability of customers of service and the larger community to absorb new information is vital to the improvement of efficiency. So are the IT abilities of bank employees.

**Patel S. (2019)** conducted research on ‘Role and Opportunities of ICT in Cooperative Sector’ wherein author said that, ICTs have the potential to increase service access, quantity, and quality. Using local resources to leverage financial sustainability, a rural Indian network offers low-cost voice over internet protocol and offers a service on it. It is well established that cooperatives play a key role in reducing poverty, ensuring food security, and creating jobs. ICTs have the potential to revolutionise cooperative operations and have enormous positive effects, notably in agriculture if provided with internet and text message access to information on local markets, farming techniques, crop cycles, and weather data. Creative use of ICT can change cooperatives' daily operations for the betterment of their members. Experience with ICT implementation at cooperative services and cooperative manufacturing is necessary for effective professional management in cooperatives. It is

obvious that ICTs are vital in the growth of cooperatives, but there are still challenges to be solved, mainly access costs and infrastructure problems. Cooperatives must be supported by the development of an enabling environment, comprising a legal, policy, commercial environment, and sharing frameworks that are beneficial to the creation and development of organisations, in order to facilitate or offer access to ICTs to them.

**Lokeswari K. (2016)** has explained the role of ICT in the development of agriculture and among rural farmers. The traditional agricultural methods being adopted face several difficulties in terms of production, marketing, and profit, among other things. Information and communication technologies (ICT) play a vital role in improving the lives of rural small landholder farmers by addressing the constraints of traditional agriculture. ICT contributes to the rise in demand for novel methods. ICT has created previously unheard-of chances for small-scale farmers to become more independent by enhancing their capacity for agricultural commercialization. By giving farmers better access to markets, banking and other financial services, marketplaces, improved agricultural technologies, and other resources, it also assists in empowering the rural population. Rural areas could develop if ICT is used effectively since it allows for the timely broadcast of necessary information in an accessible, cost-effective, and user-friendly format.

**Satchidananda S. S. et. al. (2004)** have found in the research entitled ‘An ICT based Framework for Improving Rural Credit Delivery’ that, to improve investment development and capital creation in the agriculture sector, there must be an increase in the timely and adequate flow of productive credit. Although a multi-agency infrastructure consisting of cooperatives, commercial banks, and microfinance organisations has been built for the delivery of rural credit, the flow of credit still needs to be accelerated and the service quality must be improved. This study suggests an ICT-based strategy for enhancing the distribution of loans and other services to rural areas in order to address this significant issue. In order to significantly lower transaction costs and increase delivery speed and quality, the proposed system calls for shared delivery channels by banks as well as common infrastructure for rural data gathering, information administration, and processing. The development of a data centre per village and assuring its two-way communication to a multi-service delivery system that offers banking, extension, and other government services are the components of the suggested solution. The suggested approach calls for outsourcing the data hub's operations as well as the creation and management of Multi Service Delivery Systems with the necessary security measures in place.

**Naithani V et. Al. (2022)** studied issues and prospects for PACS during adoption of Fintech and role of Fintech in reinforcement of PACS in ‘Challenges and Opportunities in Employing the Financial Technologies by PACS IN India- A Swot Analysis’. Authors have found that, PACS lack the essential digitalization despite being accessible and meeting the diverse needs of its members. The PACS faces significant difficulties including a lack of skilled staff, ineffective management, a lack of digitalization, an increase in non-performing assets (NPAs), and a lack of financial and technological awareness among members. The use of fintech, with E-rupi being the most recent addition, would help them not only grow their product and membership bases but also make it easier for the government to distribute services to the right people. Although PACS are a significant player in rural and agricultural finance, there are still issues in the sector. If the digitalization of PACS is properly taken into account, PACS will surely help to the overall growth of the nation by promoting regional financial inclusion, especially in rural areas.



## **Chapter III**

### **RESEARCH METHODOLOGY**

The present study titled as “**Issues and challenges in adaptation of information and communication technology in Primary Agricultural Cooperative Credit Societies (PACs) with special reference to Western zone**” is conducted with the following objectives:

1. To review the present status of PACS in Western Zone states.
2. To measure the manpower and skill requirement of staff for ICT handling in PACS.
3. To examine the training requirement for the staff of PACS for smooth adaptation of ICT.
4. To make appropriate recommendations for PACS to grow.

#### **3.1 Research Design**

The research design to be used in this study is survey design, the research is designed in such a way that it gives the major people to be interviewed to provide answers to the questionnaires raised by the study. The choice of this design was chosen due to the fact that it is flexible and best suited for gathering descriptive information. Its underlying principle is to seek the opinion of individuals on a particular problem, whereby the consensus of these opinions provides the needed solution to the problem at hand. ( Nwogu, 2006).

#### **3.2 Area of the Study**

The study commenced as per zones created by The National federation of State Cooperative Banks Ltd. (NAFSCOB). Six zones were formed by NAFSCOB, namely Central Zone, Eastern Zone, North-Eastern Zone, Northern Zone, Southern Zone, Western Zone.

For this study, a Western Zone was considered. Western Zone consists of three states Goa, Gujarat, and Maharashtra. The total PACs in western zone are 29,052 as per 2019-20 data of NAFSCOB. Maharashtra state has the highest number of PACs in India (promoted by NABARD and the State Government) followed by Gujarat state. At India level Goa, state has very less PACS.

- The area of the study is credit society in western zone with emphasis on the Impact of Information technology on Primary agriculture credit societies (PACS). In western zone study was conducted in Maharashtra and Goa state. There are 15,419 viable Primary agricultural credit Cooperatives in Maharashtra and 67 viable Primary agricultural credit Cooperatives in Goa.

- 14 PACS were selected randomly from Maharashtra and 6 PACS were covered from GOA. In total, 20 registered Primary Agriculture credit Society (PACS) were selected for this research study. PACS from Aurangabad, Nashik and Pune Division of Maharashtra state were selected. The questionnaire filled by the officials and staff of PACS were administered, out of which reliable information were used for the data analysis after screening.

### **3.3 Limitations of the Study**

**There are number of limitations in the current work that should be considered as caveats.**

1. The people of PACS were reluctant to give data owing to the sensitivity of questions on operational and financial performance.
2. The study started at the end of Covid period during the opening of Maharashtra economy. The data collected for the study are on the basis of discussions and telephonic call to the concerned society. Limited PACS were contacted as there was no central database. Therefore, the researchers requested NCDC to share the contact details of PACS. But some of the numbers were out of reach.
3. However, the current study has not taken under consideration the spatial variations within the distribution of cooperative credit system across India. Hence this may be scope for any further study by other research scholars in the future.

### **3.4 Method of Data Analysis**

Descriptive statistics such as frequency, percentage and mean was used to analyze the present Status of record keeping in PACS, Usage of technology in PACS, ICT systems that are currently used by PACS etc. Binary Logit model was used to determine the factors affecting adoption of IT facilities among the cooperatives.

#### **3.4.1 The Binary Logit Model**

The Logit regression analysis is an appropriate technique for estimating the probability that an event occur or not by predicting a binary dependent outcome from a set of independent variables (Hoetker, 2007). For example, a PACS may decide to adopt or not to adopt a particular Information technology (IT). The probability to adopt,  $y_i^*$ , is linearly related to a vector of observable variables,  $X_i$  and other unobservable factors, the error term. The linear form of the Logit model is specified as;

$$y_i^* = \beta x_i + \epsilon_i \quad \dots\dots (1)$$

When  $y_i^*$  is greater than zero, the PACS decides to adopt the IT. Hence,  $y_i^*$  assumes a value of one (1) when the PACS adopts the IT and zero (0) when it does not. The probability that  $y_i = 1$  is given by;

$$P(y_i = 1 | x_i) = \frac{\exp(x_i \beta)}{1 + \exp(x_i \beta)} \dots\dots\dots(2)$$

where  $\beta$  is the vector of coefficients to be estimated. The dependent variable in this analysis is adoption status of computer system (i.e. adopted or nonadopted) being the major information technology used to gather, process, compute, store, protect, and transfer information. It is also used for internet connections and social media. Positive coefficients mean that the probability of adopting the IT increases with that variable and vice versa. The application of the Logit model is in line with Bassey (2015) among other authors. The regression equation is specified explicitly as;

$$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \dots + \beta_8 X_8 + (3)$$

Where:

$Y_i$  = Adoption of IT (i.e. Use of computer system = 1, otherwise = 0)

$X_1$  = Age of PACS (years)

$X_2$  = Education of Official (years)

$X_3$  = Size of cooperative membership (number)

$X_4$  = Experience of Official (years)

$X_5$  = Official's computer literacy (literate= 1, otherwise = 0)

$\beta_0$  = Constant term = Parameters to be estimated (regression coefficient).

$\epsilon_i$  = error term

### **3.5 Results and Discussion**

#### **3.5.1 Determinants of Information Technology Adoption among the Cooperatives**

The factors determining the use of Information technology (IT) among PACS in the study area were examined by the Binary Logit model. The dependent variable in this analysis is adoption status of information technology (i.e. adopted or non-adopted) that is used to operate the software, internet

and social media. The estimates of the analysis are presented in Table 7 The model parameters i.e. chi-square and log likelihood values were significant at ( $P < 0.01$ ).

The estimated coefficient of age (-0.0337) of the PACS had a significant **negative relationship** with IT adoption at  $p < 0.01$ . This implies that age does not support the use of IT facilities. Youthful officer are likely to be willing for new training that will favor IT adoption in PACS. Educational level of the official had a **positive and significant coefficient** (0.2956) at  $p < 0.01$  indicating that higher level of education will promote adoption of IT facilities among the society.

The coefficient of membership (0.0358) significantly influenced adoption of IT facilities at  $p < 0.01$ . The **positive sign** indicates that an increase in membership will enhance the use of IT facilities by the society through additional funds. **The membership in each PACS under study ranges from 1500 to 2000 members on an average.**

Experience has a **positive and significant coefficient** (0.0607) at  $p < 0.01$ , implying that appreciable years in cooperative management will encourage effective use of IT facilities. However, the coefficient of Official's computer literacy (0.9399) shows a **positive and significant relationship** with IT adoption. Thus, adequate knowledge in computer operation is a prerequisite for adoption and effective use of computer system and other related facilities.

H<sub>1</sub>: Computer adoption in PACS has a relation with age of PACS.

H<sub>2</sub>: Computer adoption in PACS does not have a relation with age of PACS.

H<sub>3</sub>: Computer adoption in PACS does not have a relation with size membership of PACS, education of official, Experience of official and computer literacy of staff.

H<sub>4</sub>: Computer adoption in PACS have a relation with size membership of PACS, education of official, Experience of official and computer literacy of staff.

**Table 7: Binary Logit Model for Different Variables**

Variables	Variables	Co-efficient	t-value	Standard error	Marginal effect
Constant	-	6.1640	9.094	0.6778	-
Age of PACS	X <sub>1</sub>	0.0337***	3.310	0.0101	0.3721
Education of Official	X <sub>2</sub>	0.2956***	8.101	0.0364	0.1388

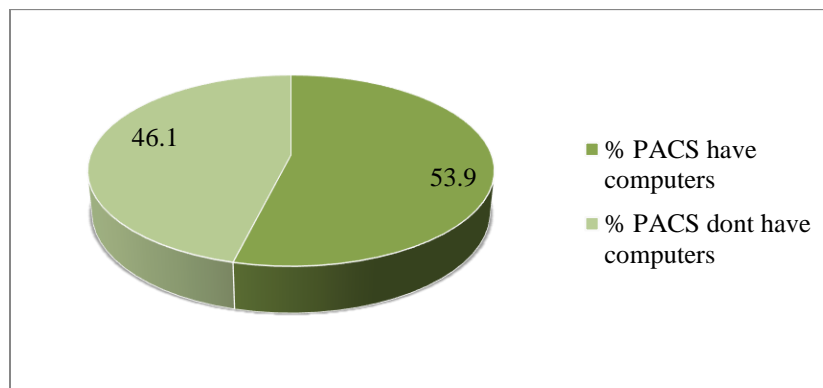


Membership Size	X <sub>3</sub>	0.0358***	4.336	0.0082	0.4299
Experience of Official	X <sub>4</sub>	0.0607***	2.763	0.0219	0.5971
Official's computer literacy	X <sub>5</sub>	0.9399***	3.954	0.2377	0.2192
Chi-square		72.816***			
Log likelihood		-255.430			
Pseudo R <sup>2</sup>		0.7497			

(Source: Field Survey. \*\* Significant at  $p < 0.05$ , \*\*\* Significant at  $p < 0.01$ )

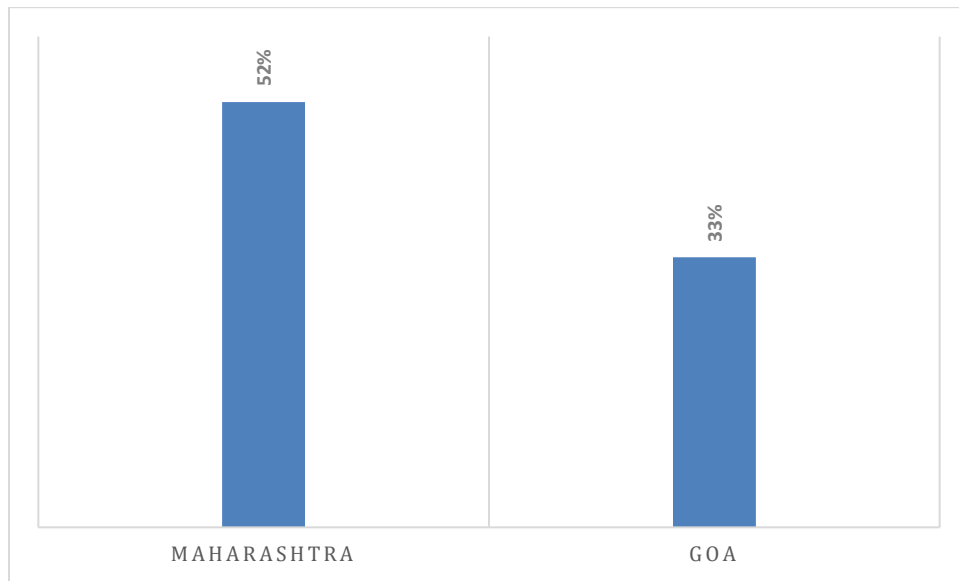
As per the statistical results p-value is 0.0337 and less than the alpha of 0.05, the researcher rejects the null hypothesis because there is statistical significance. So null hypothesis is directly rejected. As per the above table, the independent variable “Education of Official” and “Official’s computer literacy” have a positive effect on the adoption of ICT in PACS. Hence the null hypothesis is rejected and alternative is accepted.

### 3.5.2 Status of Usage of Computers in PACS



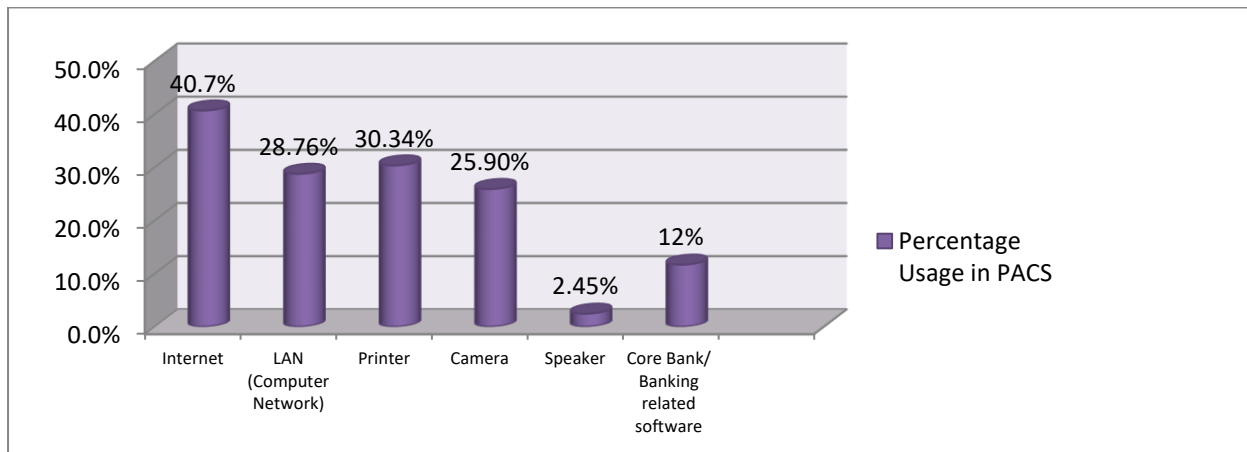
**Chart 1: Usage of Computers in PACS**

As shown in chart 1, only 53.1% PACS are using computers for their day to day operations. It indicates that there is huge gap in adoption of computer in PACS. While generally, ICT uptake is lesser in PACS across the region, the usage of computers in PACS in Maharashtra state is less than 52% and that in Goa, it is only 33% comparatively.



**Chart 2: Usage of Hardware in PACS**

While gauging the type of hardware devices used by cooperatives, a common, trend was observed.



**Chart 3: Percentage Usage of Technology in PACS**

As shown in the above chart 3, usage of Internet, LAN and printer at the PACS under study is only at 40.7 % and 28.76% respectively. Camera use was increase in the COVID19 period. At present 25.90% of PACS has camera facility in society. Core banking is adopted by 12% PACS. It is safe to say that ICT uptake is low.

### 3.5.3 Examination of ICT systems that are currently used by PACS and their purpose

PACS are not new to ICT. However, the degree of exposure differs with the setup, infrastructural availability, cost of ICT, computer literacy, and the structure of the cooperative added to the nature of the PACS's business, among others.

PACS utilize computers for different engagements to keep records for various reasons like to prepare financial statement, to complete the regulatory compliances, to keep transaction records of PACS, to keep monitoring business growth and planning of PACS activities, for annual audit procedure to get auditor report etc.

Overall, ICT gears towards process automation. Essentially, ICT increases the group of process automation and reduces the manual intervention. Among PACS, ICT is still at its infancy.

The results of assessment of Information Technology (IT) adoption among the PACS were presented in Table 8.

**Table 8: Distribution of Cooperatives by Adopted Information Technology**

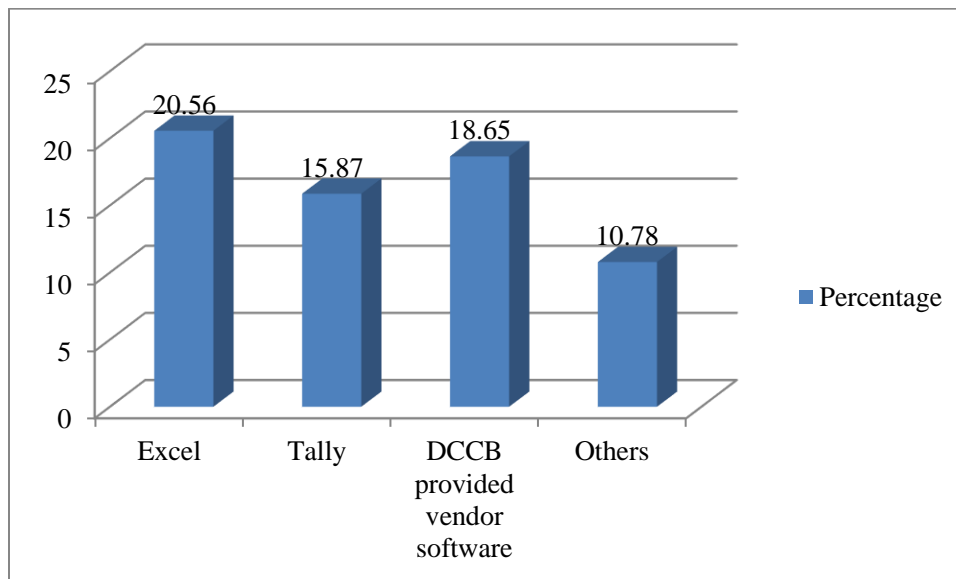
IT Facilities	Adoption (%)
DBMS for managing members' records	3.3
Spreadsheet software for computation	5.7
Point of Sale (POS)	4.9
Office telephone line	84.4 1
Bulk SMS messaging	10.7
E-banking	5.7
Broadband internet	4.1
Social media account/page	14.8

*(Source: Field Survey)*

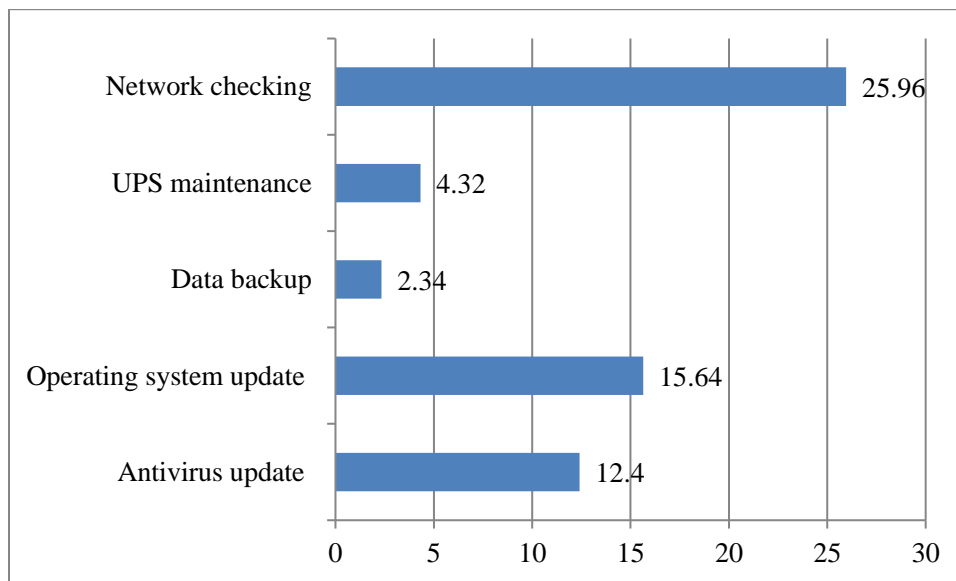
The statistics show that the major IT facility adopted by the societies was office phone line (84.4%). The office phones include mobile handsets used mainly to communicate with members and leaders. About 10.7% of the PACS used the phone to send bulk SMS messages to members while 89.3% did not probably due to high cost of subscription for bulk messages. Only 27.9% of the PACS adopted a Database Management System (DBMS) software and spreadsheets for electronic data computation. Similarly, 18.9% subscribed for broadband internet to provide online

information. The data analysis shows that Point of Sale (POS) (4.9%), E-banking (5.7%) and Skype (4.9%) were rarely adopted as IT facilities by cooperatives in the study area. Meanwhile, POS is an important electronic device for receiving payment/ subscription. Use of ATM cards make it possible to withdrawal of cash without visiting a bank. E-banking is useful for online transactions to make payments or transfer money. E-banking will ease payment and security could enhance cooperative performance. Skype software enables voice and video calling. This software provides opportunity and evidence for sharing real life information between a caller and a receiver. But, effectiveness of these IT facilities also depends on the ability of the members and staff of cooperative society to use the technologies.

Chart 4 below represents the type of application software deployed for use across the PACS where it is professed that both “Manual” and “Automated” transaction take place. About 20.56% of PACS are using a excel software for accounting and record keeping purpose, 15.87 % of PACS are using tally for accounting. 18.65% of PACS reported that they are using the DCCB provided vendor software for the transaction automation purpose. 10.78% of PACS could not disclose the type of automation solution PACS are using because either they do not know, or likely, because they do not which one is used.



**Chart 4: Software Application used in PACS**



**Chart 5: Status of Maintenance of Hardware and Software in PACS**

The chart 5, above shows the frequency of PACS who does the maintenance of hardware and software. Out of the PACS studied, there are only few, almost 6.66 % who does the UPS maintenance and data backup. Majority of PACS who has network connection does the checking on time to time basic. The frequency of operating system update is 15.64% and antivirus update is done by 12.4% of PACS.

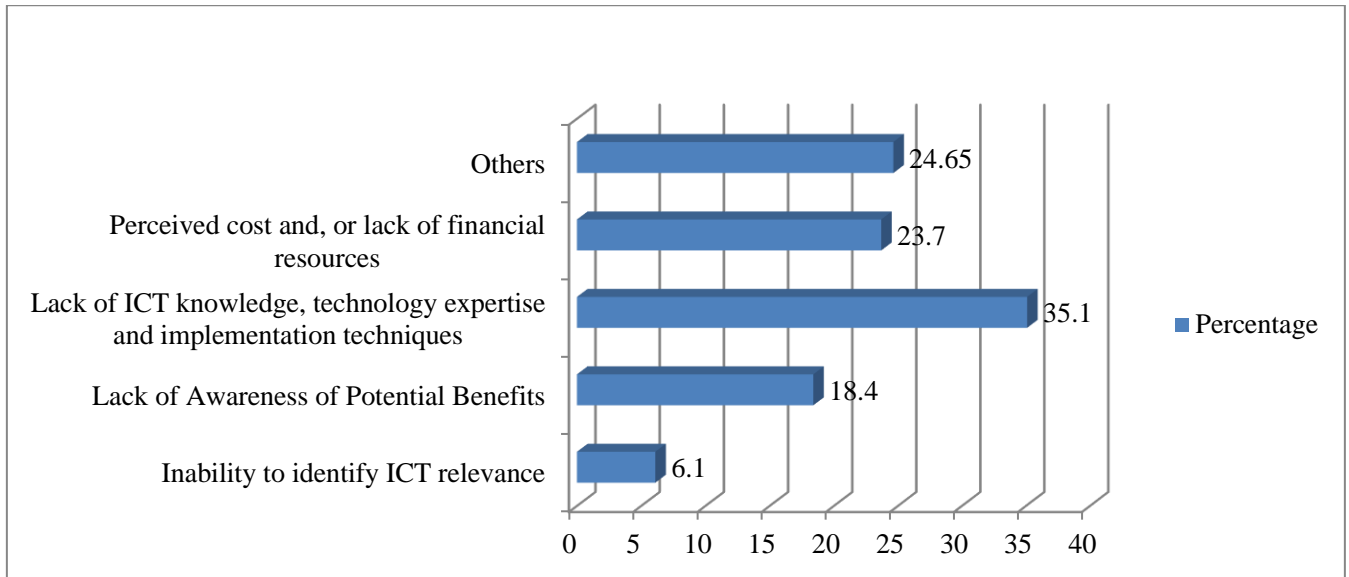
### **3.5.4 Identification of Barriers to Uptake of Technologies by Cooperatives; Critical Pathways & the Impediments**

Across the regions, ICT utilization is still relatively low in the PACS of the various economies. In the absence of dedicated core application, what obtains is application of fringe ICT toolkits. When these and generic computer applications are appropriately blended creatively, they could accomplish appreciable result which output far outweighs the best of manual operations and process.

Below are some impediments quoted from the field research:

1. Lack of Airtime, Bandwidth and Internet Due to remoteness of area.
2. Lack of awareness on ICT benefits and how to use it
3. Members of PACS do not have smart phone.
4. Members have lack of knowledge about the importance of mobile phones and computers.

The following chart no. 6 showcase the barriers to the adoption of workable ICT platform at PACS were identified. 6.1% indicated inability to identify ICT relevance, 18.4% stated that lack of Awareness of Potential Benefits is a barrier to their adoption of ICT for their cooperative operations. 35.1% mentioned lack of ICT knowledge, technology expertise and implementation techniques while 23.7% indicated that perceived cost and, or lack of financial resources. Amongst other barriers stated by some of the respondents in the table tagged “Others” are; inability to identify very suitable ICT platform from vendors, not strong wiliness of principal officers etc.



**Chart 6: Barriers in adoption of ICT**

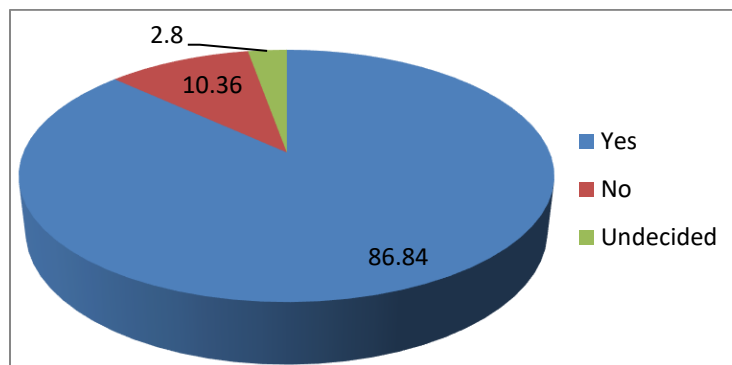
Other barriers identified by respondents include:

1. Inability of the staff to adapt technology.
2. Inability to identify very suitable ICT platform from vendors.
3. Existence of resistance to change in PACS.
4. Comparative low-level of literacy
5. Low computer skills of members and officials of PACS.
6. Prevalence of manual operations and low computerization of the process in PACS.
7. Inadequate leadership to guide towards the adoption of record automation.

## Identification of Training Needs

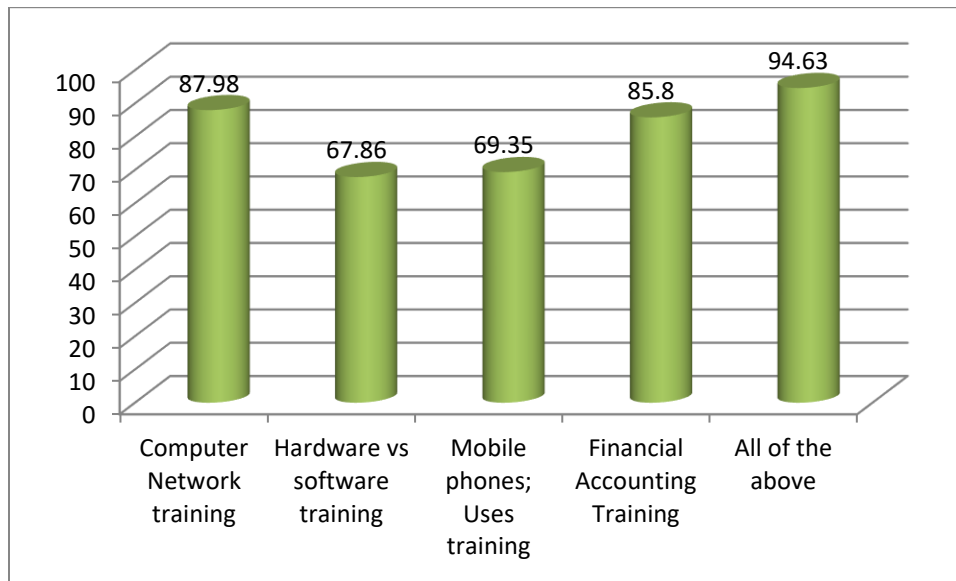
Responses elicited from respondents across various strata of the PACS underpin the importance of Training for a successful computerization solution adoption and utilization. Respondent mentioned an array of training which includes:

1. Training on Computer Appreciation
2. Training about Hardware vs software
3. Training on Mobile phones uses
4. Training on Financial and accounting system in software and
5. Training in Database Management system.



**Chart 7: Training Needs of PACS**

Chart No.7 above is a reflection of findings from the field on the need for training. There is 86.84% training demand across various strata of the PACS, while 2.8% are undecided.



**Chart 8: Nature of Training Needs by PACS**

Chart 8 represents requests for specific training which is deemed important by members to aid the adoption of workable ICT. 87.98 % of PACS has in need of computer network training. 67.86% of the staff has in need of hardware vs software training. 69.35% of the staff has opted for Mobile phones and their uses training, 85.8% of PACS staff indicate the need for training in Financial Accounting and 94.63% of PACS show inclination towards the need for training in all different areas. Some PACS have reported the need for training on Database Management Systems. Across the PACS, it is pertinent to conclude that training will lead to facilitating the adoption of ICT.

### 3.5.5 Data Analysis of Statements

KEY: SA – Strongly agree, A – Agree, U – undecided, D – Disagree, SD – strongly disagree

**Table 9: Frequency and percentage representation of Statements**

QUESTIONS	SA & (%)	A & (%)	N & (%)	D & (%)	SD & (%)
ICT exposure improves the performance of PACS	11 (63.3)	4 (20.4)	3 (12.2)	1 (4.1)	
Information technology has increased the activities of PACS.	9 (46.9)	7 (38.8)	3 (8.2)	1 (2.0)	
Information technology will	14 (83.7)	2 (6.1)	4 (8.2)	1 (2.0)	



enhance cooperative operation in terms of quick service delivery.					
IT exposure of PACS reduced the cooperative members surplus	-	-	2 (10)	6 (32.7)	12 (30.6)

From table 9, 31(63.3%) of the respondents strongly Agrees, 10(20.4%) Agrees, 6 (12.2%) are undecided, and 2(4.1%) of the respondents Disagrees that IT exposure improves the performance of society’s services.

36(73.5%) of the respondents Strongly Agree, 6(12.2%) Agrees, 5(10.2%) Undecided and 2(4.1%) of the respondents Disagrees that information technology is highly efficient and will improve the performance of the society.

41(83.7%) of the respondents Strongly Agrees, 3(6.1%) Agrees, 4(8.2%) are Undecided and 1(2.0%) Disagrees that information technology will enhance PACS operation in terms of quick service delivery.

2 (10%) of the respondents are Undecided, 6 (32.7%) are Disagrees and 12 (30.6%) of the respondents Strongly Disagrees that IT exposure of PACS reduced the cooperative members surplus.



## Chapter IV

### CONCLUSIONS AND RECOMMENDATION

This chapter presents discussions on the key data findings. This chapter covers conclusions drawn based on findings and recommendations. At the end of the chapter areas for further research study are given.

#### 4.1 Findings of the Study

- As per the Binary Logit model, the Education level of official and literacy of the staff effect the adoption of ICT in PACS. But the age of PACS does not affect the ICT adoption.
- Findings show that manual operation is rife in PACS across the study area. It indicates that there is huge gap in adoption of computer in PACS. While generally, ICT uptake is lesser in PACS across the region, the usage of computers in PACS in Maharashtra state is far better than the goa state comparatively.
- It shows high manual operation in the society's administration and further survey reveals that majority of PACS data are manual. Data is lock in away in aged ledgers that are neither readily accessible, nor easily convertible in time to grab the opportunity. The solution of the manual mode of operations is automation of major processes through user-friendly ICT. Such automation will reduce error in data recording, increases transparency, improvise the efficiency of management and governance, and allows retrieval of data with just a click.
- The usage of Internet and LAN uptake at PACS is low. The degree of existing ICT lacks the robustness and flexibility required to manage a dynamic sector if it truly desires to meet the challenges of emerging in members' inclusive and exclusive needs, when and how to be served, timely.
- The degree of exposure differs with the setup, infrastructural availability, cost of ICT, computer literacy, and the structure of the cooperative added to the nature of the PACS's business, among others. Among PACS under study, ICT is still at its infancy. The statistics show that the major IT facility adopted by the societies was office phone line followed by computer system. The use of Database Management System (DBMS) software, Point of Sale and Broadband internet to provide online information was low. The low level of adoption might also be attributed to low level of finance for subscription or lack of adoption policy.

- Computerization of PACS, will serve the purpose of financial inclusion. It will lead to strengthening service delivery to farmers especially Small & Marginal Farmers (SMFs) also will become nodal service delivery point for various services and provision of inputs like fertilizers, seeds etc. The project will help in improving the outreach of the PACS as outlets for banking activities as well as non-banking activities apart from improving digitalization in rural areas.
- For accounting and record keeping purpose, excel software was used majorly followed by DCCB provided vendor software for the automation purpose. This explains that PACS in Maharashtra and Goa are yet to adopt full automation of their processes. It is also an indication that the available ICT tools in PACS have not been sufficiently sweated for desired result.
- While examining the prevailing ICT systems currently used and the purpose for their use, it was observe that most of the PACS accept basic utilities available. Most of the PACS that practice mediated operations as opposed to manual operations use Accounting Application. While the use of Accounting Application alone may not be sufficiently robust to meet the requirements, information management application conceived and developed for PACS will go a long way in alleviating administrative challenges and strengthen the fabrics of transparency and accountability.
- Adequate knowledge in computer operation is a prerequisite for adoption and effective use of computer system and other related facilities. Lack of ICT knowledge, technology expertise and implementation techniques; perceived cost and lack of financial resources were the major issues identified through the study. Amongst other barriers stated by some of the respondents are inability to identify ICT relevance, inability to identify suitable ICT platform from vendors, etc; has found as challenges in adoption of ICT.
- Responses elicited from respondents across various strata of the PACS underpin the importance of Training for a successful cooperative solution adoption and utilization. The high rate of training request may be indication of the users are willingness to update their knowledge about ICT. It is important to note that, success or failure of any society will depend largely on the members' perception of their ability to use the platform. Specific training which is deemed important by members to aid the adoption of workable ICT are "training on Computer Network". "training on Hardware vs software" and "training on Mobile phones; Uses training".
- Thus, it is imperative for cooperative management to adopt or increase their level of use of Information Technology (IT) so as to increase the financial performance and their

impacts on economic development. Meanwhile, the high cost of procurement and maintenance, low level of computer literacy and low membership were the major constraints confronting the adoption of information technology by society. Therefore, PACS should ensure the fund availability to investment in IT facilities and updating.

- Overall, the adoption of ICT for data and process automation is relatively low, even though data and process automation possess a lot of advantages which can enhance the society's operations. It is also an indication that there is scarcity of flexible software that can cater for the variety of needs existing in the PACS. A major barrier cited for slow uptake of ICT is the perceived cost and lack of financial resources. To encourage the adoption of ICT, stakeholders are advised to facilitate the availability of ICT solutions at an affordable cost to PACS.
- It has been observed that about 40 % of PACS under study functions as a multi-service centers as they have necessary infrastructure for its members and take up allied agriculture activities for the value addition of the farm produce. But the computerization in most of the PACS is not done. Hence the PACS being the multi service have no relation with the computerization of PACS.
- Finally, the degree of willingness on the part of the cooperative members to make a financial commitment towards the deployment of a full automation process came to the fore. It is logical to infer here that majority of the respondent desire the growth of the PACS through the infusion of ICT even at their own expense. Perhaps, the respondent who disagrees might change their mind by enlightening with how ICT is the necessity to PACS operations.

## **4.2 Recommendations**

- Based on the above findings, it is recommended that members of PACS need to make awareness about importance of ICT in credit business. State Government and the cooperative unions should ensure implementation of cooperative education as a principle to include computer training of managers/ staff particularly in the use of DBMS, electronic spreadsheet and other software.
- Locally, CSR funds of corporate can be invited for computerization of PACS. As a part of CSR, companies can take up the responsibilities of training and maintenance.
- Similar to E-Shakti or Digitization of SHGs initiative by NABARD, the DCCBs can enroll themselves as one of the important options for taking up various government

schemes (where credit and subsidy is involved) which can be implemented through PACS.

The above recommendations, if implemented, will go a long way in reducing or eliminating many problems confronting cooperative development in the study area and in the country as a whole.

### **4.3 Conclusion**

ICT adoption has been growing, different applications and technologies have been adopted by some PACS to control costs, create efficiency and effectiveness in their operations, improve productivity, and increase outreach to the members. Some PACS are appreciating the benefits associated with ICT and in particular increased efficiency, improved service delivery, improved operational performance among many others. There has been barriers to ICT usage such as high costs of qualified personnel, high value added tax, and high costs of ICT equipment's and services that must be brought to the attention of the practitioners and policy makers for action so that ICT may continue influencing positively to the PACS operations.

### **4.4 Future Scope of Study**

- This study is conducted before the formation of Ministry of Cooperation. It covered two states in western zones namely, Maharashtra and Goa. This study majorly focuses on identifying issues and challenges regarding ICT handling in PACS in relation to manpower training need analysis. The same kind of study can be conducted for different states.
- After the formation of Ministry of Cooperation, 110 Cr is announced in budget 2022 for computerization of PACS. Inline to this, the identified issues in present study like handling of technology, up-gradation of technology, training to the employees, evolution of PACS as a multiservice centre might be overcome by computerization of PACS. In relation to this, further study can be conducted in the states of Maharashtra and Goa.

## Chapter V

### REFERENCES

- Babu, S. (2020). Pathargama Primary Agriculture Credit Cooperative Society a Case for Intense Study With Respect Transformations Brought by Vaidyanathan Committee Recommendations in PACSs. In International Conference of Advance Research & Innovation (ICARI).
- Bassey, N. E., Edet, M. E. and Okeke, C. C. (2015). Determinants of Off-Farm Labor Supply among Farming Households in Akwa Ibom State, Nigeria. *Agricultural Science*, 3 (1): 31–40
- Butler, R. D. (2022). Exploring the Social Media Platforms and Online Communication Channels Utilized Among Agricultural Commodity Cooperatives in Texas (Doctoral dissertation).
- Devi Sekhar, R., & Vijayan, S. (2021). Productive Efficiency of Primary Agricultural Credit Societies in Kerala, India. *NVEO-NATURAL VOLATILES & ESSENTIAL OILS Journal*| NVEO, 8032-8040.
- Dr. Yashoda. (2017). Role of Primary Agricultural Cooperative Society (PACS) in Agricultural Development in India. *Global Journal of Management And Business Research*, Volume 17 Issue 3 Version 1.0.
- Fu, X., & Polzin, C. (2008). Do Modern Technologies Work for the Rural ICT and Rural Credit Institutions in India?.
- Fu, X. (2013). Computerization and efficiency of rural credit cooperatives: evidence from India. *Journal of international development*, 25(3), 412-437.
- Hanitra, R. L. (2012). Cooperatives and the Role of Information and Communication Technologies (ICTs). United Nations Headquarters, New York.
- Hoetker, G. (2007). The use of logit and probit models in strategic management research: Critical issues. *Strategic Management Journal*, 28(4): 331-343.
- Karthikeyan, K. (2021). A Study on Financial Statement Analysis of Primary Agricultural Cooperative Credit Society in Paiyanoor Branch at Chengalpattu District. *ComFin Research*, 9(3), 37-43.
- Lokeswari, K. (2016). A study of the use of ICT among rural farmers. *International Journal of*

Communication Research, 6(3), 232.

- Mohit Kumar and Mehta, V.P. 2018. Performance and Prospects of Primary Agricultural Credit Societies (PACS) in Haryana during 2000-01 to 2014-15. *Int.J.Curr.Microbiol.App.Sci.* 7(04): 20- 32
- Misra, B. S. (2006). Performance of primary cooperatives in india: an empirical analysis.
- Naithani, V., Kumar, B., & Prajapati, V. P. CHALLENGES AND OPPORTUNITIES IN EMPLOYING THE FINANCIAL TECHNOLOGIES BY PACS IN INDIA-A SWOT ANALYSIS.
- Nayak, A. K. (2016). Farmer producer organizations in India: Policy, performance, and design issues. In *Organised Retailing and Agri-Business* (pp. 289-303). Springer, New Delhi.
- Oyebanjo, O., Ologbon, O. A. C., Oshodi, D. A., Oluwasanya, O. P., & Dada, O. M. (2020). Adoption of Information Technology and its effect on Cooperative Performance in Egba Division, Ogun State, Nigeria. *KIU Journal of Social Sciences*, 6(2), 343-352.
- Patel, S. (2019). Role and opportunity of ICT in cooperative sector. Book chapter in *Cooperatives for Sustainable Rural Development* Publisher: Reliable, Ahmedabad.
- Rao, G. N. A Study on Problems and Prospects of the Primary Agricultural Credit Societies in Andhra Pradesh with Special Reference to Guntur District\* Dr. Talluri Sreekrishna
- Report of the Expert Committee to examine Three Tier Short Term Cooperative Credit Structure (ST CCS)
- Satchidananda, S. S., & Srinivasa, S. (2004, October). An ICT based framework for improving rural credit delivery. In *Asian Applied Computing Conference* (pp. 279-286). Springer, Berlin, Heidelberg.
- SKM, T. Critical Review on Cooperative Societies in Agricultural Development in India.
- Soni, A. K., & Saluja, H. P. S. (2012). Role of Cooperative Bank in Agricultural Credit: A study Based on Chhattisgarh. *Abhinav Journal of Research in Commerce & Management*, 1(10), 106-113.
- Tripathy, K. K., Paliwal, M., & Nistala, N. (2021). Good governance practices and competitiveness in cooperatives: An analytical study of Kerala Primary Agricultural Credit Societies. *International Journal of Global Business and Competitiveness*, 16(2), 153-161.



## Chapter VI ANNEXURES

### Annexure I

#### List of PACS under Study

##### Goa

1. Sattari Taluka Farmer Service Co-op Society, Ltd, Valpoi, Sattari, Goa
2. Shri Mahalakshi VKSS Ltd., Netravallli- Sanguem, Goa 403704
3. Dhanbandara VKSS Society Ltd, Dharbandara, Goa, 409406
4. Savoi Verem VKSS Society Ltd., Saiveram, Ponda, Goa- 403107
5. Konxem Nirankal VKSS Society Ltd., Nirankal, Ponda, Goa
6. Arpora Nagao MP Cooperative Society Ltd.

##### Maharashtra

1. Bhatkudgaon Vividh Karyakari Seva Sahakari Sanstha Ltd., At.Bhatkudgaon,Taluka Shevgaon, District.Ahmednagar.
2. Sultanpur Vividh Karyakari Seva Sahakari Sanstha Ltd., At.Post. Sultanpur, Taluka Shevgaon, District.Ahmednagar.
3. Hatgaon Vividh Karyakari Seva Sahakari Sanstha Ltd., At.Post.Hatgaon, Taluka Shevgaon, District.Ahmednagar.
4. Dahigaon ne Vividh Karyakari Seva Sahakari Sanstha Ltd., At. & Post.Dahigaon ne, Taluka Shevgaon,
5. Malichinchora Vividh Karyakari Seva Sahakari Sanstha Ltd., At. & Post.Malichinchora, Taluka.Newasa, District.Ahmednagar. Pin Code-414 602.
6. Utkarsh Nagari Sahakri Patsanstha Mydt, Ganpati Society, Wai, Dist Satara
7. Dnyanganga Sahakari Patsanstha Ltd.,Shree Commercial Complex, Shop No. 19, Kisanveer Chowk, 433, Motha Pul, Dharmapuri, Brahmanshahi, Wai, Maharashtra 412803
8. Walluth Vividh karyakari Sewa Sahakari Sanstha, At&Post Kudal, Tal Jaoli, Satara-415514
9. Raangeghar Vividh Karyakari Sahakari Sewa Sanstha,At&Post Raangeghar, Tal Jaoli, Satara-415514
10. Rajegaon Vividh karyakari Sahakari Sanstha, Ghansavangi, Jalna
11. Raheer PACS, Ghansapangi, Jalna
12. Shri Vishnu VKSS,NAVEKHED, TAL.WALWA, DIST SANGLI
13. Pimparkhed Vividh karyakari Sahakari Sanstha, Ghansavangi, Jalna
14. Mandavgan Phata Vividh Karyakari Seva Sahakari Society Maryadit, Shirur, Maharashtra

## Questionnaire

वैकुंठ मेहता राष्ट्रीय सहकारी प्रबंध संस्थान, पुणे

PACS मधील माहिती आणि संवाद तंत्रज्ञान अनुकूलन यांसाठी प्रश्नावली

Questionnaire for Information and Communication Technology Adaptations  
in PACS

[ए] सोसायटी ची मूलभूत माहिती/ [A] BASIC INFORMATION OF PACS

सोसायटी चे नाव/ Name of PACS:-

\_\_\_\_\_

सोसायटी चा पत्ता/ Address of PACS:-

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

जिल्हा/ District:- \_\_\_\_\_

राज्य/ State:- \_\_\_\_\_

संपर्क क्रमांक/ Contact Number:- \_\_\_\_\_

ई - मेल आयडी/ Email Id:- \_\_\_\_\_

स्थापनेचे वर्ष/ Year of establishment:- \_\_\_\_\_

सोसायटी चे संस्थापक (नाव)/ Founder of PACS (Name):-

\_\_\_\_\_

\_\_\_\_\_

सोसायटी ची सुरुवात किती सदस्यांनी झाली?/ PACS was started with how many members?

\_\_\_\_\_

शेअर होल्डिंग नमुना/ Pattern of Shareholding

शेतजमीन असलेल्या भागधारकांची संख्या/

No. of shareholders with farming land

शेतजमीन नसलेल्या भागधारकांची संख्या/

No. of shareholders without farming land

सोसायटी चे मुख्य कार्य कोणते?/ What is the core activity of PACS:-

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सोसायटी मध्ये सध्या कोणते उपक्रम राबवले जात आहेत?/ What are activities undertaken in PACS at present?

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[बी] सोसायटी चा आर्थिक डेटा/ [B] FINANCIAL DATA OF PACS

तपशील/ Particulars	२०२०-२१/ 2020-21	२०१९-२०/ 2019-20	२०१८-१९/ 2018-19	२०१७-१८/ 2017-18	२०१६-१७/ 2016-17
भाग भांडवल (रु.)/ Share capital (Rs.)					
दिलेली कर्जे (रु.)/ Loan and advances (Rs.)					
घेतलेले कर्ज (रु.) Borrowed Loan (Rs.)					
ऑपरेटिंग खर्च (रु.)/ Operation expenses (in Rs)					
प्रशासकीय/ अप्रत्यक्ष खर्च (रु.)/ Administration/ Indirect expenses (Rs.)					
चालू मालमत्ता (रु.)/ Current Assets (Rs.)					
चालू देणी (रु.)/ Current Liability (Rs.)					
निव्वळ एन.पी.ए. (रु.)/ Net- NPA (Rs.)					
निव्वळ एन.पी.ए. (%)/ Net NPA (%)					

ढुडल ँन.डु.ँ. (रु.)/ Gross NPA (Rs.)					
ढुडल ँन.डु.ँ. (%)/ Gross-NPA (%)					
लुखडडरुडल डनडंकन/ Audit Rating					
सदसुडडडु डंडुडडड/ Number of members					

### करुड वडडड/ Lending of loan for activities

डडशुडल/ Particulars	हुडड/ Yes	नडुडु/ No
डुड करुड/ Crop loan		
कडुडन खरुडुडु/ Purchase of land		
डशुडन खरुडुडु/ Purchase of Livestock		
सुडडन सुवुडुडु/ Irrigation Facility		
ठुडक सुडडन/ Drip irrigation		
कुरुडडड नडुड करड- करुड वडडड वगळुडड इतर सुडलरुन करुडुडु/ Please specify- other allied activities, except lending of loans		

### सुडसडडुडु डडुडु सदसुडडडडु सहुडडडु/ Member Involvement in PACS

नडुडुडुडुडु डुडुडुडुडु डंडुडडु/ Number of meetings Scheduled	सडुडुडु डुडुडुडुडुडु असलुडुडुडु सदसुडडडुडु डंडुडडु (अंडडडु डंडुडडु)/ Number of members attending the meeting (Approx. number)
वडुडुडुडु सडुडु/ Annual Meetings	सडुडुडु डुडुडुडुडुडुडु असलुडुडुडु सदसुडडडुडु डंडुडडु (अंडडडु डंडुडडु)/ Number of members attending the meeting (Approx. number)

[सी] सोसायटी मध्ये कॉम्प्युटर आणि माहिती विज्ञान अनुकूलन (वापर)/

[C] INFORMATION AND COMMUNICATION TECHNOLOGY ADAPTATIONS IN PACS  
(USAGE)

सोसायटी मध्ये खालील तंत्रज्ञानाचा वापर आहे का?/ Do the PACS have the following usage of technology?

तपशील/ Particulars	होय/ Yes	नाही/ No	होय असल्यास, किती?/ If Yes, how many?	होय असल्यास, अंमलबजावणीचे वर्ष/ If Yes, Year of implementation	होय असल्यास, फंडिंग एजन्सीचे नाव जसे नाबार्ड, डीसीसीबी इ./ If Yes, Funding Agency name like NABARD, DCCB etc.
संगणक/ Computer					
इंटरनेट/ Internet					
LAN (संगणक नेटवर्क)/ LAN (Computer Network)					
प्रिंटर/ Printer					
कॅमेरा/ Camera					
स्पीकर/ Speaker					
कोअर बँक / बँकिंग संबंधित सॉफ्टवेअर/ Core Bank/ Banking related software					
यू.पी.एस/बॅटरी बॅकअप/ UPS/Battery Backup					

आय.सी.टी.च्या अंमलबजावणीसाठी सदस्यांचा प्रतिसाद कसा होता?/ How was response of members towards implementation of ICT?

अति उत्तम/  
Very good  उत्तम/Good  सरासरी/  
Average  कमी/ Low

सोसायटी ला आय.सी.टी. लागू करण्यास कोणी प्रेरित केले?/ Who motivated PACS to implement ICT?

नाबार्ड/  
NABARD  डी.सी.सी.बी./  
DCCB  खाजगी सॉफ्टवेअर कंपनी/ Private  
Software Company  इतर नमूद करा/  
Other Specify

सोसायटी ला आय.सी.टी. च्या अंमलबजावणीसाठी कोणी मदत केली?/ Who helped PACS to implement of ICT?

<input type="checkbox"/>	नाबार्ड/ NABARD	<input type="checkbox"/>	डी.सी.सी.बी./ DCCB	<input type="checkbox"/>	खाजगी सॉफ्टवेअर कंपनी/ Private Software Company	<input type="checkbox"/>	इतर नमूद करा/ Other Specify
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[डी] कर्मचारी आणि इतर माहिती

[D] STAFF AND OTHER INFORMATION

सोसायटी मध्ये किती कर्मचारी कार्यरत आहेत?/ How many Staff is working in PACS?

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सोसायटी मध्ये किती संगणक वापरत आहेत?/ How many are using computer in PACS?

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गेल्या तीन वर्षात किती कर्मचारी सदस्यांनी प्रशिक्षण कार्यक्रमांतून भाग घेतला आहे?/How many staff members have undergone through Training programmes in last three years?

---

कृपया नमूद करा, कर्मचारी सदस्यांसाठी कोणत्या प्रकारचे प्रशिक्षण कार्यक्रम घेतले जातात?Please Specify, the kinds of training programme taken for staff members.

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कृपया नमूद करा, कर्मचारी सदस्यांसाठी कोणत्या प्रकारचे प्रशिक्षण कार्यक्रमांची गरज आहे? Please Specify, the kinds of training programme required for staff members.

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कर्मचारी आणि सदस्यांना प्रशिक्षण कोणी दिले?/ Who gave training to staff and members?

<input type="checkbox"/>	नाबार्ड/ NABARD	<input type="checkbox"/>	डी.सी.सी.बी./ DCCB	<input type="checkbox"/>	खाजगी सॉफ्टवेअर कंपनी/ Private Software Company	<input type="checkbox"/>	इतर नमूद करा/ Other Specify
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डेटा रेकॉर्डिंगसाठी सोसायटी द्वारे कोणते संगणक सॉफ्टवेअर वापरले जातात?

Which are computer software used by PACS for data recording?

<input type="checkbox"/>	एक्सेल/ Excel	<input type="checkbox"/>	टॅली/ Tally	<input type="checkbox"/>	DCCB विक्रेता सॉफ्टवेअर प्रदान करते/ DCCB provide vendor software	<input type="checkbox"/>	इतर नमूद करा/ Other Specify
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कोअर बँकिंग/ Core banking

[ई] सोसायटी मध्ये प्रणाली/संगणकाचा वापर आणि जागरूकता/

[E] USAGE & AWARENESS OF SYSTEM /COMPUTER IN PACS

तपशील/ Particulars	होय/ Yes	अंशतः/ Partially	नाही/ No	यासाठी कार्यरत कर्मचाऱ्यांची संख्या/ Number staff working for this	प्रशिक्षण दिले जाते का/ Any Training given होय/Yes नाही/No
कर्मचाऱ्यांना संगणक नेटवर्क संकल्पना माहित आहे का?/Does staff know the Computer Network concept?					
कर्मचारी सदस्यांना सोसायटी मध्ये वापरल्या जाणाऱ्या हार्डवेअर आणि सॉफ्टवेअरबद्दल माहिती आहे का?/ Do the staff members have knowledge about Hardware and software used in PACS?					
कर्मचाऱ्यांना संगणक कार्यप्रणालीचे ज्ञान आहे का?/ Do the staff members have knowledge about computer operation system?					
सर्व व्यवहार सिस्टीममध्ये नोंदवले जातात का?/ All transactions are recorded in system?					
कर्मचाऱ्यांना यू.पी.एस चा वापर कसा करतात हे माहित आहे का?/ Do staff know the use of UPS?					

[एफ] कर्मचारी सदस्यांमध्ये ITCT बदल जागरूकता/

[F] AWARENESS ABOUT ITCT IN STAFF MEMBERS

कर्मचाऱ्यांमध्ये जागरूकता/ Awareness in staff	होय/ Yes	अंशतः/ Partially	नाही/ No	यासाठी कार्यरत कर्मचाऱ्यांची संख्या/ Number of staff working for this	प्रशिक्षण दिले जाते का/ Any Training given होय/Yes/ नाही/No
कर्मचाऱ्यांना डेटाचे महत्त्व माहीत आहे का?/ Do staff know the importance of data?					
कर्मचाऱ्यांना डेटा बॅकअप प्रणाली माहीत आहे का?/ Do staff know the Data Backup system?					
कर्मचाऱ्यांना डेटा सुरक्षित कसा ठेवायचा हे माहीत आहे का?/ Do staff know how keep Data secure?					
कर्मचारी प्रणालीद्वारे वेगवेगळे अहवाल तयार करतात का?/ Do staff prepare different report through system?					
प्रिंटर कसे काम करते हे कर्मचाऱ्यांना माहीत आहे का?/ Do staff know how Printer works?					

सोसायटी मध्ये हार्डवेअर आणि सॉफ्टवेअरची स्थिती/काम/ Status /Working of hardware and  
software in PACS

तपशील/ Particulars	होय/ Yes	अंशतः/ Partially	नाही/ No	तपासणीची वारंवारता/ Frequency of checking	तांत्रिक व्यक्ती सोसायटीचा कर्मचारी आहे का?/ Technical Person a staff of PACS - होय/Yes नाही/No
अँटीव्हायरस अपडेट/ Antivirus update					
ऑपरेटिंग सिस्टम अपडेट/ Operating system update					
डेटा बॅकअप/ Data backup					
यू.पी.एस देखभाल/ UPS maintenance					
नेटवर्क तपासणी/					



Network checking

**आय.सी.टी हाताळताना/अंमलबजावणी करताना सोसायटी ला भेडसावणाऱ्या समस्या?/ Issues faced by PACS in handling/ implementing ICT?**

तांत्रिक व्यक्ती उपलब्धता  
Technical Person  
availability

अँटीव्हायरस  
अपडेट  
Antivirus  
update

पॉवर बॅकअप  
Power backup

संगणक नेटवर्क  
समस्या/ Computer  
Network problem

संगणक प्रणालीच्या अपग्रेडेशनसाठी निधी  
Funding for upgradation of Computer systems

इतर नमूद करा/ Other Specify

**सोसायटी मध्ये कॉम्प्युटर आणि माहिती विज्ञानाविषयी काही विशिष्ट गरजा आहेत का?/ Any specific requirement of Information and Communication Technology in PACS?**

**सोसायटीमध्ये कॉम्प्युटर आणि माहिती विज्ञान सुरु झाल्यापासून कोणता परिणाम झाला?/ Overall impact of implementation of Information and Communication Technology in your society?**

**माहिती देणाऱ्या व्यक्ती/ कर्मचाऱ्यांचे नाव, मोबाईल, ईमेल आयडी/ Contact details of person/staff who gave this information like name, Mobile, email ID.**

**SCHEME GUIDELINES - Centrally Sponsored Project for 'Computerization of Primary Agricultural Credit Societies'**

**1 Introduction**

The Primary Agricultural Credit Societies (PACS) form the vital third tier in the three-tier structure of the Short Term Cooperative Credit Structure (STCCS). The other two tiers are comprised of District Central Cooperative Bank (DCCBs) (2<sup>nd</sup> tier) and State Cooperative Bank (StCBs)(1<sup>st</sup> tier). National Bank for Agriculture and Rural Development (NABARD), has earlier taken the initiative to bring most of the StCBs and DCCBs on Core Banking Solution (CBS) platform, which has enabled them to give modern-day technology-based banking facilities to their clients. However, the PACS have so far been largely out of the ambit of the technology support.

PACS are owned by farmers, rural artisans, etc. and aim at promoting thrift and mutual help among the members; cater to their credit requirements and provide credit-linked services like input supply, storage and marketing of agricultural produce etc. DCCBs provide direct linkages to the PACS through direct financing. The StCBs are primarily responsible for control and coordination of the finances of DCCBs.

The large out-reach of PACS to the Small and Marginal Farmers (SMFs) make them a systemically important class of agricultural credit purveying institutions. Further, there is a felt need to develop cooperatives as vibrant business enterprises by enabling them to provide multiple services to their members with support of technology in order to fulfil members' requirements.

Keeping in view the above and to make PACS self-reliant in tune with 'Atmanirbhar Bharat Abhiyaan', the Government of India (GoI) has, on 29<sup>th</sup> June 2022 approved the Centrally Sponsored Project for Computerization of Primary Agricultural Credit Societies for a period of five years from 2022-23 to 2026-27.

**2. Aims & Objectives of the Project**

The aims and objectives of the project inter alia include the following:

- a. To bring in efficiency, accountability, transparency at PACS and improve profitability.
- b. To bring in accuracy and uniformity in the conduct of business, accounting with

entries originating at the transaction level and reporting thereof through standardization of processes, implementation of Common Accounting System (CAS) and Management Information System (MIS) and compliance to stipulations.

- c. To transform PACS into multi service entities, offering to members in particular and the rural population in general, an array of services covering agriculture and allied activities; financial and non-financial products.
- d. To seamlessly connect PACS with the higher-tier institutions and Government departments in the domains of agriculture, banking and rural development for dissemination of knowledge to grassroots.
- e. To leverage on the unique strength of PACS i.e. their captive member base, to design and offer personalized products and services and thereby improve the socio-economic landscape of rural India.
- f. To ensure accurate delivery of funds and subsidies through DBT to the targeted beneficiary groups.
- g. To enable PACS to provide doorstep banking services to facilitate easier access to banking services.
- h. To enable PACS to utilize digital acceptance infrastructure like Point of Sale (PoS)/mobile POS (mPoS)/ QR Code Readers/ Green Pin solution /BHIM Aadhaar pay device, etc. in the establishments run by PACS like fertilizer shops, Seed Processing units, etc. to facilitate cashless/ digital transactions.
- i. To expand financial services to unbanked villages/ areas, improve the overall performance and efficiency of PACS and STCCS, increase rural employment opportunities and reduce migration to urban areas.

### **3. Project Details**

#### **3.1 Title of the Project**

Centrally Sponsored Project for '**Computerization of Primary Agricultural Credit Societies**'.

#### **3.2 Sponsoring Agency**

Ministry of Cooperation, Government of India.

#### **3.3 Duration of the Project**

For a period of five years from 2022-23 to 2026-27.

#### **3.4 Sunset Date of the Project**

Sunset date of the project will be 31 March 2027.

### **3.5 Type of Project**

Centrally Sponsored Project with one-time assistance from the GoI. Extant Centrally Sponsored Scheme (CSS) guidelines are applicable.

### **3.6 Project Beneficiaries**

63000 PACS, LAMPS etc. will benefit directly through computerization of their credit/ non-credit business activities related to Agriculture and Allied activities. (In North East and Tribal Areas of the country, due to thinly populated area, Large Area Multipurpose Societies (LAMPS) are prevalent which function more or less like PACS. Such LAMPS or any other societies similar to PACS will also be covered in this project within the proposed budget outlay).

### **3.7 Implementation Mechanism**

**3.7.1 Formation of Implementation and Monitoring Committees** National and State Level Implementation and Monitoring Committees shall be constituted as detailed hereunder for implementation of this project. These committees will ensure real-time monitoring and effective feed-back on the implementation of the scheme.

#### **i) National Level Monitoring and Implementation Committee(NLMIC):**

##### **a) Members of NLMIC:**

- i. Secretary (M/o Cooperation, GoI) (Chairman)
- ii. Additional Secretary & Financial Advisor (M/o Cooperation, GoI)
- iii. Joint Secretary (M/o Cooperation, GoI)
- iv. Chairman, NABARD
- v. Principal Secretaries (Cooperation ) of selected States
- vi. Representative of NITI Ayog
- vii. CEOs of selected State Cooperative Banks
- Deputy Managing Director (Institutional Development Department),NABARD -Member Secretary.

### **b) Role of NLMIC:**

- i. Guide and steer the implementation of the project.
- ii. Approve the guidelines for implementation of the project.
- iii. Review the progress of implementation of the project periodically.
- iv. To consider and authorize the appropriation of the funds from one component of the project to another within the overall budget outlay of the project, if required.
- v. Monitor functioning of central Project Monitoring Unit (PMU).
- vi. Act as final Grievance Redressal Authority for the project.

NABARD will be responsible for implementation of the project at the central level under the guidance and directions of NLMIC and Ministry of Cooperation, Government of India. It will establish a core team of its officers for this purpose which will be assisted by a Project Monitoring Unit (PMU) manned by professionals and experts. Further, NABARD will also act as a custodian on behalf of GoI of the common software and all the financial and personal data generated/ captured on the software. After completion of the project, NABARD will manage the system in coordination with the State Governments and will be responsible for its sustainability.

### **ii) State level Implementation & Monitoring Committee (SLIMC)**

#### **a) Members of SLIMC**

- i. Addl. Chief Secretary/Principal Secretary/ Secretary, Co-operation- Chairperson
- ii. Principal Secretary/Secretary (Finance) - Member
- iii. Registrar of Cooperative Societies (RCS) - Member
- iv. Chief General Manager (CGM)/ OIC, NABARD - Member
- v. Three DCCBs by rotation - Members
- vi. MD/CEO-State Cooperative Bank - Member Secretary

#### **b) Role of SLIMC**

- ❖ To implement the approved guidelines at the state level and provide feedback to NLMIC.

- ❖ To guide and steer the implementation of the project in the state.
- ❖ To examine and recommend the proposals to be taken up in this project.
- ❖ Any other role assigned to it by the NLMIC.

### **iii) District Level Implementation & Monitoring Committee (DLIMC)**

#### **a) Members of the DLIMC:**

- i. District Collector/District Magistrate - Chairperson
- ii. District Development Manager (DDM), NABARD - Member
- iii. Officials notified by the respective State/UT Governments – Members
- iv. MD, District Cooperative Bank/ Suitable official nominated by StCB (for states with 2 tier system)- Member Convener
- v. Representation of selected PACS – Members

#### **b) Role of DLIMC:**

- i. To be the first line of implementation and monitoring system within the overall framework.
- ii. It will be responsible for the smooth implementation of the project as per approved guidelines and provide necessary support like power, connectivity, etc.
- iii. Any other role assigned to it by the NLMIC/ SLIMC.

## **3.8 Project Cost, Sources of Funds & Funding Pattern**

### **3.8.1 Project Cost:**

The total cost of the project is estimated at ₹2516.00 crore to be shared as under:

<b>Agency</b>	<b>Cost share (₹Crore)</b>
Government of India (60.73%)	1528
State Govt. (29.25%)	736
NABARD (10.02%)	252
<b>Total</b>	<b>2516</b>

However, the exact cost of the project shall be finalised by NABARD following due procedure for procurement through open bidding as per the relevant procurement guidelines.

### 3.8.2 Component wise Cost Sharing Pattern:

Component	Cost Sharing pattern
Comprehensive software (including cyber security and data storage) and Training	To be shared by GoI and NABARD. NABARD will contribute ₹252.00 crore. (about 10% of the project cost) and the remaining will be borne by GoI.
Other Components (Hardware, Digitization and support system)	To be shared as per the extant guidelines of Centrally Sponsored Project. <ul style="list-style-type: none"> <li>• Share of <b>GOI: State</b> will be <b>60:40</b>.</li> <li>• For Northeastern and Hilly States share will be <b>90 (GoI):10(State)</b>.</li> <li>• For UTs (without legislature) <b>100%</b> by GoI.</li> <li>• For UTs (with legislature) share will be <b>80 (GoI):20(State)</b>.</li> </ul>
PMU and Administrative Cost	This cost will be borne by GoI upto ₹50.00 crore. Any additional expenditure beyond ₹50.00 crore, will be borne by NABARD.

### 3.8.3 Item wise cost estimate per PACS

The item-wise cost estimate per PACS is given as under:-

SN	Item	Amount (₹) per PACS
<b>A</b>	<b>Per PACS project cost</b>	
(i)	Hardware– Computer, Multi-functional Devices (MFD), UPS, webcam, bio-metric scanner, external HDD, including 5 years of AMC for hardware, tablet/mobile, passbook printer, electrical arrangements/power switches, etc.	1,22,158/-

(ii)	A comprehensive ERP solution covering Membership, financial services – deposits; lending including ST, MT and LT, procurement, processing units, PDS, Business planning, warehousing, merchandising, borrowings, asset management, human resource management, RuPay / KCC integrations, etc. with cyber security and data storage facility.	72,103/-
(iii)	Training	10,198/-
<b>SN</b>	<b>Item</b>	<b>Amount in ₹ per PACS</b>
(iv)	a. Implementation Services including data preparation, digitization, verification till final reconciliation and porting into the ERP solution for Operationalization (₹1,10,000/-) b. Maintenance and Handholding support (₹76,910/-)	1,86,910/-
<b>Total cost (per PACS)</b>		<b>₹3,91,369/-</b>

However, the exact item-wise cost per PACS shall be finalised by NABARD following due procedure for procurement through open bidding as per the relevant procurement guidelines.



### 3.8.4 Component wise Fund Flow Mechanism

The component wise Fund Flow mechanism of the project will be as under:

SI No	Component	Cost per PACS (in ₹)	Total cost (in ₹crore)	Source of funds	Release of Fund
1	Software with cyber security and data storage	72,103	454.24	Shared by GoI and NABARD. NABARD will contribute ₹252.00 crore. (about 10% of the project cost) and the remaining will be borne by GoI.	<ol style="list-style-type: none"> <li>GoI share towards the software with cyber security and data storage, will be passed on to NABARD.</li> <li>Vendor bills will be settled by NABARD as per provisions of the contract.</li> </ol>
2	Hardware	1,22,158	769.59	As per the extant guidelines of Centrally	<ol style="list-style-type: none"> <li>GoI share towards hardware will be passed to the State Government directly.</li> </ol>

Sl No	Component	Cost per PACS (in ₹)	Total cost (in ₹crore)	Source of funds	Release of Fund
				Sponsored Project. a. Share of <b>GOI: State</b> will be <b>60:40</b> . b. For North-eastern and Hilly States share will be <b>90 (GoI):10 (State)</b> .	2. State Government will put in place suitable mechanism for settling vendor bills. 3. The DLIMCs will review the acceptance challans signed by the respective PACS secretaries and resolve issues, if any.
3	Digitization	1,10,000	693	c. For UTs (without legislature) <b>100%</b> by GoI. d. For UTs (with legislature) share will be <b>80 (GoI): 20 (UT)</b> .	1. GoI share towards digitization will be passed on to the State Government directly. 2. State Government will put in place suitable mechanism for settling vendor bills. 3. The DLIMCs will review the certificate of completion of the respective stage signed by the respective PACS secretaries and resolve issues, if any.
4	Support System	76,910	484.53		1. GoI share towards support system will be passed on to the State Government directly by GoI. 2. State Government

Sl No	Component	Cost per PACS (in ₹)	Total cost (in ₹crore)	Source of funds	Release of Fund
					will put in place suitable mechanism for settling vendor bills on the basis of recommendation of SLIMC. 3. The DLIMCs will review the certificates of availability of the service, signed by the respective PACS secretaries and resolve issues, if any.
5	Training	10,198	64.24		1. GoI share towards support system will be passed on to NABARD directly. 2. NABARD will settle bills from the training institutions on the basis of documentation/ location/ number of trainees etc.
6	PMU and administration	7936.50	50	This cost will be borne by GoI upto ₹50.00 crore. Any additional expenditure beyond ₹50.00	Bills raised by state level PMUs in respect of contract staff and other incidental expenses etc. and the same for central PMU will be settled by NABARD and adjusted

Sl No	Component	Cost per PACS (in ₹)	Total cost (in ₹crore)	Source of funds	Release of Fund
				crore will be borne by NABARD.	against the GoI share upto a limit of ₹50.00crore. Salaries of regular staff of NABARD engaged in the PMU will not be booked under PMU expenses.
	<b>Total</b>		<b>2516</b> <b>(approx.)</b>		

### 3.9 Phasing of the project

Year		Total No. of PACS to be computerized	Maintenance and handholding support
Year I	2022-23	13,000	Handholding support of total 5 years from 2022-23 to 2026-27.
Year II	2023-24	20,000	
Year III	2024-25	30,000	
Year IV	2025-26		
Year V	2026-27		
<b>Total</b>		<b>63,000</b>	

### 3.10 Basic Architecture of the Project

**3.10.1** One common ERP software will be provided to all the PACS in the project, across the country, to capture data on all functionalities of PACS, both credit and non-credit. This software would be customisable for state specific needs. At the national level, NABARD will engage a vendor namely National Level PACS Software Vendor (NLPSV) to provide the common software including cyber security and data storage

through open bidding as per the relevant procurement guidelines.

**3.10.2** NABARD will prepare and publish a central panel of System Integrators (SIs) through open bidding. States are to select the SIs from this central panel with a ceiling on number of PACS that one SI can take up. SIs will supply hardware, prepare legacy data, digitise and port this data into software, recommend state specific customization required in the common software and provide the support system. In the project, there will also be a provision to run the software on offline mode and later upload the data in the system in case of network issue.

PACS in various states are at various levels of computerization. This means that some PACS have been computerised (mostly working on a stand-alone basis) while others are not computerised at all. In respect of PACS which have been computerised, expenditure will be reimbursed to States ₹50,000/- per PACS subject to the condition that,

(i) They integrate their software with the National PACS Software,

(ii) Their hardware meets the required specifications and

(iii) The computerization of PACS was commissioned by the state on or after 01 February 2017 i.e. the date of budget announcement by Central Government for computerization of PACS.

PACS which have not been computerised by such states will be taken up under this project at full cost.

For sustainability of the project, maintenance and handholding of the software and hardware is considered critical. For this purpose, the Project envisages a support system by setting up one support centre on an average at cluster of around 200 PACS/ District Level. These support centres, to be set up by the System Integrator(s), will report to State PMUs which will also serve as State level support centre. This entire support system will be under the overall supervision and control of the State Governments and will be operated by the concerned SI.

**3.10.3** The basic responsibility of training on use of software will lie with NLPSV. NLPSV will provide necessary inputs to state level SIs and National Level Training Institutions to facilitate creation of trainers at National and State Level. The trainers will be drawn from all training institutions in cooperative sector. After migration to

the software, employee(s) of the PACS will be given adequate trainings about functioning of the software and how to work on it. Hands on training will be given through National Council for Cooperative Training (NCCT)institutions and Scheme of Financial Assistance for Training of Cooperative Banks Personnel(SOFTCOB) assisted Institutions like Agricultural Cooperative Staff Training Institutes (ACSTIs) and other Cooperative Training Institutes under the administrative control of State Government. Expenditure on this

account will be shared by GoI and NABARD. A training calendar will be prepared by NABARD mapping every PACS under the project.

**3.10.4** For implementation and monitoring of the project, creation of a core team at NABARD, Head Office with the team members constituted from its officers has been envisaged. This core team will be assisted by Project Monitoring Unit (PMU) hired by NABARD for the project. NABARD may hire staff/ professional or technical experts for the PMU on contractual basis. Similarly, NABARD will set up state PMUs to assist states in implementation and monitoring of the project at state level, which will also function as the state level support centers. These State PMUs will also be manned by NABARD officials and contractual staff/ experts.

### **3.11 Data Management**

The data shall be housed at the National Level Data Repository (NLDR). Data generated at PACS would be routed, either through the DCCBs or State Data Centers, to the National Level Data Repository (NLDR). All data will be shared with/ deposited and maintained at NLDR, in conformity with the rules and regulations. Given availability of connectivity, all data will be available at NLDR level as at the end of the previous day.

The data will be maintained at NLDR and will be available for use by Central Government, State Government and other authorised stakeholders. The data will be utilized to generate various national/state/district level reports for Government of India, State Governments, NABARD, StCB, DCCB and other stakeholders, for the purpose of information based effective policy making.

### **3.12 Selection of PACS**

- All functional PACS will be eligible for joining the project. A PACS will be deemed functional if it fulfils the necessary condition i.e. completion of Audit of accounts of PACS for the financial year 2021-22. If the selection is being done in FY 2023-24 or FY 2024-25, then audit of the respective previous year will be the cut-off date for audit.
- For deciding upon the order in which the eligible PACS are to be taken up under the project, the following norm for prioritization will be followed:
  - PACS without computerization - priority
  - PACS with some computerization but needs upgradation - second priority
  - PACS with computerization achieved through State Govt./ StCBs/ DCCBs – Third Priority
- The DCCBs/ StCBs will make their selections, based on the allocation, also considering aspects such as prioritising backward areas and ensuring functional sustainability of the project.
- The selection will be recommended by the DLIMC to the SLIMC. After that, SLIMC will send their final proposal to NABARD for its implementation.

## **4 Project Monitoring Units (PMUs)/Support Teams**

### **4.1 Central PMU:**

#### **a. Roles and responsibilities of Central PMU**

Central PMU will:

- i. Be set up by NABARD and manned by Management & Technical Experts.
- ii. Finalize project design and implementation strategy.
- iii. Undertake stakeholder consultation with States, Central Government, RBI, Banks etc.
- iv. Finalize the requirement of hardware and functionalities of software for the project.
- v. Undertake bidding and short listing exercise as per the provisions of General

Financial Rules (GFR), 2017.

- vi. Provide technical support during and after the implementation of the proposed Project.
- vii. Guide the NLPSV regarding customization of the central software based on the state-wise feedback/needs.
- viii. Provide guidance to the state level PMUs.
- ix. Provide necessary inputs to the National Level Monitoring and Implementing Committee (NLMIC).
- x. Prepare necessary reports and dashboards (MIS etc.) for facilitating review at National/ State Level.
- xi. Ensure periodical reporting of the progress to the Government of India.
- xii. Provide guidance on the business aspects to the PACS as well as monitor the implementation carried out by the selected vendors.
- xiii. Undertake planning and execution of the training and capacity building at all levels.
- xiv. Ensure the preservation of the data and provide measures for data analysis & analytics.
- xv. Undertake all other matters necessary for the successful implementation of the project, duly consulting NABARD/GoI.

The team will be physically present at NABARD, HO and will be supported by the NLPSV, teams of data analysts, programmers, documentation specialists and other team members from respective locations.

#### **4.2 State PMUs:**

##### **a. Roles and responsibilities of State PMU**

PMUs at the State level will:

- i. Be manned by NABARD's officials and Management & Technical Experts.
- ii. Will function under the overall guidance of the Central PMU and report to State Secretary of Co-operation Department.



- iii. Provide management/ technical support during and after the implementation of the proposed Project.
- iv. Assist in identification of functional PACS for computerization in consultation with State Government within overall project guidelines.
- v. Be responsible for identifying the customization needs at the state level and report to the central PMU/SI.
- vi. Liaise with state level stakeholders.
- vii. Arranging for stakeholder capacity building at the state level.
- viii. Follow up with stakeholders for successful implementation at the state level.
- ix. Provide guidance on business aspects to the PACS as well as monitor the implementation carried out by the selected vendors.
- x. Prepare necessary reports (MIS etc.) for facilitating review at State Level.
- xi. Facilitate planning and successful execution of the training and capacity building at all State/ PACS level as advised by Central PMU.
- xii. Undertake all other matters necessary for the successful implementation of the project, duly consulting all the stakeholders.

### **4.3 Support Teams at District/Cluster levels**

There will be field level 'support teams', set up and maintained by System Integrator, at a cluster of about 200 PACS/ District Level, manned and assisted by persons with qualifications/ experience in installation of computers/ trouble shooting for hardware and software, field level on the job training etc. These support teams will continue to work throughout the project period. In the post project period, suitable pay for use models will be developed for sustained support for PACS. However, some states with much less number of PACS like states in the NER/Goa/ Andaman and Nicobar Islands, will have teams of smaller size.

## **5 Stakeholders**

### **5.1 Roles and responsibilities of various stakeholders of the project**

#### **5.1.1 Government of India:**

Government of India i.e. Ministry of Cooperation will be responsible for guiding the overall implementation and monitoring of the project through NLMIC.

**5.1.2 State Governments:**

- a. State Governments will be responsible for implementation and monitoring of the project in their respective states through the State level Implementation and Monitoring Committee (SLIMC) and District Level Implementation and Monitoring Committee (DLIMC).
- b. To hold meetings of the SLIMC regularly, record discussions and decisions, communicate the same to relevant stakeholders and follow up for action thereon.
- c. Ensure that list of PACS, to be taken up for computerization, is approved by the SLIMC, based on eligibility criteria.
- d. Ensure that District Level Implementation and Monitoring Committees (DLIMCs) are set up in the relevant districts with involvement of the DCCB and other stakeholders as indicated in the project guidelines and ensure regular meetings thereof.
- e. Where there are more than one DCCB working in a district, States through StCB to involve all DCCBs to act on behalf of their respective PACS.
- f. To coordinate with the NLMIC and also maintain/ share data on the progress of the project.
- g. Facilitate customization of the national level PACS Computerization Software (PCS) as per requirement of the PACS in the state including modules and MIS.
- h. Ensure that the System Integrator(s) (SI) is identified for the state through due process.
- i. Ensure data readiness and infrastructure preparedness of the PACS for migration.
- j. Enter into Service Level Agreement with SI, monitor their work and release funds to these agencies, based on the approved performance milestones.
- k. Ensure inflow of funds from GoI (through NABARD) for proper implementation of the project as also maintains necessary accounts.

### **5.1.3 NABARD:**

- a. NABARD will implement the project and act as project manager for the PACS Computerization Project at Central level under the guidance and directions of National Level Monitoring and Implementation Committee and Ministry of Cooperation.
- b. NABARD will establish a core team of its officers of this purpose which will be assisted by a Project Monitoring Unit (PMU) manned by professionals and experts at national and state level.

### **5.1.4 State Cooperative Bank:**

- a. Form a dedicated PACS Computerization Cell, equipped with IT trained manpower, within the Bank for this Project
- b. Act in capacity of Member Secretary of the State Level Implementation and Monitoring Committee (SLIMC).
- c. Play the role of coordinator between the DLIMC and SLIMC.
- d. Obtain authorisation from DCCBs and PACS for entering into agreements with SI or any other stakeholders on behalf of the DCCBs and PACS.
- e. Take any other action necessary for successful implementation of the project within the overall time frame of the project.

### **5.1.5 District Central Cooperative Banks:**

- a. Form a dedicated PACS computerization cell within the Bank for this project.
- b. Act in the capacity of Member Secretary of the District Level Monitoring and Implementation Committee (DLIMC). As Member Secretary of the DLIMC, convene meetings of the DLIMC, record discussions and decisions, communicate the same to relevant stakeholders and follow up for action thereon.
- c. Arrange to prepare list of eligible PACS as per approved eligibility criteria and prioritise the same as per the prioritisation norms, get it recommended by the DLIMC and refer to SLIMC for approval.
- d. Procure letters of authorization permitting StCB to enter into agreements on its behalf from each of the participating PACS and issue letter of authorization to StCB, based on the same.
- e. Ensure data readiness and infrastructure readiness of the PACS.

- f. Guide and monitor the progress of implementation of the project at the PACS.
- g. Ensure that implementation problems are resolved by the SI or escalated to the DLIMC/ SLIMC, as may be required.
- h. Put in place a mechanism to ensure that the data at End of Day (EoD) is sent to the Data Repository, after Go-live of the PACS.

**5.1.6 Primary Agricultural Credit Societies:**

- a. Check own eligibility as per norms.
- b. If eligible, then check priority status as per norms.
- c. If some criteria are not fulfilled, arrange to plug the gaps.
- d. Submit application to the DCCB/StCB (in case of states with 2 tier structure) for inclusion in the list of eligible PACS.
- e. Issue letter of authorisation to the StCB, through DCCB, authorising StCB to enter into agreements on its behalf for this project.
- f. Ensure onsite data readiness and infrastructure readiness.
- g. Maintain data on the progress of the project to be shared with DCCB. This involves issuance of installation certificate after the hardware is installed, AMC contract with SI for three years, signing the migration certificate after the data is migrated to the new software and other such milestones.
- h. Ensure regular use of the software after migration.
- i. Take full advantage of the handholding support provided under the project.
- j. Ensure regular transfer of data to the National Data Repository, if the PACS is working on offline mode.
- k. Ensure that sanctity of the IT environment is maintained by following steps as advised by the SI.
- l. Report problems in implementation to the DCCB, to be resolved either at DLIMC or escalated to SLIMC, as may be necessary.
- m. Liaise closely with SI for ensuring that all activities of the PACS and accounts are captured appropriately.

#### **5.1.7 National Level PACS Software Vendor (NLPSV):**

- a. Provide a national level PACS Computerization Software (PCS).
- b. Customize the software based on the requirement of each state.
- c. Facilitate the SIs, in deployment of the PACS software.
- d. Provide help desk support to PACS during the project period.
- e. Provide training solutions on the software to trainers under Training of Trainers (TOT) arrangement.

#### **5.1.8 National Level Data Repository Vendor (NLDRV):**

- a. Be responsible for national level data storage, security and data management.
- b. Generate reports required at
  - i. National Level
  - ii. State Level
  - iii. NABARD
  - iv. Other stakeholders as directed by GoI/NABARD/ State governments

#### **5.1.9 System Integrator (SI) state-wise:**

- a. Supply and install hardware, and provide AMC support for five years from the date of installation. Installation certificate to be obtained from the PACS. Install software prepared by NLPSV.
- b. Digitise existing manual/semi computerised/computerised data of PACS, including legacy data.
- c. Migrate PACS data to the new software and obtain migration certificate from the PACS / DCCB.
- d. Integrate the software installed at the PACS with the National Data Repository to ensure that the data is stored at the Data Repository
- e. Train DCCB personnel as Master Trainers and train PACS personnel on software usage and hardware maintenance.  
Handhold PACS, on dedicated basis for at least 2 weeks from the date of go-

live. Thereafter, provide handholding on cluster mode.

## **6 Legal Framework**

The project will adhere to the respective State Cooperative Acts under which the PACS are working. The implementation of the project shall be bound by the following agreements:

- (a) A Service Level Agreement (SLA) will be executed between NABARD and the National Level PACS Software Vendor (NLPSV) as also between NABARD and the National Level Data Repository Vendor (NLDRV).
- (b) A Service Level Agreement (SLA) will also be executed between StCBs/ DCCBs and the System Integrator(s) (SI).

## **7 Upkeep and maintenance of assets created**

**7.1** The software maintenance, in terms of upgrades/ antivirus and incorporation of new modules for new / innovative activities initiated by the PACS, as also maintenance of the data repository, will be done under contract given to vendors at NABARD level with NABARD as facilitator for initial five years.

**7.2** Maintenance of the hardware installed at PACS will be the responsibility of the respective PACS, DCCBs/ StCBs on an ongoing basis even after completion of the project period.

**7.3** The central infrastructure facility and common software will be maintained and updated by NABARD periodically. A suitable Pay per use arrangement will be finalised by NABARD in consultation with StCB/State Govt. for the period beyond the current project period of 5 years.

**7.4** This will be a periodic contractual exercise, which will be funded from contributions by various tiers of the system during and beyond the project period, as per the requirements.

**7.5** State Level support teams will continue to work under aegis of StCB and State Government and suitable pay per use models will be designed for financial closure for such continued functioning of support teams. NABARD shall guide and handhold the support teams / StCBs/ State Governments on an ongoing basis.

## **8 Deliverables of the Project**

### **8.1 Transparent and Complete accounting System**

Accounting as per CAS (Common Accounting System) & MIS (Management Information System) prescribed by NABARD – Origination of accounts on the basis of the member transactions and automation of all the businesses, their business processes and associated calculations for all financial transactions. In an ideal automated accounting system, every single entry, based on transaction of any nature, shall:

1. Enable automatic posting and recording in all relevant heads of accounts.
2. be in conformity with all pre-sets like rate of interest, period (including days) of interest applicability, etc.,
3. Appropriate amounts to various heads of accounts as per the prescribed priorities.
4. generate of accurate NPA, Interest subvention statements covering the State and Central components and other important & relevant disclosure statements.

### **8.2 Governance**

1. Alerts on the conduct of Board Meetings and General Body meetings.
2. Prompting on Agenda preparation.
3. Record Keeping of Board & General Body Meeting proceedings.
4. Real time information flow and access to all stakeholders.

### **8.3 Enablement**

- a. Optimal use of Infrastructure – currently substantial warehouse capacities are being created under Atmanirbhar Bharat program.
- b. Market connectivity – access to the agri-produce information of members can facilitate the institution for procurement, processing and marketing thereof resulting in better price realization to farmers.
- c. Providing multiple financial and non-financial products, citizen services etc.

## **9 Expected Outcomes of the Project:**

- i. PACS functions will be faster, transparent and accountable.

- ii. Migration of the legacy data.
- iii. Timely generation of MIS.
- iv. Improved facilities (credit & non- credit) to members at PACS level.
- v. Financial irregularities can be prevented on time.
- vi. Increase in work efficiency of the PACS staff.
- vii. Enhanced financial inclusion and business opportunities for the members

### **9.1 Statutory Audit**

An automated accounting and audit process delivers prompt and accurate audit statements leading to completion of audit within 2 to 3 days from the date of closure of financial accounts (31st March) – the current practice of manual accounting and preparation of audit statements often results in inaccuracies and delays in completing financial audits.

**9.2 Transparency in Operations and Productive Manpower Deployment** Further, automation of all the businesses and their business processes will lead to complete transparency and ease of use besides providing quality time for the PACS staff and administration to plan and undertake other profitable businesses and services.

### **9.3 Integration**

Seamless integration with all the relevant governmental agencies and departments and more specifically the higher financing agencies leading to better financial management and account reconciliations.

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