Decision-Oriented Information Systems for Farmers:

A Study of Kisan Call Centres (KCC), Kisan Knowledge Management System (KKMS), Farmers Portal, and M-Kisan Portal

Vasant P. Gandhi
Nicky Johnson

Centre for Management in Agriculture (CMA)
Indian Institute of Management Ahmedabad (IIMA)

Supported by
Ministry of Agriculture and Farmers Welfare, Government of India

September 2017

Decision-Oriented Information Systems for Farmers: A Study of Kisan Call Centres (KCC), Kisan Knowledge Management System (KKMS), Farmers Portal, and M-Kisan Portal

Vasant P. Gandhi
Nicky Johnson

Final Report

Centre for Management in Agriculture (CMA)
Indian Institute of Management Ahmedabad (IIMA)

Supported by Ministry of Agriculture and Farmers Welfare
Government of India

September 2017

Preface

The Centre for Management in Agriculture (CMA), Indian Institute of Management, Ahmedabad (IIMA) is actively engaged in applied research and education on important challenges in the current management of the food, agriculture, agribusiness and rural sectors of the Indian economy and the world. The Centre is supported by the Ministry of Agriculture & Farmers Welfare, Government of India, and advises the government on its important policies and schemes through its research. The topics of research include the delivery of agricultural inputs & technologies, agro-processing, agri-food marketing, rural infrastructure, rural institutions, new technologies and services for agriculture, international trade, WTO, commodity markets, food supermarkets and value chains, food safety, organic food, farmer producer companies, and more.

The Kisan Call Centres (KCC) (Farmer Call Centres) were launched in 2004 by the Government of India as an innovative and modern national scheme for expeditiously delivering extension information and support to the farmers, using the vast telecommunication network which has developed substantially. It helps overcome the handicaps of the traditional personal extension system which was often proved inadequate in meeting the urgent demands and queries for the latest information by the farmers. The study has examined the design, implementation and performance of the KCCs in the context of a decision oriented information system for farmers, and examins the related portals of Kisan Knowledge Management System (KKMS), Farmers Portal, and M-Kisan Portal. The study was coordinated and implemented by the Centre for Management in Agriculture (CMA), IIM Ahmedabad, in cooperation with five Agro-Economic Research Centres/Units (AERCs) including Ludhiana-Punjab, Ahmedabad-Gujarat, Pune-Maharashtra, Bangalore-Karnataka, and Jorhat-Assam. The KCCs sampled, covered 18 different states/ territories in the country with operation in 14 different languages.

The authors wish to thank all the Heads and staff of the AERCs involved, as well as the respective KCCs, the Ministry of Agriculture and Farmers Welfare, and all the respondents for their help and cooperation. We hope the study will be found useful by policymakers, administrators, service providers, researchers, and those seeking to bring new innovations and services for enhancing the performance of the agriculture sector, the rural economy and the welfare of farmers.

September 2017
Centre for Management in Agriculture (CMA)
IIM, Ahmedabad

Vasant P. Gandhi
Nicky Johnson

Contents

List of Tables

Chapter 1: Introduction

Chapter 2: Data: Kisan Call Centre & Farmer Tele Advisor Survey & Profile

Chapter 3: Examination of the Call Information Recorded in the KCC-KKMS System

Chapter 4: Results: Centre Study

Chapter 5: Results: Farm Tele Advisors (FTA) Survey

Chapter 6: Results: Farmers' Survey

List of Figures

List of Abbreviations

AERC	Agro Economics Research Centres
AO	Avaaj Otalo
CMA	Centre for Management in Agriculture
CSC	Common Service Centres
DAC&FW	Department of Agriculture Cooperation & Farmers Welfare
DLDO	District Level Designated Officers
FTA	Farm Tele Advisor
ICT	Information & Communication Technology
IT	Information Technology
IVRS	Interactive Voice Response System
KCC	Kisan Call Centre
KCC	Kisan Credit Card
KKMS	Kisan Knowledge Management System
KVK	Krishi Vigyan Kendra
NeGP-A	National e-Governance Plan- Agriculture
SAU	State Agriculture Universities
SLDO	State Level Designated Officers
USSD	Unstructured Supplementary Service Data

Executive Summary

Introduction

- The Kisan Call Centres (KCC) (Farmer Call Centres) scheme has been launched as an innovative and modern scheme of the government for expeditiously delivering extension information and support to the farmers, using the vast telecommunication network which has grown remarkably. It helps overcome the handicaps of the traditional personal extension system which is often inadequate in meeting the pressing queries and demands for the latest information from the farmers. The KCC scheme was launched by the Ministry of Agriculture & Farmers Welfare, Government of India in 2004. The study has examined the design, implementation and performance of the KCCs, and also observed the related systems of Kisan Knowledge Management System (KKMS), Farmers Portal, and M-Kisan Portal.

- To make correct decisions on various critical matters, farmers frequently need information and advice on many different technical and economic aspects. The information helps them to make correct decisions on matters such as the right crop & variety to plant, the correct inputs to apply to solve problems, and the right practices to follow so as to manage their farms successfully and achieve the best productivity and returns. Inadequate and imperfect information leads to poor decisions, poor farm performance, and in the worst cases even to crop failures and suicides. Systems to provide good & up to date information and knowledge to the farmers are therefore extremely crucial for their productivity & livelihoods as well as the performance of the agriculture sector.

- The modern management approach to designing a good information system focuses on the main decision-making needs of the firm or managers. The approach first identifies the key decision-making needs for best achieving the objectives of the firm. Then, in order to make these key decisions well, it identifies what key information that will be required. This includes not only “what”, but also “when”, “where” and “who” of the information. Then, squarely based on this examination, a tailor-made information system is designed and implemented, which would most effectively and directly provide the information when and where it is needed. The result is an information system which directly leads to better decision-making and performance.

Method & Coverage

- The study was designed & implemented by the Centre for Management in Agriculture (CMA), IIM Ahmedabad, in cooperation with the state Agro-Economic Research Centres

(AERCs) involved. Based on multiple criteria, the following 5 KCC units were selected for study: Chandigarh Punjab, Ahmedabad-Gujarat, Pune-Maharashtra, Bangalore-Karnataka, and Guwahati-Assam. The 5 KCCs covered 18 different states/ territories with operation in 14 different languages. For a comprehensive study, three different levels were investigated: the Kisan Call Centres (KCC) - 5, the Farm Tele Advisors (FTAs) - 140 FTAs, out of a total of 210 FTAs, and Farmers – 561 farmers, including 458 users and 103 non-users.

KCC National Call Data

- The Kisan Knowledge Management System (KKMS) database at the national level records the broad information on the calls received by all the KCCs in the country. Examination of this data indicates that over 61 lakh live calls were recorded during 2016-17. This amounts to over 16,000 calls per day indicating the large response to the KCCs. The highest number of calls were received from Uttar Pradesh, followed by Maharashtra. Among the sample states, Maharashtra had the highest number followed by Karnataka, Punjab, Gujarat and Assam. If the IVR (recorded) calls are added, the number rises to 80 lakh calls in 2016-17 or about 22,000 calls per day, a huge number. Among the crop subjects for calling, Rice had the highest share followed by Cotton, and Wheat. Among the reasons for calling, the highest number of calls were for weather information, followed by plant protection, government schemes, market information, fertilizers, and variety choice. This indicates a diversity of topics, with weather, plant protection and government schemes as important ones.

KCC Centre & Supervisor Survey

- Centre Supervisors head the KCCs and their responses indicate that each sample KCC covers at least 2 states/UTs, with Guwahati KCC covering 7 in the north-east. The KCCs can communicate in all the local languages. Over the years after being launched in 2004, the KCCs have undergone significant improvement and change, particularly since 2012 when outsourcing was done to IFFCO. Comparing the past KCCs to the present, all the KCC Supervisors agree or strongly agree that the changes have brought about better hardware, better software, better connectivity, better database and better ability to respond to farmers' calls. All the KCCs are now equipped with integrated hardware of personal computers, headphones, and printers/ scanners. Whereas Gujarat, Maharashtra and Punjab have all-in-one desktops of Windows i5 or i3 type, Karnataka and Assam report HP or Compaq computers. The call handling softwares are identified as Agent Openscape Contact Centre, Openscape Desktop and Real Time Viewer. The performance of the hardware and software is reported to be good

by the KCC Supervisors but the internet connectivity is not satisfactory, and there is dissatisfaction regarding infrastructure, service support, and the systems and policies. The KCC Supervisors, report that daily a large number of calls are received and handled efficiently at the KCCs, and the communication between the FTAs and farmers is good. Some problems are reported regarding the availability of the necessary information on time, and with the farmers understanding and satisfaction with the information. But the usefulness of KCCs is reported to be good to excellent and all KCC supervisors indicate that the KCCs should continue.

Farm Tele Advisors (FTA) Survey

- The Farm Tele Advisors (FTAs) are the ones who actually receive and respond to the calls of the farmers and therefore, their responses are from direct experience and are important. A total 140 Farm Tele Advisors (FTAs) out of 210 FTAs in the 5 Centres were surveyed. All the FTAs were graduates, with 83 percent from B.Sc. Agriculture background, indicating that they are appropriately qualified. Regarding the hardware, about 70 percent of the FTAs find the hardware adequate and working well, but many report problems of breakdown and the headsets not comfortable. Regarding the software, about 65 percent indicate that the software is up to date, fast and user-friendly, but over 50 percent report voice quality problems, and problems of call drop, lost or mishandled calls and inability to block of irrelevant calls. Regarding the knowledge sources used by FTAs to answer farmer's questions, the most frequently used is self-knowledge used by over 90 percent, followed by internet search by over 60 percent, jointly prepared excel sheets and materials by 58 percent, and help of colleagues and supervisors by 50 percent. A majority of FTAs indicate the inadequacy of extension booklets and government department sources and materials, and a very large number report the inadequacy in the response of university experts, and nodal officers.

- Regarding the websites, the KKMS website is used almost all the time by the FTAs, and is reported to be easy to use, clear and well organized. However, its response is often slow and the information often not up to date. The Farmers' Portal website is found easy to use and clear but has problems of failing/ crashing, information not up to date, and is not frequently used. The M-Kisan website is found to work well, but it is not convenient and very useful and it is not frequently used. The FTAs find the KCC office space largely adequate, but many don't find the work environment very satisfactory and see scope for improvement. Regarding the training programs, their main contributions reported by FTAs are in understanding farmers questions, how to handle them, and in obtaining some of the necessary information, but they are inadequate in covering hardware and software operation, and the knowledge

of government schemes. The FTAs indicate a substantial need for more, better and regular training.

- FTAs indicate that it is not difficult to understand the farmers, and farmers don't have difficulty in understanding them, but farmers have difficulty in understanding scientific and technical terms. FTAs face considerable problem of irrelevant calls and abusive language. Regarding the call answering system, the FTAs report that they generally handle and answer most questions themselves, and else with help of colleagues and supervisors. Escalation to Level 2 is not working well and these calls are not speedily or well attended to by the state agriculture experts. The escalation to Level 3, fares even worse as nodal officers do not often attend even through SMS or other means. Regarding the information available, about 55 percent FTAs report that adequate information is available at KCC, but the rest see scope for improvement. For technical questions, over 60 percent think that the answers given are adequate, and so also for weather and general information. However, on government schemes and market-related queries, the information provided is considered inadequate by a large majority. Regarding the systems and policies under which the KCC is working, there is substantial dissatisfaction with nearly 75 percent putting it in the range of poor to satisfactory. However, over 80 percent indicate the usefulness of the KCC to the farmers as good to excellent, and almost all believe that the KCC scheme should continue for the benefit of the farmers.

Farmers' Survey Findings

- A sample of 561 farmers including 458 KCC user and 103 non-user were surveyed in the study across the 5 sample states. The users were found to be somewhat more educated and somewhat younger than nonusers, though many illiterate and older farmers were also using the KCCs. Comparing different sources of information used based on the user sample, the results indicate that KCCs are now frequently or very frequently used by 66.38 percent of the farmer users, which exceeds even the usual major source of fellow farmers which is at 61.54 percent. This is followed after a large margin by extension workers at 42.76 percent and input dealers at 33.57 percent. The rest of the sources such as Kisan Melas/ Summits, Krishi Vigyan Kendras (KVKs), and agricultural universities or their materials stand considerably below this. The results indicate that KCCs have risen to become a very prominent and most used source of information by farmers. In terms of the quality/ usefulness of the information the highest average score is obtained by fellow farmers at 3.54 out of 5, but the KCCs follow closely at 3.51. 55.01 percent rate fellow farmer as good to excellent source of information, but followed closely by KCCs at 50.22 percent, and this is considerably

higher than all other sources such as extension workers, input dealers, KVKs, universities, or other call centres.

- Results show that on an average a user made 35.1 calls per year to the KCC, which is about 3 calls per month. The results indicate that the average waiting time was 2.4 minutes, percent calls not answered 7.9 percent, calls dropped 8.8 percent, and calls where no proper answer was given 9.7 percent. The users report that 75 percent of the calls were effectively answered - indicating that there is scope for improvement. 78 percent of the user's find the KCC toll free number easy to reach and 60 percent find the waiting time not too long. Over 70 percent report that the FTAs understand the questions or problems easily and provide answers in a clear and understandable way. However, when it comes to the usefulness of the answer and solving the problem, the percentage drops to 57 percent.

- On technical information, 85 percent farmers indicate that this information is easily available from KCCs, but only 65 percent find it reliable and useful, 60 percent find it up to date, and only 55 percent report that it improves the profit or performance – overall satisfaction reported 67 percent. On weather, 85 percent indicate that the information is available easily, but only 55 percent find it reliable, helpful and up to date, and only 40 percent say it improves profit or performance - overall satisfaction 59 percent. With respect to prices and market information only 40 percent are satisfied, and only 33 percent indicates that it improves performance or profit. On government schemes, only 28 percent are satisfied, and only 20 percent indicate that it improves performance or profits. Thus, there is considerable scope for improvement in the content and quality of the information provided through KCCs.

- In the overall assessment, the majority of farmer users report the performance of KCC to be good. Nearly 60 percent find the call response efficiency to be good to excellent, and on quality of the information, 54 percent consider it to be good (Fig. 5). About 90 percent of the farmers – a huge majority, find the KCCs useful, and despite some weaknesses, they definitely want the Kisan Call Centres (KCCs) to continue.

Recommendations

- In a short span of years, the KCCs have become the most frequently used source of information by the farmer users, even exceeding, fellow farmers and all other sources of information including extension workers, dealers, KVKs and universities. This is a significant achievement. The KCC system is receiving a huge amount of call traffic from the farmers of about 22,000 calls per day. 99 percent of the farmer users want the KCC scheme to continue.

- For further enhancing the use of the KCC system, strong publicity to the farming community should be done especially in low use states - to increase awareness about KCCs, how they can help, and how to reach them, so that the user base and the call frequency can be greatly increased.
- There is great need to regularly monitor the call efficiency statistics of the KCCs and seek to reduce the waiting time, the calls not answered, the call drops, and to increase the percentage of calls effectively answered.
- The latest hardware and software for call handling & filtering and excellent internet connectivity is a must for the FTAs and should enable the use of photographs, useful Apps and other means of communication between the farmers and FTAs. There is also a significant need to improve the functioning of the supporting websites including the KKMS, Farmers Portal and the m-Kisan Portal.
- There are substantial inadequacies in the quality of information provided by the KCCs. The information base available with the KCCs/ FTAs to answer farmers' questions needs to be hugely improved – without this, the system will not be very useful and will not have much impact. The information needs to be made comprehensive, extensive and up to date and put into a quick access digital database system. A special Unit should be setup to build and maintain such a database.
- Escalation of questions to higher levels is not working in most KCCs. A special in-house Unit of experts should be setup in each KCC to continuously access, compile, and update the required knowledge base and provide it to the FTAs. The unit could consist of qualified experts or even of qualified or experienced FTAs who are dedicated to this task. They should create, build and maintain the quick access digital database for the FTAs mentioned above.
- Weather information is a major reason for calling and should be substantially strengthened and kept up to date. The information on government schemes is another major reason for calling and needs considerable strengthening. Besides, market/ price and technical information needs substantial improvement.
- Frequent and good training programmes for the FTAs are a must to regularly enhance their skills and knowledge include in system operation, and new/ better sources of information, and updating of information including on government schemes.
- Given the availability of good long-distance telecommunication technology and its growing reach, having a larger number of Centres may not be necessary – a limited number of well manned, well equipped and high expertise Centres may be better than

many thinly or poorly manned Centres. There may not be a need for highly local Centres – in fact, larger aggregate Centres would better be able to share knowledge & solutions across areas/ regions.

- The FTAs play the most important role in the KCC system and need to be well compensated and supported. There is need to provide good office infrastructure facilities and create a good working environment for them, and the terms and compensation of FTAs need to be enhanced to attract the best talent, motivate them, get the good performance, and retain them. They play the most important role in helping the farmers and delivering the KCC service.

Chapter 1

Introduction and Background

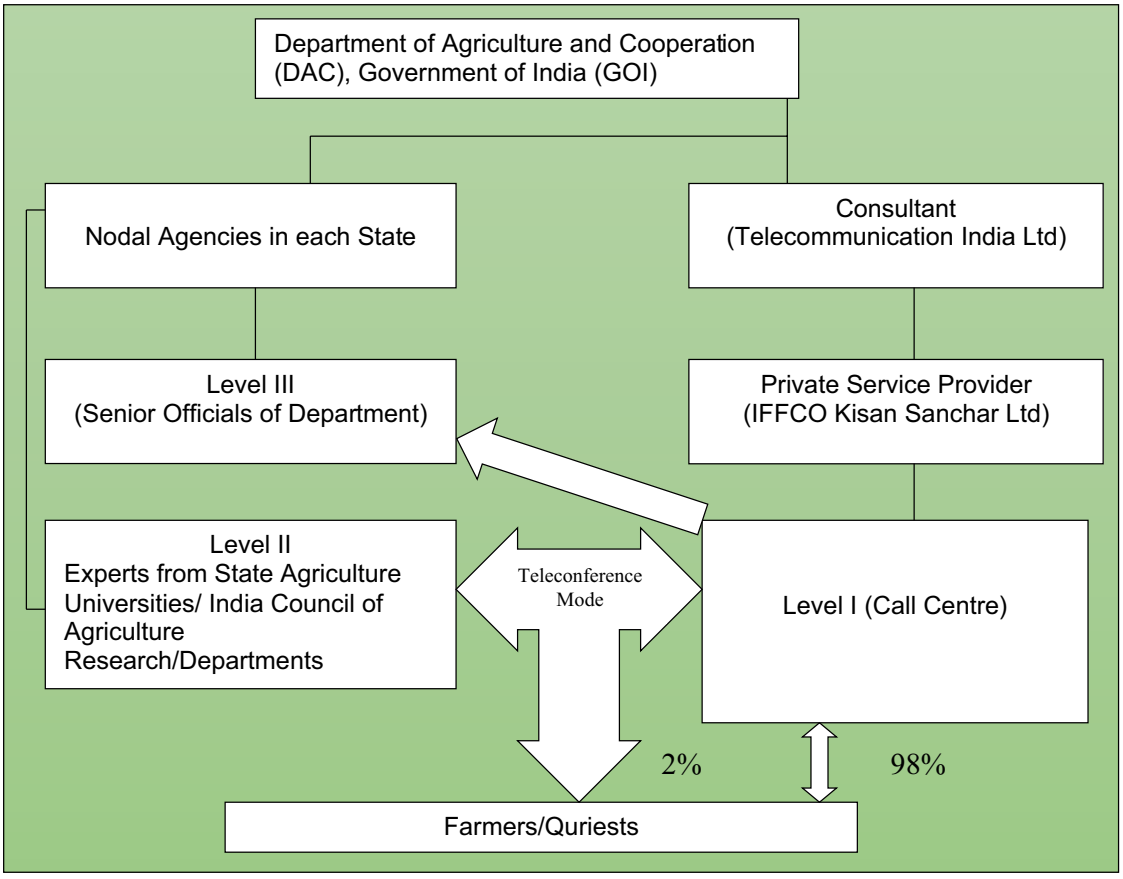
The Department of Agriculture & Cooperation, Ministry of Agriculture, Govt. of India launched *Kisan Call Centres* in 2004 with the objective of better delivering the extension information and services to the farming community by leveraging the extensive telecommunication infrastructure in the country. The role of these Kisan Call Centres (KCCs) is to respond on the spot to questions related to agriculture asked by farmers, in the local language and on a continuous basis. The aim was to serve the farmers in the entire country, in all the major languages through a network of Call Centres with information and advice related to agriculture. A toll-free number 1551 was designated for this.

In the planned structure, see Figure 1.1, the farmer reaches a farm tele advisor (FTA) in the KCC, typically an agriculture graduate or knowledgeable person, who would be able to respond to their queries and problems. In case the respondent at this Level-I is not able to satisfy the farmer, the call is taken on a conference to an expert at Level-II sitting in a specified place in the State in an institution for giving advice. It is envisaged that in the event where the farmer is not fully satisfied, his problems would be recorded, solved at Level-III at the highest level at the Nodal centre and he may get further advice through post or by the visit of extension worker. The services is to be made available round the clock. While during the working hours there would be an immediate response, but beyond working hours and on holidays, the call would be recorded and the queries answered later or by post. The network was launched and made available from 21st January 2004 throughout the country.

It has been reported that about 144 Call Farm Tele Advisors (FTA) are engaged in 25 KCCs for answering farmers' queries in 22 local dialects from 6 am to 10 pm on all 7 days a week.

All KCC locations are accessible nationwide by dialling a single toll-free number 1551, and 1800-180-1551 (from 13th Feb. 2009). The numbers are accessible through landline and mobile phones of any service provider. The reply is given in the local language. The service is available from 6 am to 10 pm i.e. 16 hours a day. It is open 7 days a week 365 days a year. The purpose of this study is to provide an in-depth evaluation of this system and its experience, examining the structure, benefits, problems and identifying recommendations for the future.

Figure 1.1: Kisan Call Centre (KCC): Overall Flow Chart



Source: *Kisan Call Centre: Overall Flow Chart* [ONLINE]. Available at: www.mkisan.gov.in [Accessed 1 March 2016].

The Need for a Strong Information System for the Farmers

To manage their farms successfully in the world today, farmers frequently need information on a substantial number of technical, operational and economic matters. The information helps them to make correct decisions on various critical matters such as what crop to plant, the variety to use, the inputs to apply, and practices to follow, including how, how much and when, for the best productivity and returns. With rapid development and scientific progress, the number of choices available and the knowledge-base of agriculture has

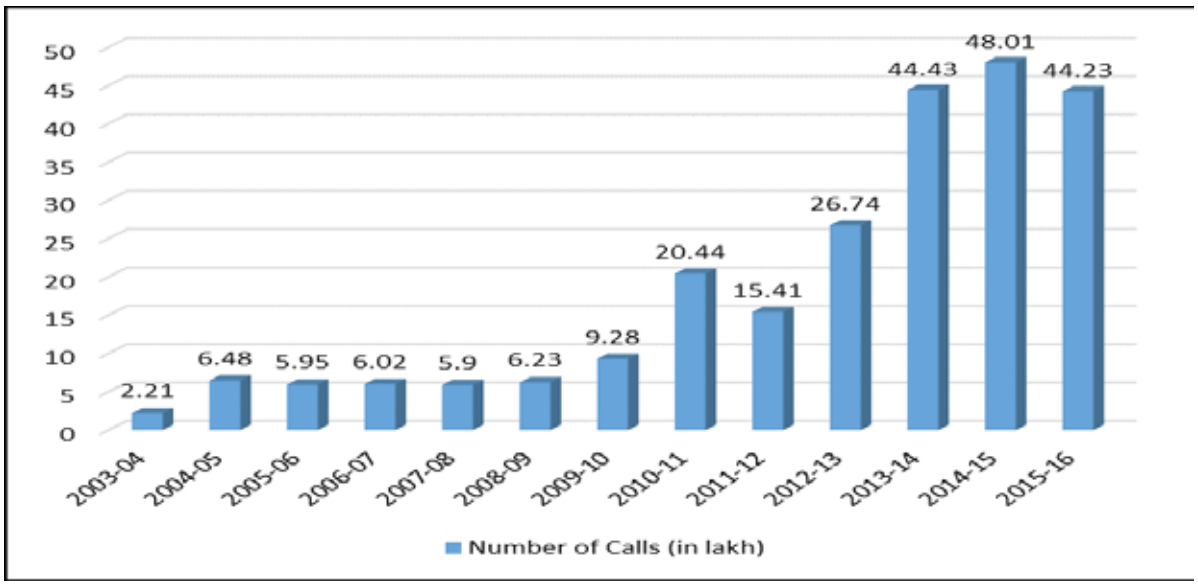
expanded tremendously, making decision-making more complex and difficult. Further, market liberalization, globalization and climate change are resulting in growing variability/ volatility including in the agro-climatic environment and the markets, thereby substantially increasing the risks and making the consequences of wrong decisions more severe.

Farmers' livelihoods depend substantially on the decisions they make and therefore on the information available to them. The extension system which was supposed to play a leading role in informing and advising the farmers is under severe stress due to inadequacies of funds, personnel and design, and are frequently unable to perform. Thus, farmers are often poorly uninformed and the latest information and advice is not available to them. Deciding on hearsay information and input dealer advice often leads to imperfect decisions, poor crop performance, and even crop failure and suicides. Systems to provide best information and knowledge are therefore extremely crucial for the farmers as well as the agriculture sector and the economy as a whole. In this context, the recent developments in information and communication technology offer a great new way and opportunity and have been harnessed by the Government of India into the initiative of Kisan Call Centres (KCC), and related systems of Kisan Knowledge Management System (KKMS), Farmers Portal, and M-Kisan Portal. These have gradually grown into action since 2004. The present study seeks to examine the structure, implementation and performance of these systems.

Kisan Call Centres – Operation and Features

The Kisan Call Centres (KCC) started functioning from Jan 2004, with a common toll-free number 1551, and later 1800-180-1551 from Feb 2009. Recent reports indicate that 144 call centre agents were engaged in 25 KCCs answering queries in 22 different dialects from 6 A.M. to 10 A.M on all 7 days a week. The objective has been to provide the desired information free of cost to the farmers. Figure 1.2 shows trend in year wise number of calls handled since inception. Table 1.1 provides information on the number of KCC calls recorded across the states in 2014-15, as wells the rural population, and number calls per lakh of rural population. They show that there was not much change in the number of calls between 2004/05 and 2008/09 but then there have been substantial increases in 2009/10 and 2010/11, and again a substantial jump in 2013/14. A major restructuring, have been done in KCC after 2012-13. Contract was given to IFFCO-IKSL to manage KCC. The highest number of calls are seen among states such as UP, Maharashtra and Madhya Pradesh, and the lowest in the states such as Assam, Meghalaya, and Kerala. The highest number of calls per lakh of rural population in the larger states is seen among states such as Punjab, Haryana and Maharashtra, and among the lowest in states such as Assam, Bihar and many north-eastern states. Gujarat and Karnataka fall in the medium range both in the number of calls as well as the calls per lakh rural population.

Figure 1.2: Year wise Number of Calls received by KCC since inception (Jan 2004 to March 2016)



Source: Based on www.mkisan.gov.in

Table 1.1: State-wise Number of Calls Registered under Kisan Call Centres (KCCs) and Kisan Knowledge Management System (KKMS) in India in 2014-15

Sr. No.	States/UTs	KCC Calls Registered	Rural Population	Calls per Lakh Rural Population
		2014-15	'000	2014-15
1.	Andaman and Nicobar Islands	40	244	16
2.	Andhra Pradesh	223929	56312	398
3.	Arunachal Pradesh	459	1069	43
4.	Assam	43204	26781	161
5.	Bihar	138198	92075	150
6.	Chhattisgarh	61378	19604	313
7.	Dadra and Nagar Haveli	9	183	5
8.	Delhi	33139	419	7903
9.	Goa, Daman and Diu	109	612	18
10.	Gujarat	245713	34671	709
11.	Haryana	240654	16531	1456
12.	Himachal Pradesh	75298	6168	1221
13.	Jammu and Kashmir	108654	9135	1189
14.	Jharkhand	41571	25037	166
15.	Karnataka	249976	37553	666
16.	Kerala	28181	17456	161

Sr. No.	States/UTs	KCC Calls Registered	Rural Population	Calls per Lakh Rural Population
		2014-15	'000	2014-15
17.	Lakshadweep	11	14	78
18.	Madhya Pradesh	417643	52538	795
19.	Maharashtra	598443	61545	972
20.	Manipur	1762	1900	93
21.	Meghalaya	791	2369	33
22.	Mizoram	364	529	69
23.	Nagaland	345	1407	25
24.	Odisha	252649	34951	723
25.	Punjab	287731	17317	1662
26.	Rajasthan	408322	51540	792
27.	Sikkim	2667	456	585
28.	Tamil Nadu and Puducherry	222972	37584	593
29.	Tripura	4418	2710	163
30.	Uttar Pradesh	753842	155111	486
31.	Uttarakhand	46132	7026	657
33.	West Bengal	306992	62214	493
	India	4795596	833088	576

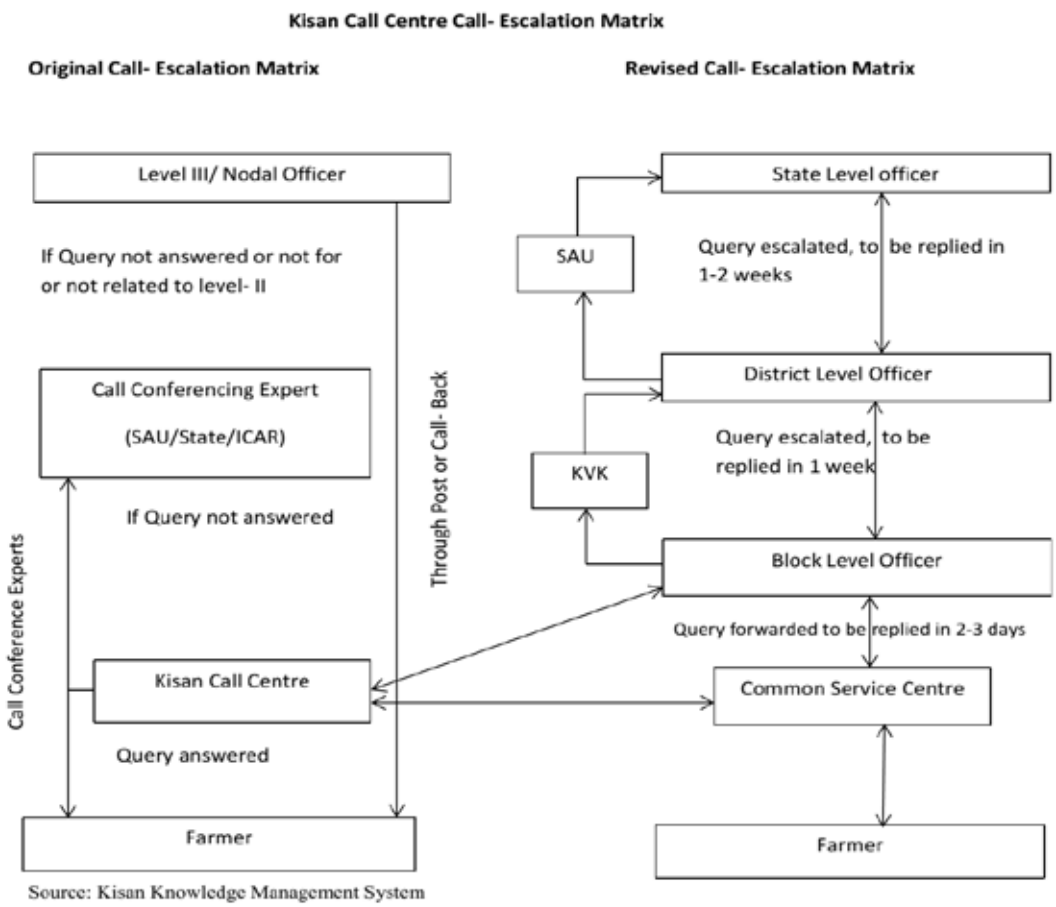
Source: Based on www.mkisan.gov.in, and Ministry of Agriculture 2014

The original design and the restructured design for processing of calls is described in the flow chart in Figure 3 below. In the original design, as described above, the farmer reached a call centre person (usually an agriculture graduate or expert) who responds to his/her queries and problems. If the respondent at this Level-I is not able to satisfactorily answer, the call may be taken on a conference call with an expert at Level-II in an institution in the state for handling and giving advice. Even then if the farmer is not fully satisfied, the problems is recorded and then addressed at Level-III, the highest level called the Nodal Centre and further advice is given through post or by visit of an extension worker. The service is available round the clock. During the working hours there is immediate response, but after working hours and on holidays, the call is recorded and the queries answered later or by post. (Presently, KCC runs even on holidays).

However, the call escalation process has been restructured from April 2011, and it now said to involve (i) the State Agriculture Department from the block level to the state level, (ii) State Agriculture Universities (SAU), and (iii) Krishi Vigyan Kendras (KVK). When the KCC agent is not able to answer farmer's question, then experts from these organizations are

connected through conference call. Involvement of Common Service Centres (CSCs) and other stakeholders is also envisaged. In the revised plan, since Level II of the escalation after KCC is at the block Level, it is necessary to have at least one expert on each speciality/sector in every block. Decentralization to the block and district level is required through identifying one officer in each sector at the district and block levels. The District Level Designated Officers (DLDOs) in every district needs to be enabled by State Level Designated Officers (SLDOs). The farmers can also visit the Common Service Centre (CSC) to get the answer to their queries. The CSCs may either answer the query by accessing relevant websites or escalate the query to higher levels as in case of KCC. The CSCs can also upload photographs along with description of the problem if the farmer comes with specimens of affected crops. A login interface is provided under the KCC Portal (www.dackkms.gov.in). Queries registered at the CSCs go through the same escalation matrix. The database of farmers' queries made at CSCs are also be available at KCCs and vice versa. Thus, a KCC agent can convey solutions to a CSC query by making an outbound call to the farmer. Figure 1.3 provides an outline of the original and revised KCC-KKMS system.

Figure 1.3: Original and Revised KCC matrix



Source: *Original and Revised KCC matrix* [ONLINE]. Available at: www.mkisan.gov.in [Accessed 1 March 2016].

Kisan Knowledge Management System (KKMS)

Kisan Knowledge Management Systems (KKMS) is the web portal system- application software which records detail of the registered farmer, the queries of farmer, and answers provided to them. The KCC agents or Customer Care Agents (CCA) can access KKMS over the internet, to find answers to queries from farmers. Available data in KKMS can help to identify and respond to the problems with solutions. Analysis of the KKMS data can help see the patterns and trends in the queries and responses. The data recorded in the KKMS has details available by states, districts, sectors, crops and topics.

Farmer's Portal - One Stop Shop for Farmers

A centralised knowledge base was first created purely from the farmers' perspective and was termed Farmers' Portal (www.farmer.gov.in) (in Beta version). Though over 800 websites of various central and state governments departments and organisations and 80 applications/portals existed, there was no one portal for the farmers. That was the genesis of the Farmers' Portal. The Farmers' Portal is an endeavour in this direction to create one stop shop for meeting all informational needs relating to agriculture, animal husbandry and fisheries sectors of an Indian farmer. With this the Indian farmer will not have to sift through maze of websites. Once in the Farmers' Portal, a farmer will be able to get all relevant information on specific subjects around his village/block /district or state enabled through a map of India placed on the home page. This information can also be delivered in the form of text, SMS, email and audio/video in the language he or she understands. Farmers can also ask specific queries as well as give valuable feedback through the feedback module. Considering popularity of the Farmers' Portal (of which SMS Portal is an integral part), as reflected in the tens of thousands of hits being received by SMS Portal everyday by the user department / organisations as well as farmers & other stakeholders, a new third level domain has now been created for all mobile based services for farmers on a unified portal which is www.mkisan.gov.in.

M-Kisan Portal - Mobile based Service for Farmers

As part of agricultural extension under the National e-Governance Plan - Agriculture (NeGP-A), various modes of delivery of services have been envisaged. These include internet, touch screen kiosks, agri-clinics, private kiosks, mass media, Common Service Centres, Kisan Call Centres, and integrated platforms in the departmental offices coupled with physical outreach of extension personnel equipped with pico-projectors and hand held devices. However, mobile telephony (with or without internet) can be the most potent tool of agricultural extension. As per TRAI data (May 2014), though there are about 38 crore mobile telephone connections in rural areas, internet penetration in the countryside is still

extremely low - in single digit percentage. This makes mobile messaging a more effective tool to reach the 8.93 crore farm families. The m-Kisan SMS Portal was inaugurated on July 16, 2013, and since its inception nearly 92 billion SMSs have been sent by scientists, experts and officers to farmers by 2015. The mKisan SMS Portal enables all central and state government organizations in agriculture and allied sectors to give information and advisories to farmers.

Almost every government department, office and organisation from the ministry headquarters to the block level has been authorised to use this portal to provide information to farmers on a vast gamut of issues. Further, USSD (Unstructured Supplementary Service Data), IVRS (Interactive Voice Response System) and Pull SMS are included as value-added services which enable farmers to receive messages and also get web based services on their mobile without having internet. Semi-literate and illiterate farmers can be reached by voice messages. The messages can be specific to farmers' needs and often generate heavy inflow of calls in the Kisan Call Centres where people can get supplementary information. A key objective is to make SMS and other mobile based services a tool of 2-way communication in which information/advisory services are provided as per needs in a broadcast mode and farmer can also raise specific queries through KCC, Pull SMS or USSD.

Review of the Literature on IT Based Information Systems for Farmers

Cole and Fernando (2012) conducted a study on the impact of phone based agriculture extension services on productivity. This included a mobile based agriculture consulting service, Avaaj Otalo (AO), for cotton farmers in Gujarat, and the influence on decisions related to pesticide usage, investment, crop choice, and agricultural knowledge were examined. The study found substantial information inefficiencies and great demand for agricultural information. It found that AO resulted in farmers purchasing and applying more effective pesticides such as imidacloprid to treat sucking pests. However, some farmers continued to rely on local information from fellow farmers. Sharma, Singh and Sharma (2011) conducted a study on the role of Kisan Call Centres (KCC), examining the coverage and effectiveness of KCC in solving the problems of famers in Himachal Pradesh covering the crops apple and tomato in high-hills and mid-hills. The farmers who used KCC grew their crops more scientifically and were found to have higher yields than those not availing the facility of KCC. Kant and Pandey (2015), in a study of KCC calls in Madhya Pradesh finds that according to the data, farmers face huge pest problems with kharif crops in the month of September and least in January.Most studies are state based and do into take into account the differences across states.

Kaushal (2015) reported that Kisan Call Centre (KCC) system is facing some problems due to lack of coordination between the government departments and KCC. Due to this, the latest market and other required information is sometimes not available from KCC resulting in lack of trust among the farmers. Bera (2014) reported that calls to KCC increase when there is a drought in the country and that due to shortage of staff many calls at KCC are unanswered. It also indicates that a large number of households are still not very accustomed to the technology and may thus be left out. Chouhan, Kumar and Sharma (2011) conducted a study on calls received per month at the KCC of the Indian Society of Agribusiness Professionals Bhopal. The study revealed that most calls were for agriculture, followed by horticulture and the livestock. The calls for agriculture were on plant protection, production techniques, high yield variety seeds, marketing, and weather forecast. The study found that farmers sometimes have problems following recommendations due to complex scientific language used and the non-availability of recommended inputs in the local market. The study suggested that information should be provided appropriate to local farming system and on inputs available in the market. Rediff-News (2007) and Khanal (2015) also reported that farmers face problems in understanding the complex terminology in solutions conveyed by call centres.

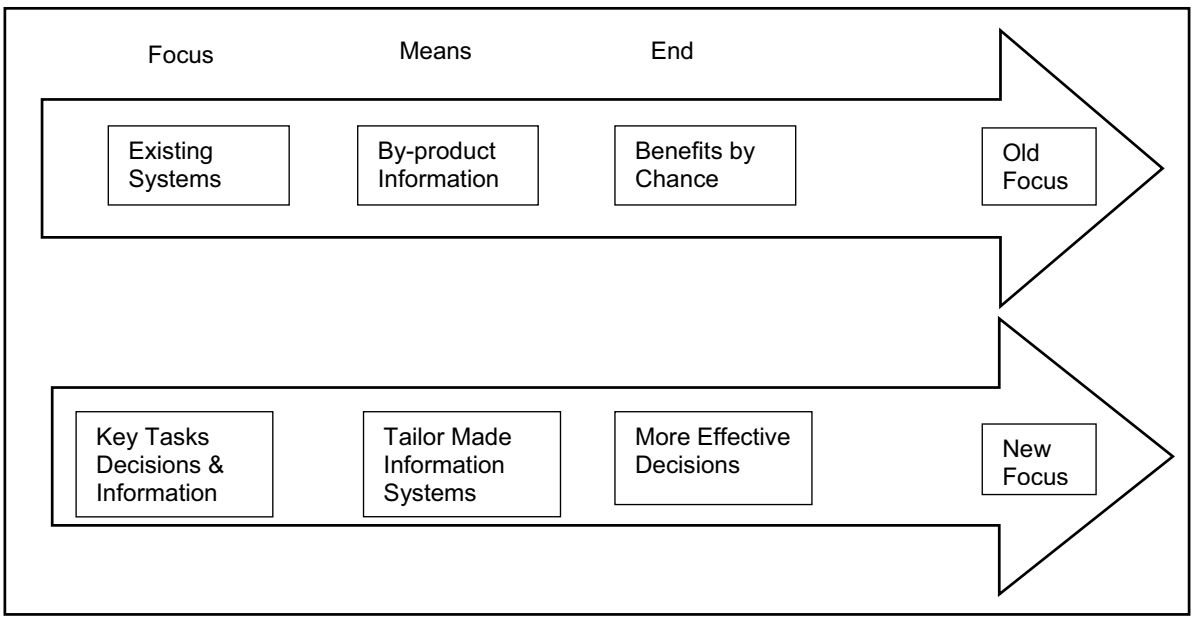
Aker and Mbiti (2010) studied that mobile phones are extending the reach of agricultural extension services in Kenya, Uganda and India, farmers can often call or send text to hotlines to ask for technical agricultural advice. McGuire, Bell and Crump, (2015) conducted a study to understand the effectiveness of agriculture call centres focusing on farmers' need for information, through farmer surveys in Ghana and Bangladesh, an audit of Esoko – a call centre based in Ghana, as well as inputs from call centres in other parts of Africa and Asia. Mobile company/ call centre software, platform management, databases, customer relationship management software, technical capacities, knowledge systems, product packages and experience of call centre operators were studied. Inconsistencies were found between the call centre's current activity and its capacity resulting in large differences in costs per call.

The Approach for Designing a Strong Information System

The approach for designing a strong information system for farmers can draw upon the conceptual framework for designing a good management information system for organizations derived from management theory. In the old/traditional approach, information was just a by-product of the operations, and was generated and passed along in a routinely, randomly or bureaucratically across the organization. Thus, it produced benefits only by chance (Fig 1.4). Decision-making generally remained ad hoc since the required information was not

available where needed. In the modern approach for designing a good information system, the focus is on decision-making. The process begins by identifying the main objectives of the organization/ manager (such as profits or return-on-investment) and the strategy deployed to achieve these. This leads to the identification of key activities and tasks that need to be performed to achieve these objectives. Given this, the key decisions that need to be made are identified followed by the key information needs for best making these decisions. This include not only the what, but also when, where and who of the key decisions. Finally, squarely based on the identified information needs, a tailor-made information system is designed, that can most effectively and directly provide the key information to the particular decision-makers. The result is an information system which is squarely focused on the key decision-making needs and would directly lead to better decision-making and performance (Laudon and Laudon 2002, Zani 1970, Gandhi 2004).

Figure 1.4: Design of Information Systems: Old and New Focus

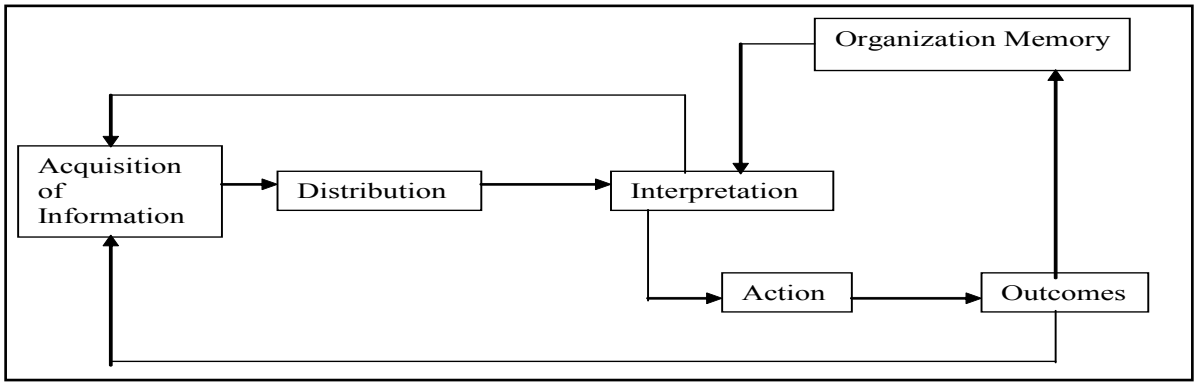


Source: Zani 1970, Gandhi 2004

It is also important to understand that the revolution in information technology is creating enormous stress in traditional organizations and systems. As information volume grows exponentially, and as its useful life shortens, organizations are being challenged to transmit information faster and learn more quickly. This means absorbing more information, making sense of it quickly, and sharing new insights so that decision-makers can act well and in time. For this, information has to be acquired, given meaning through interpretation, and then either acted upon immediately or properly stored in memory for later use (Figure 1.5) (Day and Glazer 1994). The process may be initiated by the acquisition of information

through field sourcing, scanning, internet, experimentation, and field inquiries. The extent of learning also depends on how well the information is pieced together and how widely it is distributed. Before the information can be acted upon, it may have to be interpreted to reveal meaningful patterns and relationships, so as to be able to facilitate the decision-making. These concepts set the agenda for a strong information system.

Figure 1.5: Information and the Organizational Learning Process



Source: Day and Glazer 1994

Objectives of the Research

The objectives of the research are to study the structure, design, implementation and performance principally of the government scheme of Kisan Call Centres (KCC), as well as examine the experience of related systems of Kisan Knowledge Management System (KKMS), Farmers Portal, and M-Kisan Portal. It seeks to examine their effectiveness in providing information and guidance to the farmers so as to help them with their important decisions and problems of agriculture, which would lead to better performance of their farms and the agriculture sector as a whole. More specifically, it will seek to examine:

1. The organizational setup, infrastructure, information & communication technology (ICT) and systems used, information content management, methods & information flows, types and abilities of the manpower involved, and the governance of the systems.

2. The record of the use of the systems – the profile and patterns of the users, the use made of the system including the number and nature of the calls and other means of communication, and the responses given.

3. The performance of the systems from the point of view of the farmers/users including the ease and usefulness of the systems, the decision-making and information needs of the farmers and the extent to which these are served - what they want and what they get.

4. How the systems can be improved to make them more effective in serving the farmers thereby enhancing farm performance, livelihoods and boosting the agriculture sector.

Coverage and Methodology

The study is conducted in coordination and cooperation with Agro Economic Research Centres (AERCs) in the different sample states. It is coordinated by Centre for Management in Agriculture (CMA), Indian Institute of Management Ahmedabad (IIMA).

Based on multiple relevant criteria such as geographic & agro-climatic diversity, known KCC system use level diversity, and the time and support availability across AERC/Us, the following five states/ Kisan Call Centres were included in the study sample: Punjab – Chandigarh, Gujarat – Ahmedabad, Maharashtra – Pune, Karnataka – Bangalore, and Assam – Guwahati..

The different states/ KCCs are covered by the respective AERCs, and Gujarat is covered directly by CMA. CMA has provided the overall coordination and consolidation work for the study.

The methodology provides for:

- Study of the structure and implementation of the systems in each state/centre.
- Examination of the service provider operation and profiling of the available user data, and calls/ use.
- Collection of user experience response through a sample survey of farmers, including examining their decision and information needs and satisfaction level.
- Obtaining user and service provider suggestions on areas and scope of improvement.
- Analyze the data through tabulation, distribution analysis, and other methods.
- Identify suitable operational and policy suggestions.

Special and separate survey instruments or questionnaires were designed for the survey of the Centres, the Farmer Tele Advisors (FTAs), and the farmers, based on the objectives and concepts of the study.

Chapter 2

Data and Sample Profile

Data: Kisan Call Centre & Farmer Tele Advisor Survey & Profile

Based on relevant and multiple criteria including geographic and Agro-climatic diversity, KCC system use levels, and the support & time availability across Agro-Economic Research Centres/Units (AERC/Us) in the system, the following 5 states/ Kisan Call Centres were covered in the study sample:

- Punjab - Chandigarh
- Gujarat - Ahmedabad
- Maharashtra - Pune
- Karnataka - Bangalore
- Assam - Guwahati

The Table 2.1 below provides a basic profile of the Kisan Call Centres (KCCs) that were covered in this study. These five KCCs surveyed covered 18 different states/ territories with operations in 14 different languages in the country. The number of Farm Tele Advisors FTAs (Call Agents who respond to the calls) vary from state to state with the highest number of FTAs being in Pune at 69, followed by Punjab at 59. In the case of the Guwahati centre, there are 30 FTAs divided across six languages spoken in the North-east. The Chandigarh and the Bangalore centres also have FTAs who speak two different languages each. Each of the KCCs have one or more supervisors. Pune has two supervisors and Chandigarh has three supervisors whereas the rest have one supervisor each.

Table 2.1: Basic Profile of Kisan Call Centres Sampled

Sr. No.	Kisan Call Centre Location	States Covered	Local Language	FTA's	Center Super-visors	Total FTA's
1	Gujarat-Ahmedabad	Gujarat	Gujarati	27	1	27
		Daman & Diu	Gujarati/ Konkani			
		Dadra & Nagar Haveli	Gujarati			
2	Maharashtra-Pune	Maharashtra	Marathi	69	2	69
		Goa	Konkani/ Marathi			
3	Karnataka-Bangalore	Karnataka	Kannada	19	1	25
		Kerala	Malayalam	6		
		Lakshadweep				
4	Assam-Guwahati	Assam	Assamese	8	1	30
4	Assam-Guwahati	Assam	Assamese	8	1	30
		Manipur	Manipuri	4		
		Nagaland	Nagamese	4		
		Meghalaya	Garo/ Khasi	4		
		Arunachal Pradesh	Hindi	3		
		Mizoram	Mizo	3		
		Tripura	Bengali	4		
5	Punjab-Chandigarh	Punjab	Punjabi	26	3	59
		Haryana	Punjabi	27		
		Himachal Pradesh	Hindi	6		
Total Number	**5**	**18**	14	210	8	210

In collecting responses from the FTAs, the plan was to cover about 30 FTAs in each Centre or all FTAs, whichever was greater. Thus, in the case of Ahmedabad all 27 FTAs were covered and similarly in Bangalore, all 25, and in Guwahati all 30 were covered. In the case of Pune centre, 32 of the 69 FTAs were covered and in the case of Chandigarh, 26 FTAs who were assigned for Punjab were covered out of the total of 59. Thus, the study covered a total 140 FTAs out of a total of 210 FTAs.

Table 2.2: Kisan Call Centre and FTA Sampling

Sr. No.	State	States Covered	Total FTA's	Total FTA Surveyed in Study
1	Gujarat-Ahmedabad	Gujarat	27	27
		Daman & Diu		
		Dadra & Nagar Haveli		
2	Maharashtra-Pune	Maharashtra	69	32
		Goa		
3	Karnataka-Bangalore	Karnataka	25	25
		Kerala		
		Lakshadweep		
4	Assam-Guwahati	Assam	30	30
		Manipur		
		Nagaland		
		Meghalaya		
		Arunachal Pradesh		
		Mizoram		
		Tripura		
5	Punjab-Chandigarh	Punjab	59	26*
		Haryana		
		Himachal Pradesh		
Total Number	**5**	**18**	**210**	**140**

*Only 26 FTA's dealing with Punjab were surveyed.

The Tables below provide a basic profile of the 140 FTAs sampled & surveyed. In Table 2.3 on the profile by gender, it is found that about 72 percent of the FTAs were male and 28 percent were female. In terms of the education, table 2.4 shows all FTAs were graduates with the maximum of 83 being of B.Sc. Agriculture background, constituting 59 percent of all the FTAs. This was followed by 12 percent having B.Sc. in Horticulture and 3.6 percent being B.V.Sc. & AH. 27 of the FTAs have Masters level qualifications constituting about 20 percent of the FTAs. Thus, it appears that almost all the FTAs are professional and well qualified for their jobs at the Kisan Call Centres.

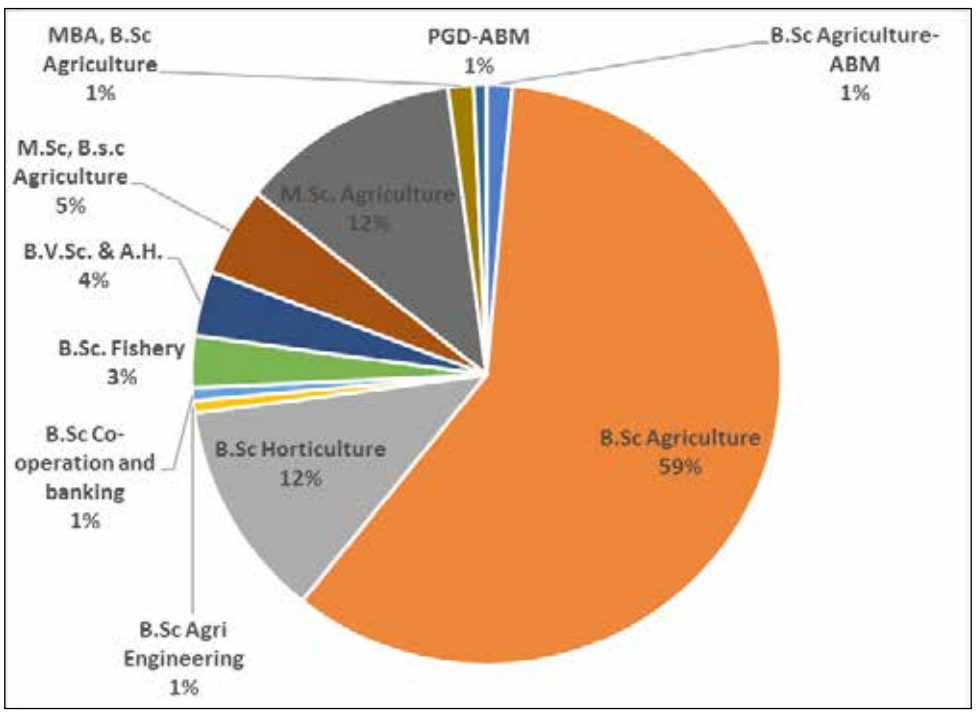
Table 2.3: Gender Profile of FTA's Surveyed

Gender	Number	Percent (%)
Male	101	72.1
Female	39	27.9
Total	140	100

Table 2.4: Education profile of FTAs surveyed

Degree	Number	Percent (%)
B.Sc Agriculture-ABM	2	1.4
B.Sc Agriculture	83	59.3
B.Sc Horticulture	17	12.1
B.Sc Agri Engineering	1	0.7
B.Sc Co-operation and banking	1	0.7
B.Sc. Fishery	4	2.9
B.V.Sc. & A.H.	5	3.6
M.Sc, B.s.c Agriculture	7	5
M.Sc. Agriculture	17	12.1
MBA, B.Sc Agriculture	2	1.4
PGD-ABM	1	0.7
Total	**140**	**100**

Figure 2.1: Education Profile of FTAs surveyed



In terms of the subject of specialization, the maximum of 51 percent has agriculture as their subject of specialization followed by 12 percent of horticulture and 6.4 percent of agronomy. Various other disciplines such as entomology, plant pathology, economics, and agricultural extension among many others can also be seen in the backgrounds of the FTAs, which are all largely relevant backgrounds. In terms of work experience, 26.4 percent of the FTAs have work experience whereas 73.6 percent do not have any work experience and are fresh recruits from the universities. The kind of work experience is not known.

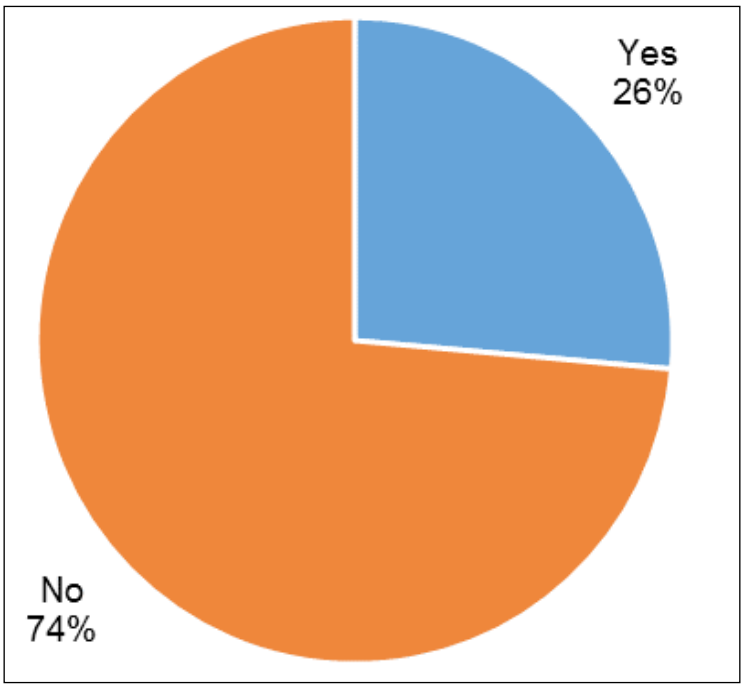
Table 2.5: Stated Subjects of Specialization of FTAs Surveyed

Subjects	Number	Percent (%)
Agri engineering	1	0.7
Agri. Business management	3	2.1
Agricultural marketing	4	2.9
Agriculture	72	51.4
Agriculture Extension	4	2.9
Agriculture Economics	1	0.7
Agronomy	9	6.4
Animal Husbandry	3	2.1
Co-operation and banking	1	0.7
Crop Physiology	1	0.7
Economics	2	1.4
Economics, agricultural marketing	1	0.7
Entomology	5	3.6
Fishery Science	3	2.1
Genetics and Plant Breeding	1	0.7
Horticulture	17	12.1
Marketing	1	0.7
Marketing, Agri. Business management	1	0.7
Plant Biotech	1	0.7
Plant Pathology	3	2.1
Plant physiology	1	0.7
Plant production & Agronomy	1	0.7
Plant Protection	1	0.7
Sericulture	1	0.7
Soil science	1	0.7
Veterinary	1	0.7
Total	140	100.0

Table 2.6 FTAs with Work Experience

	Number	Per cent (%)
Yes	37	26.4
No	103	73.6
Total	140	100.0

Figure 2.2: FTA's with Work Experience



Data: Farmer Sample Survey & Profile

The sampling plan proposed the coverage of a farmer sample size of about 100 farmers per state including at least 80 users and about 20 non-users. The data was proposed to be collected from at least 2 diversely located districts per state and any number of villages (at least 2 or more) per district so that the necessary number of users and non-users can be identified and covered. Thus, from the five Kisan Call Centres in the country covered, a total sample size of 500 farmers was planned to be covered, consisting approximately of 400 KCC users and 100 non-users.

User Sample

The Table 2.7 below gives the actual state-wise profile of the farmer sample of KCC users which were finally covered. A number of states exceeded the planned user sample number and collected data from more farmers than planned. The number varied in actual coverage with Punjab & Karnataka at 100 each, Gujarat at 98, and the rest at 80. Thus, against a planned sample size of 400 users, 458 users were covered. In every case the coverage included a large number of districts, and a diverse set of farmers. Some dimensions of the profile are given below.

Table 2.7: State-wise Profile of KCC users

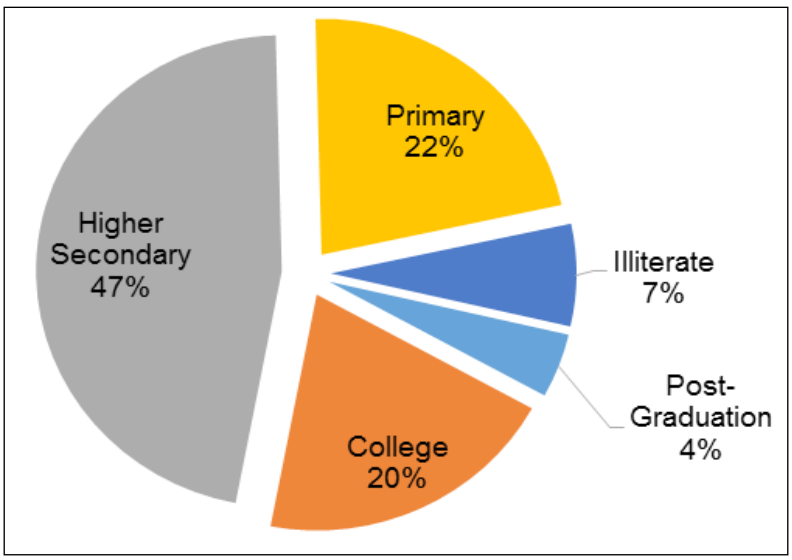
State	Number	Per cent (%)
Gujarat	98	21.40
Maharashtra	80	17.47
Karnataka	100	21.83
Assam	80	17.47
Punjab	100	21.83
Total	458	100.00

The Table 2.8 below provides the education profile of the farmers. The Table indicates that 70 percent of the users had a higher secondary education or more, with 20 percent having been to college, and 4.4 percent with post-graduation. The sample included seven percent of illiterate farmers, which is 32 farmers in the sample. Thus, many users appear to be educated, though even illiterate farmers are making use of the KCC service.

Table 2.8: Education Profile of Farmers (KCC user) sample

	Per cent (%)
Post- Graduation	4.42
College	20.35
Higher Secondary	47.35
Primary	21.68
Illiterate	6.19
Total	100.0

Figure 2.3: Education Profile of Farmers (KCC Users)



The Table 2.9 below provides the caste profile of the sample. It shows that 10.70 percent belong to Schedule Tribes (ST), 6.33 percent belong to Schedule Castes (SC), 37.77 percent belong to Other Backward Castes (OBC), and 44.78 percent belong to other castes. The sample data indicates that the KCC users show a fairly wide and diverse social coverage and may be not too different from the proportions in the population. The age profile of the sample also shows a wide coverage with about 53 percent belonging to ages below 40 and the rest of 40 & above.

Table 2.9: Caste Profile of Farmer (KCC users) Sample

Caste	Per cent (%)
Others/General	44.78
OBC	37.77
ST	10.70
SC	6.33
Total	**100**

Table 2.10: Age Profile Sample Farmers (KCC Users)

Age Group	Number	Per cent (%)
18-29	109	23.80
30-39	133	29.00
40-49	126	27.51
50-59	64	13.97
60-69	24	5.24
70 and Above	2	0.44
Total	**458**	**100.00**

Non-users Sample

The Table 2.11 below provides the state-wise distribution of the non-user's sample covered in the study. It shows that 103 non-users were covered in Gujarat, 21 in Maharashtra, and 20 each in Karnataka, Punjab and Assam. The non-users could not be asked the specific questions related to the experience with the KCCs but the responses were collected on the other questions.

Table 2.11: Non-user Sample Across States

State	Number	Percent (%)
Gujarat	22	21.36
Maharashtra	21	20.39
Karnataka	20	19.42
Punjab	20	19.42
Assam	20	19.42
Total	103	100.00

The Tables 2.12, 2.13 and 2.14 below give the education, caste and age profiles of the non-users. About 50 percent of the non-users have education of higher secondary or above and 18 percent are illiterate. By caste 12.62 percent belong to ST, 2.91 percent belong to SC, 45.63 percent belong to OBC, and 38.83 percent belong to other castes. By age profile, the sample shows a wide coverage with about 46 percent belonging to ages below 40 and the rest to 40 & above. The results very broadly show that the non-user sample is somewhat less educated and somewhat older than the user sample. Thus, users are likely to be more educated and younger.

Table 2.12: Education Profile – Non-users

Education	Per cent (%)
Post-Graduation	0.99
College	12.87
Higher Secondary	36.63
Primary	31.68
Illiterate	17.82
Total	**100.00**

Figure 2.4: Education profile of farmers

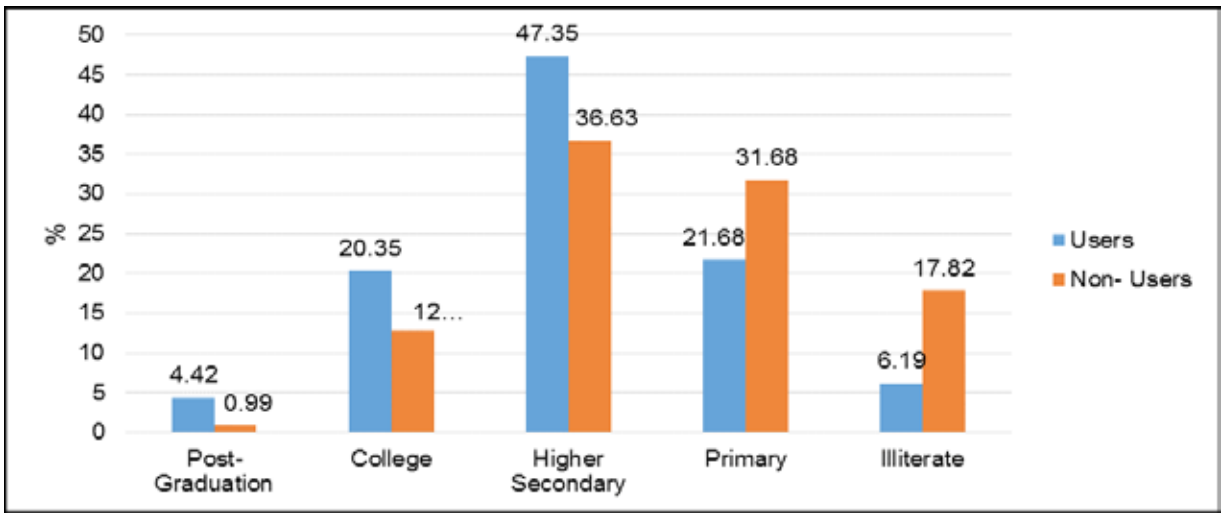


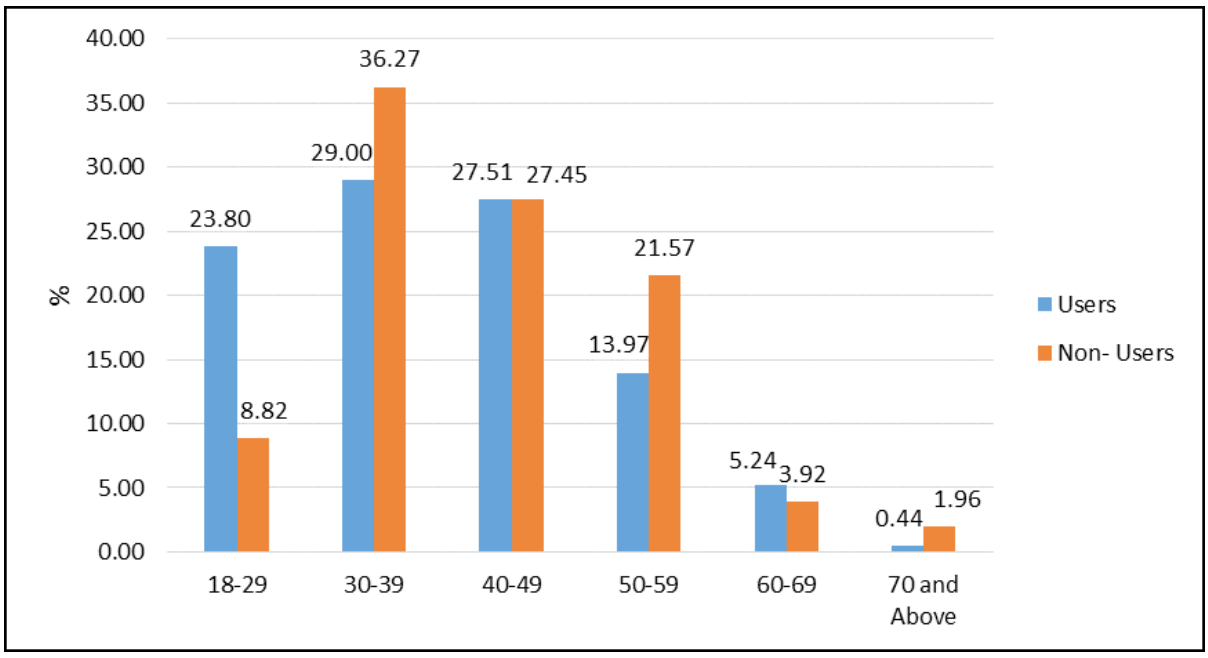
Table 2.13: Caste Profile-Non-Users

Caste	Per cent (%)
Others/General	38.83
OBC	45.63
ST	12.62
SC	2.91
Total	**103**

Table 2.14: Age Profile Farmers (Non-Users)

Age Group	Frequency	Per cent (%)
18-29	9	8.82
30-39	37	36.27
40-49	28	27.45
50-59	22	21.57
60-69	4	3.92
70 and Above	2	1.96
Total	**103**	**100.00**

Figure 2.5: Age Profile of Farmers (Users and Non-Users)



Chapter 3

Study of the Call Information Recorded in the KCC-KKMS System

The calls received by the Kisan Call Centres (KCCs) are recorded in the KKMS system database by the Centres. Examination of the data indicates that in 2016-17, over 61 lakh live calls were received and recorded at the KCCs in the country, which is a huge number. The highest number of calls were received from Uttar Pradesh at over 12 lakh calls or 20.7 percent of the calls, followed by Maharashtra at over 7 lakh calls or 12.5 percent. Among the sample states, Maharashtra showed the highest number of calls followed by Karnataka at 2.9 lakh or 4.7 percent, Punjab at 2.7 lakh calls or 4.5 percent, Gujarat at 2.3 lakh or 3.8 percent, and Assam at 0.37 lakh calls or 0.6 percent. If the IVR system calls are added, the total number of calls recorded in the entire system rises to 80 lakh calls, and the number rises substantially for Punjab to 8.7 lakh calls or 10.9 percent, becoming greater than that for Maharashtra. Since the states vary substantially in size, normalization was also done by the rural population and cropped area. With the normalization by rural population, the highest number of live calls per lakh of rural population is found to be in Delhi, followed by Haryana and Punjab. Maharashtra is at fifth position. In normalization by cropped area, the number of live calls per lakh hectares cropped area is found to be highest in Delhi, followed by Jammu & Kashmir and Himachal Pradesh. Haryana and Punjab drop considerably in position. With the normalization by rural population, the highest number of total calls per lakh of rural population is found to be in Delhi, followed by Haryana and Punjab. In normalization by cropped area, the number of total calls per lakh hectares cropped area is

once again found to be highest in Delhi, Haryana and Punjab. The All-India numbers show 738 live calls and 962 total calls per lakh of rural population, and 3091 live calls and 4026 total calls per lakh hectare of cropped area. The sample states show a good spread across the call density levels observed. Overall, calls to the KCCs are received from across all the states. The top 10 states account for over 80 percent of the calls, indicating that there is scope and need to spread the use. The call densities indicate that there is also considerable scope for increasing overall call levels.

Table 3.1: Calls Landed in the KCCs as Recorded in KKMS Database (FY 2016-17)

Sr. No	State	Live Calls	Live Calls%	Total Calls incl. IVRS	Total Calls %	Live Calls per Lakh Rural Population	Live Calls per lakh hectares Cropped Area	Total Calls per Lakh Rural Population	Total Calls per lakh hectare of Cropped Area
1	Uttar Pradesh	1273762	20.71	1274157	15.91	821	5018	821	5020
2	Maharashtra	770757	12.53	776389	9.69	1252	3202	1261	3226
3	Rajasthan	685490	11.15	685790	8.56	1330	2636	1331	2637
4	Madhya Pradesh	578275	9.4	1210440	15.11	1101	2623	2304	5491
5	Odisha	351098	5.71	351290	4.39	1005	6467	1005	6471
6	Haryana	317924	5.17	918208	11.46	1923	4887	5554	14115
7	Karnataka	288608	4.69	288735	3.6	769	2210	769	2210
8	Tamil Nadu	273947	4.45	274020	3.42	737	4762	737	4763
9	Punjab	273523	4.45	873765	10.91	1580	3470	5046	11084
10	Bihar	241698	3.93	241781	3.02	263	3360	263	3361
11	Gujarat	233097	3.79	233224	2.91	672	1903	673	1904
12	Andhra Pradesh*	349908	5.69	349964	4.37	621	2411	621	2412
13	West Bengal	131472	2.14	152630	1.91	211	1375	245	1596
14	Jammu and Kashmir	84468	1.37	84537	1.06	925	7409	925	7416
15	Himachal Pradesh	64003	1.04	64019	0.8	1038	6744	1038	6746
16	Chhattisgarh	59182	0.96	59234	0.74	302	1044	302	1045
17	Uttarakhand	38938	0.63	38962	0.49	554	3328	555	3330
18	Assam	37017	0.6	37036	0.46	138	890	138	890
19	Delhi	32044	0.52	32058	0.4	7642	72827	7645	72859

Sr. No	State	Live Calls	Live Calls%	Total Calls incl. IVRS	Total Calls %	Live Calls per Lakh Rural Population	Live Calls per lakh hectares Cropped Area	Total Calls per Lakh Rural Population	Total Calls per lakh hectare of Cropped Area
20	Jharkhand	28958	0.47	28964	0.36	116	2318	116	2319
21	Kerala	22011	0.36	22026	0.27	126	832	126	832
22	Tripura	5297	0.09	5297	0.07	195	1513	195	1513
23	Manipur	1883	0.03	1883	0.02	99	541	99	541
24	Puducherry	1407	0.02	1407	0.02	357	4539	357	4539
25	Meghalaya	1329	0.02	1331	0.02	56	393	56	394
26	Sikkim	1058	0.02	1058	0.01	232	696	232	696
27	Arunachal Pradesh	987	0.02	989	0.01	92	355	93	356
28	Andaman And Nicobar Islands	424	0.01	474	0.01	173	2232	194	2495
29	Nagaland	309	0.01	309	0	22	68	22	68
30	Goa	286	0	286	0	52	179	52	179
31	Mizoram	105	0	105	0	20	79	20	79
32	Chandigarh	88	0	88	0	303	4400	303	4400
33	Dadra and Nagar Haveli	8	0	8	0	4	36	4	36
34	Lakshadweep	4	0	4	0	28	133	28	133
35	Daman and Diu	2	0	2	0	3	67	3	67
	Total	**6149367**	**100**	**8010470**	**100**	**738**	**3091**	**962**	**4026**

Source: Kisan Knowledge Management System and Directorate of Economics and Statistics, Ministry of Agriculture, New Delhi

The Table 3.2 below gives the calls recorded data for the five sample states. It indicates that 16 lakh calls or 26 percent of the live calls, and 22 lakh or 28 percent of the total calls are recorded in these states, indicating that it is a significant sample. Of the calls in the sample states, the largest share in the live calls is that of Maharashtra at 48 percent share, followed by Karnataka at 18 percent. If total calls including IVR are considered, the largest share is of Punjab at 39.5 percent followed by Maharashtra at 35.1 percent. Assam in each case has the lowest share at about 2 percent.

Table 3.2: Calls Landed in the Sample State KCCs as Recorded in the KKMS Database (FY 2016-17)

Sr. No.	State	Live Calls	Live Call%	Total Calls Incl. IVR	Total Calls%
1	Maharashtra	770757	48.08	776389	35.14
2	Karnataka	288608	18.00	288735	13.07
3	Punjab	273523	17.06	873765	39.55
4	Gujarat	233097	14.54	233224	10.56
5	Assam	37017	2.31	37036	1.68
	Total	**1603002**	**100.00**	**2209149**	**100.00**

The crop or activity for which the calls were received are also recorded in the data base. Data was obtained for the top 10 crops in each state and then compiled and analyzed. The Table 3.3 below indicates that among these, Rice or Paddy has the largest share among crops with a share of 23.1 percent of the calls. This is followed by Cotton with a share of 20.4 percent and Wheat at 14.3 percent. Between the states, the ranks vary substantially. For Punjab and Assam, Rice has the highest number of calls. For Gujarat and Maharashtra, Cotton has the highest number of calls, whereas in Karnataka, the highest number of calls are for Pigeon Pea/ Arhar. Thus, even though Rice, Cotton and Wheat have the highest share in the calls accounting for about 58 percent of the calls in the sample states, the dominant call crop varies considerably from state to state.

Table 3.3: Calls by Crop

Crop/Activity	Assam	Gujarat	Karnataka	Maharashtra	Punjab	Total	%
Paddy (Dhan)	2979				98703	101682	23.05
Cotton (Kapas)		11282	3277	71020	4519	90098	20.43
Wheat		2697			60536	63233	14.33
Pigeon pea (red gram/arhar/tur)		2235	5981	28838		37054	8.40
Soybean (bhat)				24058		24058	5.45
Onion			2877	18398		21275	4.82
Bengal Gram (Gram/Chick Pea/ Kabuli/Chana)		2243		16510		18753	4.25
Chilies	1479	2304	3289	10979	411	18462	4.19
Sugarcane (Noble Cane)			2000	13682		15682	3.56
Pomegranate				11204		11204	2.54
Groundnut (pea nut/mung phalli)		10549				10549	2.39

Crop/Activity	Assam	Gujarat	Karnataka	Maharashtra	Punjab	Total	%
Cumin		6669				6669	1.51
Tomato	871		2667			3538	0.80
Maize (Makka)			2445		568	3013	0.68
Coriander		2923				2923	0.66
Coconut	697		1699			2396	0.54
Arecanut			2338			2338	0.53
Black Gram (urd bean)		2132				2132	0.48
Potato	1048				827	1875	0.43
Green Gram (Moong Bean/ Moong)					820	820	0.19
Brinjal	810					810	0.18
Pea (Vegetable)					598	598	0.14
Bottle Gourd	578					578	0.13
Cabbage	538					538	0.12
Pumpkin	515					515	0.12
Bhindi(Okra/ Ladyfinger)					319	319	0.07
Total						**441112**	**100.00**

The Table 3.4 below provides an analysis of the broad reasons for calling recorded for the five sample states. It shows surprisingly that the highest number of calls recorded are for weather information, amounting to as much as 56 percent of the calls. This indicates that weather is a major concern of the farmer and KCCs are looked upon as an important source of weather information. This is followed after a huge margin by Plant Protection as the reason reflecting the concern and need correct information on plant protection. Following this is government schemes indicating that many want to know about them, and then market information which reflects another major need. This is followed by fertilizer use/ availability, and then variety choice. Others such as water management and mechanization do not figure prominently. The results indicate that there is great need to strengthen weather information availability at the KCCs.

Table 3.4: Calls by Topic-Wise - Agriculture Related Topics

Agriculture Related Topics	Gujarat	Assam	Karnataka	Maharashtra	Punjab	Total Calls	% Call
Weather	26656	2628	138399	267940	181337	616960	56.34
Plant protection	24791	2117	10985	69844	15528	123265	11.26
Government schemes	18176	237	1671	45090	254	65428	5.98
Market information	4522	14	13177	37456	331	55500	5.07
Fertilizer use and availability	5081	500	860	41645	3227	51313	4.69
Varieties	4231	441	3372	22946	14925	45915	4.19
Cultural practices	19151	1013	3273	6746	2494	32677	2.98
Field preparation	7176	105	1414	5396	10634	24725	2.26
Nutrient management	822	732	2286	9310	3955	17105	1.56
Weed management	2616	118	1423	8208	4247	16612	1.52
Seeds	1592	100	754	5348	831	8625	0.79
Sowing time and weather	1933	102	610	4921	550	8116	0.74
Bio pesticides and bio fertilizers	222	11	136	7146	28	7543	0.69
Agriculture mechanization	907	34	194	5917	13	7065	0.65
Training and exposure visits	626	30	349	884	2550	4439	0.41
Crop insurance	399	60	491	1476	66	2492	0.23
Water management	1320	31	211	698	63	2323	0.21
Soil testing	559	30	251	896	25	1761	0.16
Organic farming	286	25	155	1188	5	1659	0.15
Credit	185	22	201	238	7	653	0.06
Storage	67	25	75	163	157	487	0.04
Post-harvest preservation	51	16	41	68	5	181	0.02
Powers, road etc.	71	1	21	30	3	126	0.01
Total Calls	**121440**	**8392**	**180349**	**543554**	**241235**	**1094970**	**100**

The Table 3.5 below shows the percentage analysis of the reasons for calling by the sample states. It shows that there is considerable variation across the states. Whereas weather has the highest share in all the states, the share varies from as high as over 75 percent in Karnataka and Punjab, to only 22 percent and 31 percent in Karnataka. The major three in Gujarat are weather, plant protection and cultural practices, in Assam too - weather, plant protection and cultural practices, in Karnataka - weather, plant protection and market information, in Maharashtra – weather, plant protection and government schemes, and in Punjab – weather, plant protection and varieties. Thus, the kind of information required varies from state to state but weather and plant protection are major in all of them – indicating that concerns of immediate risk are a major reason for calling.

Table 3.5: Calls by Topic-Wise - Agriculture Related Topics (Per cent)

Agriculture Related Topics	Gujarat	Assam	Karnataka	Maharashtra	Punjab	Total Calls	% Call
Weather	21.95	31.32	76.74	49.29	75.17	616960	56.34
Plant protection	20.41	25.23	6.09	12.85	6.44	123265	11.26
Government schemes	14.97	2.82	0.93	8.30	0.11	65428	5.98
Market information	3.72	0.17	7.31	6.89	0.14	55500	5.07
Fertilizer use and availability	4.18	5.96	0.48	7.66	1.34	51313	4.69
Varieties	3.48	5.26	1.87	4.22	6.19	45915	4.19
Cultural practices	15.77	12.07	1.81	1.24	1.03	32677	2.98
Field preparation	5.91	1.25	0.78	0.99	4.41	24725	2.26
Nutrient management	0.68	8.72	1.27	1.71	1.64	17105	1.56
Weed management	2.15	1.41	0.79	1.51	1.76	16612	1.52
Seeds	1.31	1.19	0.42	0.98	0.34	8625	0.79
Sowing time and weather	1.59	1.22	0.34	0.91	0.23	8116	0.74
Bio pesticides and bio fertilizers	0.18	0.13	0.08	1.31	0.01	7543	0.69
Agriculture mechanization	0.75	0.41	0.11	1.09	0.01	7065	0.65
Training and exposure visits	0.52	0.36	0.19	0.16	1.06	4439	0.41

Agriculture Related Topics	Gujarat	Assam	Karnataka	Maharashtra	Punjab	Total Calls	% Call
Crop insurance	0.33	0.71	0.27	0.27	0.03	2492	0.23
Water management	1.09	0.37	0.12	0.13	0.03	2323	0.21
Soil testing	0.46	0.36	0.14	0.16	0.01	1761	0.16
Organic farming	0.24	0.30	0.09	0.22	0.00	1659	0.15
Credit	0.15	0.26	0.11	0.04	0.00	653	0.06
Storage	0.06	0.30	0.04	0.03	0.07	487	0.04
Post-harvest preservation	0.04	0.19	0.02	0.01	0.00	181	0.02
Powers, road etc.	0.06	0.01	0.01	0.01	0.00	126	0.01
	100.00	100.00	100.00	100.00	100.00	1094970	100.00
Total Calls	**121440**	**8392**	**180349**	**543554**	**241235**	**1094970**	**9.52**

Chapter 4

Results: Kisan Call Centres – Centre Survey

The Kisan Call Centres that were covered in this study sample included those located at Gujarat-Ahmedabad, Maharashtra-Pune, Karnataka-Bangalore, Assam-Guwahati, and Punjab-Chandigarh. The information provided in this section is based on the responses of the Supervisors of each of these Kisan Call Centres.

Each of the Call Centres covers more than one state or territory. The Ahmedabad-Gujarat Centre covers Gujarat and Daman & Diu, the Pune-Maharashtra Centre covers Maharashtra & Goa, the Bangalore-Karnataka Centre covers Karnataka, Kerala and Lakshadweep the Guwahati-Assam Centre covers Assam, Arunachal Pradesh, Meghalaya, Mizoram, Manipur, Nagaland & Tripura, and the Chandigarh-Punjab covers Punjab, Haryana, and Himachal Pradesh.

Whereas the Gujarat, Maharashtra and Punjab Centres work in single languages that is Gujarati, Marathi, and Punjabi, respectively, the Karnataka Centre communicates both in Kannada and Malayalam, and the Assam Centre communicates in Assamese, Bengali, Garu, Nagamis and Manipuri. The highest number of Farm Tele Advisers (FTA) are in Maharashtra numbering 69 whereas Gujarat, Karnataka, Assam and Punjab have in the range of 25 to 30 FTAs. To an extent, this depends on the call traffic and Maharashtra has the highest call traffic in the sample of Centres. (See Table 4.1)

The Gujarat Centre started in 2004 and relocated in 2012. The number of FTAs increased from 6 to 29. The Maharashtra Call Centre started 2004 and relocated in 2012, with the number of FTAs going up from 7 to 69. The Karnataka Call Centre started in 2004

and relocated in 2012 with the number of FTAs increasing from 2 to 25. The Assam call centre started in 2004 and relocated in 2012 and once again in 2013. The number of FTAs increased from 14 to 24 to 30. Punjab reports relocation in 2012 with the FTAs increasing to 26. Thus, all the KCCs have undergone a process of development, with major changes especially in 2012. (See Table 4.2)

Responses on comparing the past call centre to the present call centre, all the call centres strongly agree or agree that the change brought about better hardware, better connectivity, better software, and better ability to respond to farmers' calls. Except for Assam, all the other call centres strongly agree or agree that it resulted in a better farmer database. Thus, there substantial improvements seem to have taken place after the changes were undertaken over time and especially in 2012. (See Table 4.3)

Table 4.1: Profile of Kisan Call Centre

	Gujarat	Maharashtra	Karnataka	Assam	Punjab
States Covered	Gujarat and Daman & Diu	Maharashtra and Goa	Karnataka, Kerala and Lakshadweep	Assam, Arunachal Pradesh, Meghalaya, Mizoram, Manipur, Nagaland and Tripura.	Punjab, Haryana, and Himachal
Languages Used	Gujarati	Marathi	Kannada and Malayalam	Assamese, Bengali, Garu, Nagamis, and Manipuri	Punjabi & Hindi
Number of FTA's	29	69	25	30	59

Table 4.2: History of Development of Kisan Call Centre

	Gujarat			Maharashtra			Karnataka			Assam			Punjab		
	Location			Location			Location			Location			Location		
	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd
Year of Start/ relocation	2004	2012	-	2004	2012	-	2004	2012	-	2004	2012	2013	-	2012	-
Number of FTA's/ KCC Agents	6	29	-	7	69	-	2	25	-	14	24	30	-	26	-

Table 4.3: Comparison of Present and Past KCC

	Gujarat	Maharashtra	Karnataka	Assam	Punjab	Average
Better Hardware/ equipment	5	5	5	5	5	5
Better Software	5	5	5	5	5	5
Better Connectivity	4	5	4	4	5	4.4
Better farmer database	4	5	4	3	5	4.2
Better ability to respond farmers calls	5	5	4	5	5	4.8

Opinion Scale: 5-Strongly Agree, 4-Agree, 3-Partially Agree/Disagree, 2-Disagree, 1-Strongly Disagree

All the call centres are equipped with personal computers, headphones, and printers/ scanners. Whereas the Gujarat and Karnataka Call Centres have 12 personal computers each, Assam has 16 and Punjab has 11. Maharashtra has a much larger number of 28 personal computers. Whereas Gujarat, Maharashtra and Punjab have all-in-one desktops of i5 or i3 type, Karnataka and Assam report HP or Compaq computers. The performance is found to be excellent in all except Gujarat where it is reported to be good. The headphones are Jabra headphones in all the Centres and the performance of this has some problems since it is rated only satisfactory to good in most Centres. The printers/scanners are HP LaserJet and the performance is found to be good to excellent. (See Table 4.4)

Table 4.4: Present Hardware Profile

	Gujarat			Maharashtra			Karnataka			Assam			Punjab		
	Type	No.	Rating	Type	No.	Rating	Type	No.	Rating	Type	No.	Rating	Type	No.	Rating
PC's	All in one Windows Processor-i3, i5	12	Good	All in one Windows i5 Processor	28	Excellent	HP Compaq	12	Excellent	HP Compaq 8200 ELITE	16	Excellent	All in one desk top with core i3, i5	11	Excellent
Headphones	Jabra Headphones	10	Satisfactory	Jabra Headphones	28	Good	Jabra Headphones	15	Good	Jabra Headphones	8	Excellent	Jabra Headphones	10	Good
Printers and scanners	HP Laser Jet M1216	1	Good	HP Laser Jet M1216	1	Good	HP Laser Jet M1216	1	Excellent	HP Laser Jet M1216	1	Excellent	HP Laser Jet M1216	1	Excellent

The call handling softwares used are identified as Agent Openscape Contact Centre, Openscape Desktop and Real Time Viewer. Each of these software is found in all the call centres. The performance of the Agent Openscape Contract Centre software is found to be excellent in all the Centres. The performance of the Openscape Desktop and Real Time Viewer is found to be excellent in some centres and good in others. (See Table 4.5)

Table 4.5: Present Software Profile

Call Handling Softwares	Gujarat		Maharashtra		Karnataka		Assam		Punjab	
	Available	Rating	Available	Rating	Available	Rating	Available	Rating	Available	Rating
Agent Openscape Contact Centre	Yes	Excellent	Yes	Excellent	Yes	Excellent	Yes	Excellent	Yes	Excellent
Openscape Desktop	Yes	Good	Yes	Excellent	Yes	Good	Yes	Excellent	Yes	Excellent
Real Time Viewer	Yes	Excellent	Yes	Excellent	Yes	Good	Yes	Good	Yes	Good

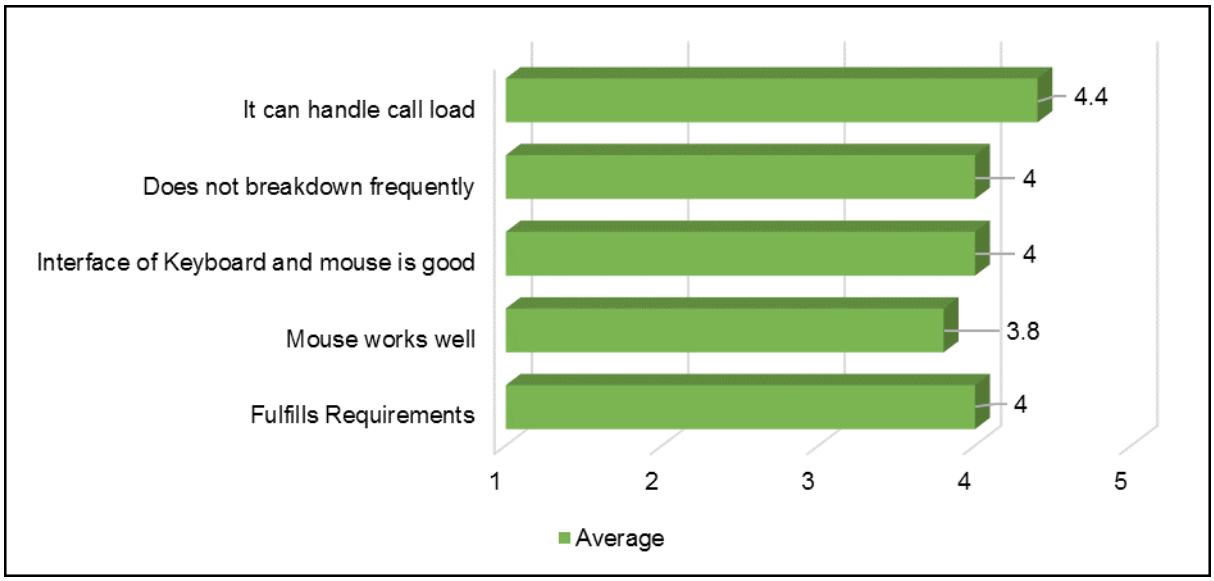
With respect to the performance of the hardware, the Centres strongly agree or agree that it can handle the call load. In terms of breakdown, Maharashtra and Assam indicate problems faced from time to time but Gujarat, Karnataka, and Punjab do not find the breakdowns to be frequent. Whereas the Maharashtra, Karnataka, and Punjab Centres report the interface of keyboard and mouse to be good, Gujarat and Assam report some problems with it. In general, however, all the Centres agree or strongly agree that the hardware fulfills the requirements. (See Table 4.6)

Table 4.6: Hardware Overall Ratings

	Gujarat	Maharashtra	Karnataka	Assam	Punjab	Average
It can handle call load	5	4	5	4	4	4.4
Does not breakdown frequently	4	3	5	3	5	4.0
nterface of Key board and mouse is good	3	4	5	3	5	4.0
Mouse works well	4	4	4	3	4	3.8
Fulfills Requirements	4	5	4	4	5	4.4

Opinion Scale: 5-Strongly Agree, 4-Agree, 3-Partially Agree/Disagree, 2-Disagree, 1-Strongly Disagree

Figure 4.1: Hardware Overall Rating



Opinion Scale: 5-Strongly Agree, 4-Agree, 3-Partially Agree/Disagree, 2-Disagree, 1-Strongly Disagree

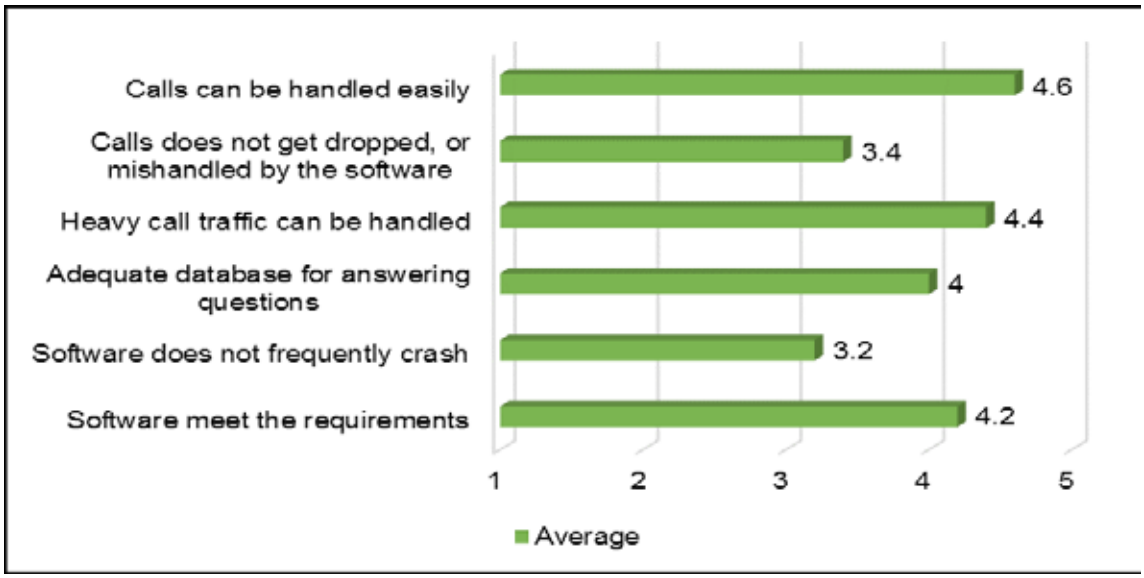
In terms of the performance of the software, the Centres report that it can easily handle the call load including under heavy call traffic. On the other hand, problems of call drop and mishandling is a problem and is reported to be significant in Maharashtra, Karnataka and Assam. The data-base for answering question is reported to be adequate by Gujarat, Maharashtra and Punjab but not found to be adequate by Karnataka and Assam. The problem of software crashing is significant and is reported by Gujarat, Assam and Punjab whereas Maharashtra and Karnataka do not find much problem. Overall, all the centres find that the software generally meets the requirements. (See Table 4.7)

Table 4.7: Software Overall Ratings

	Gujarat	Maharashtra	Karnataka	Assam	Punjab	Average
Calls can be handled easily	5	4	4	5	5	4.6
Calls does not get dropped, or mishandled by the software	4	3	3	3	4	3.4
Heavy call traffic can be handled	5	4	4	4	5	4.4
Adequate database for answering questions	5	4	3	3	5	4
Software does not frequently crash	2	4	4	3	3	3.2
Software meet the requirements	5	4	4	4	4	4.2

Opinion Scale: 5-Strongly Agree, 4-Agree, 3-Partially Agree/Disagree, 2-Disagree, 1-Strongly Disagree

Figure 4.2: Software Overall Rating



Opinion Scale: 5-Strongly Agree, 4-Agree, 3-Partially Agree/Disagree, 2-Disagree, 1-Strongly Disagree

The Tables 4.8 and 4.9 below indicate that when hardware or software problems are faced, the Centres solve them either by themselves or through IT experts but a few centres have annual maintenance contractors to take care of these problems.

Table 4.8: How do you Resolve Hardware Problem?

Gujarat	Maharashtra	Karnataka	Assam	Punjab
Self or IT Expert	Self or Annual Maintenance contractor	Self	IT Expert	Annual Maintenance contractor

Table 4.9: How do you Resolve Software Problem?

Gujarat	Maharashtra	Karnataka	Assam	Punjab
IT Expert	Self or IT Expert	IT Expert	IT Expert or Annual Maintenance contractor	IT Expert

The problem with internet connectivity is significant and many Centres report problems with internet connectivity. In the case of Gujarat, it is reported that it slows down during heavy call load and is not fast enough to respond to calls and retrieve and record information. It also breaks down frequently and this not found to be adequate for work. Similar problems are reported by Karnataka, Assam and Punjab and in all these Centres it is not considered adequate for the work. On the other hand, Maharashtra Centre does not report problems with internet connectivity. (See Table 4.10)

Table 4.10: Internet Connectivity

	Gujarat	Maharashtra	Karnataka	Assam	Punjab	Average
During heavy call loads, internet does not slowdown	2	4	3	3	4	3.2
Fast enough to respond calls	2	4	3	3	4	3.2
Fast enough for retrieving & recording information	2	4	3	4	3	3.2
Does not frequently breakdown	2	4	3	3	3	3.0
Adequate for work	3	4	3	3	3	3.2

Opinion Scale: 5-Strongly Agree, 4-Agree, 3-Partially Agree/Disagree, 2-Disagree, 1-Strongly Disagree

All the Call Centres have air conditioners though the number varies from Centre to Centre. CCTV cameras are also reported in all the Centres except for Karnataka. Drinking water and washroom facility are also reported by all the Centres. However, only the Maharashtra Centre has food catering facility. In terms of rating of infrastructure, problems are reported in the Maharashtra Centre in terms of insufficient area for activity, disturbance across FTAs, disturbance from other departments, inadequate ventilation and insufficient video surveillance. On the other hand, the Gujarat and Punjab Centres do not report much problem with respect to the infrastructure facilities. The Assam Centre reports somewhat insufficient activity area and insufficient video surveillance. Overall, the work environment is reported to be less than satisfactory in most of the Centres except in Karnataka and Punjab. Thus, infrastructure improvement is required in some Centres. (See Table 4.11 and 4.12)

Table 4.11: Infrastructure/ Office Equipment

Facilities	Gujarat	Maharashtra	Karnataka	Assam	Punjab
No. of AC's Installed	2	5	6	8	2
No. of CCTV Cameras	2	1	0	1	4
Drinking Water Facility	1	1	2	1	1
Washroom Facility	1	1	2	2	1
Lunch/Dinner Facility	0	1	0	0	0

Table 4.12: Infrastructure Rating

	Gujarat	Maharashtra	Karnataka	Assam	Punjab	Average
Sufficient Activity Area	5	2	4	3	5	3.8
No disturbance while other FTA are attending call	5	2	3	4	4	3.6
Adequate Ventilation	3	2	3	5	5	3.6
Sufficient Video Surveillance	5	2	4	1	5	3.4

	Gujarat	Maharashtra	Karnataka	Assam	Punjab	Average
No Disturbance from other departments	5	2	4	5	5	4.2
Overall good working environment	3	2	4	3	4	3.6

Opinion Scale: 5-Strongly Agree, 4-Agree, 3-Partially Agree/Disagree, 2-Disagree, 1-Strongly Disagree

The FTAs play a most important role in the performance of the Kisan Call Centres. The Table 4.13 below presents the responses of the Centre supervisor regarding the abilities and activities of the FTAs. The responses indicate that in all the centres, the FTAs are reported to be quick in responding to calls, manage the calls efficiently, and seem to have sufficient knowledge and capability to answer the questions. With respect to accessing the data-base to answer questions, their abilities are also reported to be good and is also good in the matter of escalating calls to the higher levels. In the case of Karnataka and Assam the FTAs are reported to have some problem in satisfactorily finding answers to the farmers questions but in other Centres this shows no problem. Some concern is there regarding discipline in Maharashtra Centre, and motivation is a little low in Maharashtra and Punjab, but the FTAs take considerable initiative to improve and perform better except in Maharashtra and Assam. Overall performance of FTA is reported to be good or excellent in all the Centres.

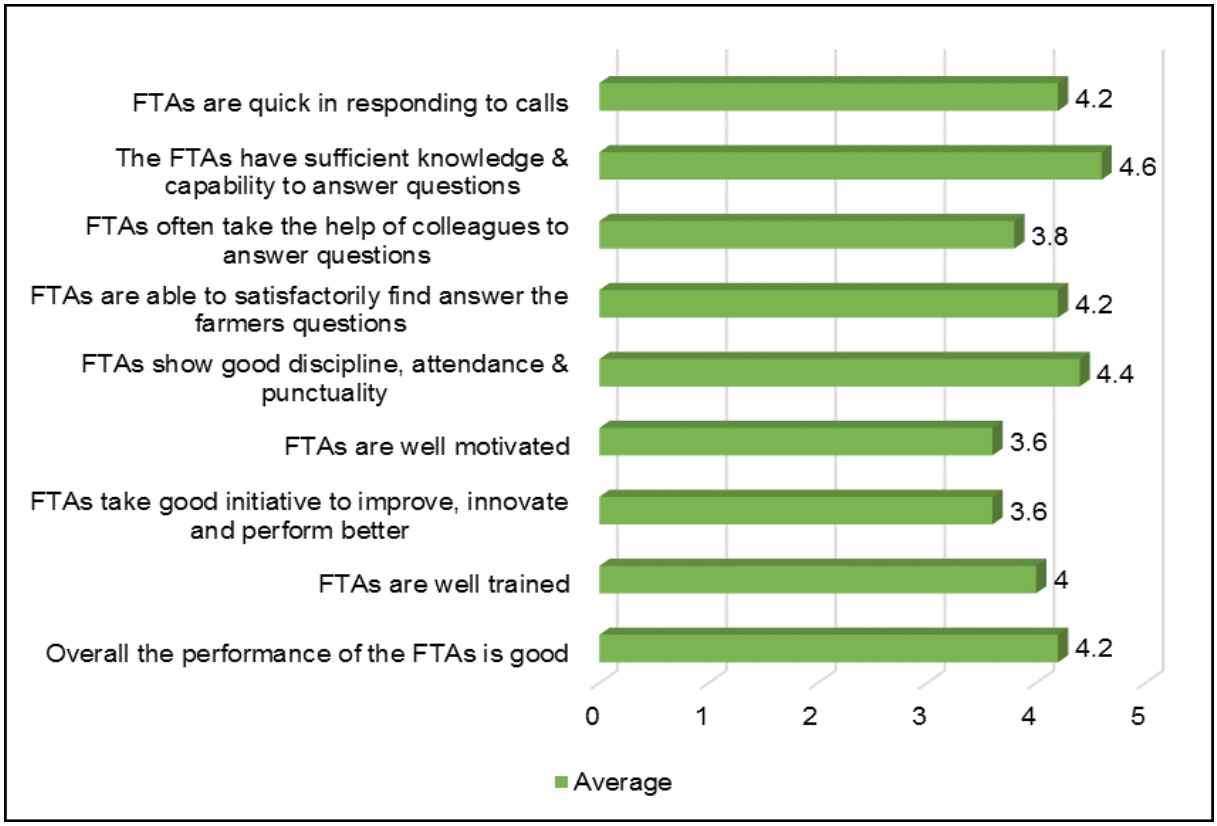
Table 4.13: Assessment of FTA Efficiency

	Gujarat	Maharashtra	Karnataka	Assam	Punjab	Average
FTAs are quick in responding to calls	4	4	4	4	5	4.2
FTA's are able to manage the calls efficiently.	5	4	4	5	5	4.2
The FTAs have sufficient knowledge & capability to answer questions	5	4	4	5	4	4.6
FTAs are able to quickly access the database/ information to answer questions	4	4	3	4	5	4
FTAs often take the help of colleagues to answer questions	5	4	3	3	4	3.8
FTAs often escalate to higher levels to answer questions	2	2	4	1	4	3.8
FTAs are able to satisfactorily find answer the farmers questions	5	4	3	5	4	4.2

	Gujarat	Maharashtra	Karnataka	Assam	Punjab	Average
FTAs show good discipline, attendance & punctuality	5	3	4	5	5	4.4
FTAs are well motivated	4	3	4	4	3	3.6
FTAs take good initiative to improve, innovate and perform better	4	3	4	3	5	3.6
FTAs are well trained	5	4	4	3	4	4
Overall the performance of the FTAs is good	4	4	4	4	5	4.2

Opinion Scale: 5-Strongly Agree, 4-Agree, 3-Partially Agree/Disagree, 2-Disagree, 1-Strongly Disagree

Figure 4.3: Assessment of the FTA Efficiency



Opinion Scale: 5-Strongly Agree, 4-Agree, 3-Partially Agree/Disagree, 2-Disagree, 1-Strongly Disagree

To answer the questions of farmers, the FTAs use information and knowledge from self-knowledge, colleagues and supervisors prepared excel sheets, internet search and extension booklets and books. The most frequently used method is self-knowledge. The FTAs very frequently take the help of colleagues and supervisors in Gujarat and Assam but less so in Karnataka & Punjab. Prepared Excel sheets & materials, internet search, and extension Booklets, books, papers are frequently used in all the Centres. The use of government material is frequent in Gujarat and Punjab but not so in other Centres. The knowledge

acquired in training is used in Maharashtra and Punjab but less so in other states. The use of university experts and nodal officers is substantial only in Karnataka and the information from other farmers is rarely or never used.

Table 4.14: Assessment of Information & Knowledge Sources and Databases uses

(Frequency of Use)

	Gujarat	Maharashtra	Karnataka	Assam	Punjab	Average
Self-Knowledge	5	5	5	4	4	4.6
Colleagues & Supervisor	5	4	3	5	3	4
Prepared Excel sheets & material	5	4	4	4	4	4.2
Internet search	5	5	4	5	4	4.6
Extension Booklets, books, papers	5	5	3	4	5	4.4
Government department sources/material	5	1	1	3	4	2.8
Knowledge acquired in Training	3	5	3	2	5	3.6
University experts/Nodal officer knowledge	2	1	4	3	3	2.6
Information from other farmers	2	3	2	1	2	2

Scale: 5-Very Frequently, 4-Frequently, 3-Occasionally, 2-Rarley, 1-Never

In general, self-knowledge, colleagues and supervisors, prepared excel sheet and internet search are considered good sources of information. Extension booklets are found to be excellent only in the case of Punjab and the government material only good in the case of Gujarat and very poor or satisfactory in other Centers. Knowledge acquired in training is found to be excellent in Maharashtra and Punjab and university experts are also considered excellent in Punjab. Other sources of information such as farmers are generally reported less than satisfactory.

Table 4.15: Assessment of Information & Knowledge Sources and Databases uses

(Rating)

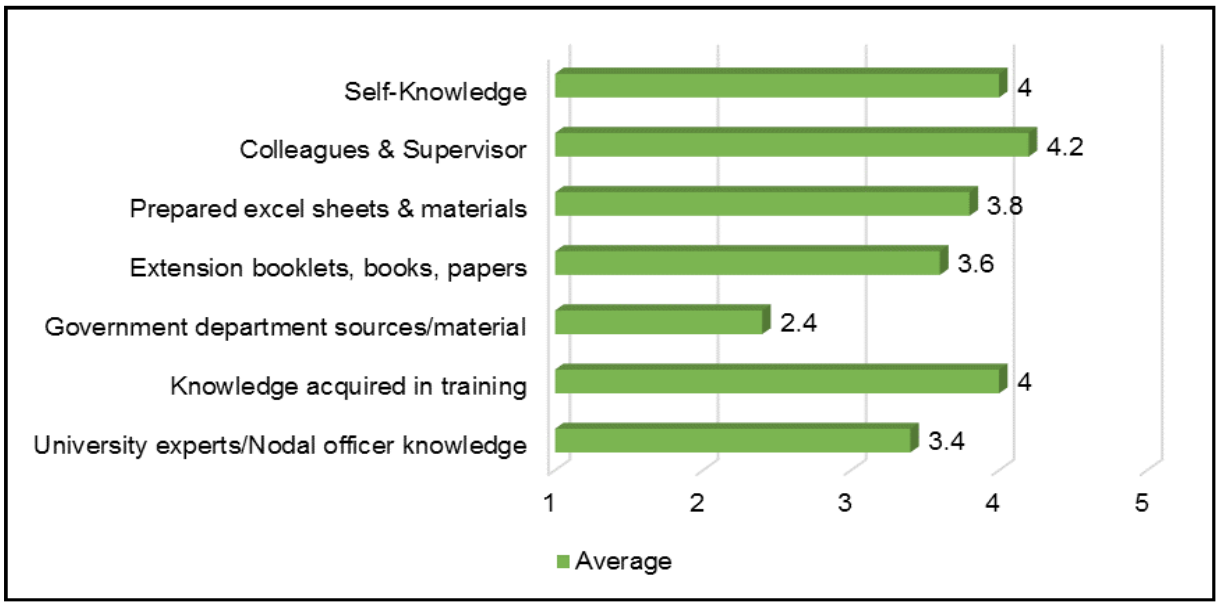
	Gujarat	Maharashtra	Karnataka	Assam	Punjab	Average
Self-Knowledge	4	4	4	4	4	4
Colleagues & Supervisor	4	4	4	5	4	4.2
Prepared Excel sheets & material	4	3	4	4	4	3.8

	Gujarat	Maharashtra	Karnataka	Assam	Punjab	Average
Internet search	4	4	4	5	3	4
Extension Booklets, books, papers	3	3	3	4	5	3.6
Government department sources/material	4	1	1	3	3	2.4
Knowledge acquired in Training	3	5	3	4	5	4
University experts/Nodal officer knowledge	4	1	4	3	5	3.4
Information from other farmers	3	3	4	1	2	2.6

Rating Scale: 5-Excellent, 4-Good, 3-Satisfactory, 2-Somewhat poor, 1-Very Poor

Figure 4.4: Assessment of Information & Knowledge Sources and Databases uses

(Rating)



Rating Scale: 5-Excellent, 4-Good, 3-Satisfactory, 2-Somewhat poor, 1-Very Poor

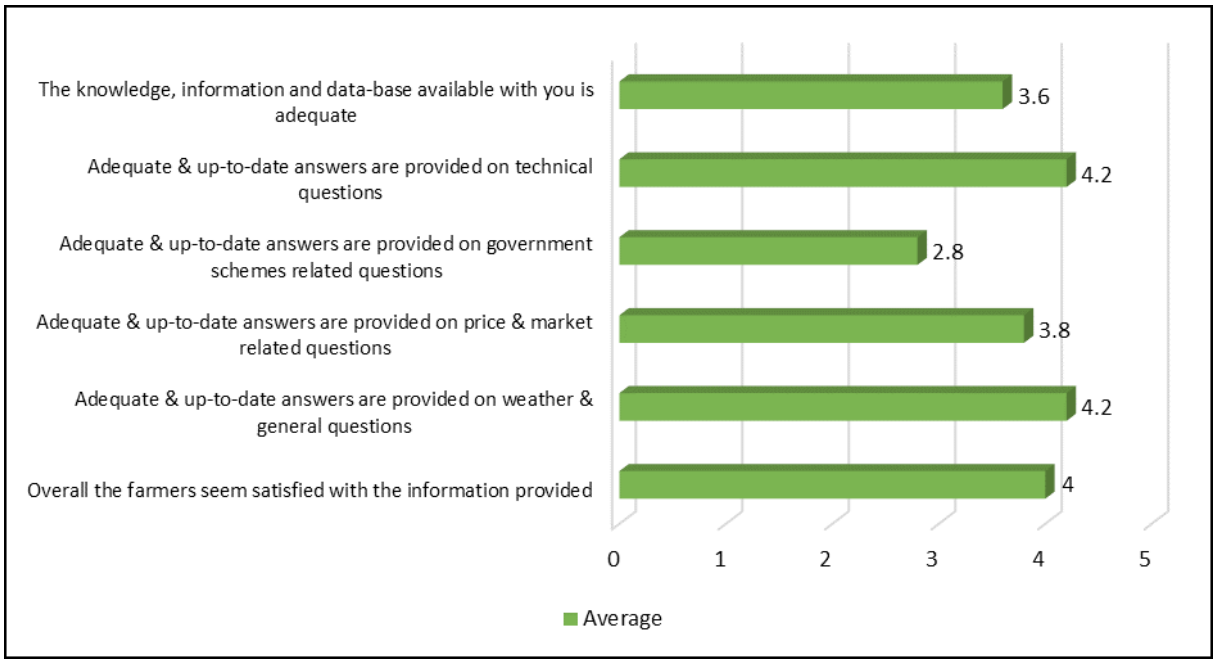
The knowledge data base available is reported not satisfactory in Gujarat and Karnataka but adequate in the other centres, see Table 4.16 below. Whereas the technical questions are being adequately answered, the question related to government schemes are generally not adequately answered and particularly in the case of Gujarat, Maharashtra and Karnataka. The price and market related information is reported to be answered well in all centres except for Gujarat, and the weather related and other questions are answered well by all the centres. Overall the farmers are reported to be satisfied with the information provided in all the centres except Gujarat.

Table 4.16: Overall Assessment of Information Provided

	Gujarat	Maharashtra	Karnataka	Assam	Punjab	Average
The knowledge, information and data-base available with you is adequate	2	4	3	5	4	3.6
Adequate & up-to-date answers are provided on technical questions	4	4	4	4	5	4.2
Adequate & up-to-date answers are provided on government schemes related questions	2	1	3	4	4	2.8
Adequate & up-to-date answers are provided on price & market related questions	2	4	4	4	5	3.8
Adequate & up-to-date answers are provided on weather & general questions	4	4	4	5	4	4.2
Overall the farmers seem satisfied with the information provided	3	4	4	4	5	4

Opinion Scale: 5-Strongly Agree, 4-Agree, 3-Partially Agree/Disagree, 2-Disagree, 1-Strongly Disagree

Figure 4.5: Assessment of Information Provided



Opinion Scale: 5-Strongly Agree, 4-Agree, 3-Partially Agree/Disagree, 2-Disagree, 1-Strongly Disagree

The Table 4.17 below provides information regarding usage of different relevant websites by the Kisan Call Centre. All the Kisan Call Centres are using the Kisan Knowledge Management System (KKMS) all the time. Whereas the farmers' portal is not being used by Gujarat and Assam, it is used 90 percent of the time in Maharashtra, 55 percent in Karnataka and 40 percent in Punjab. The AgMarket website is also used almost all the time by Maharashtra, Karnataka and Punjab. Whereas the Karnataka Centre uses the Agricultural University Portal and the State Seeds Corporation portal most of the time, the Gujarat centre uses the I-Kedut Portal and the State Seeds Corporation portal all the time. The Accuweather portal is not being used by any of the centres.

Table 4.17: Websites used for Information Source (%) usage in Percentage of Time

(%)

Websites	Gujarat	Maharashtra	Karnataka	Assam	Punjab
Farmer's Portal	0	90	55	0	40
Kisan Knowledge Management System	100	100	100	100	100
AgMarket	0	100	80	0	100
Agricultural University Portal	0	0	80	0	0
I-Kedut Portal	100	0	0	0	0
State Seeds Corporation Ltd	100	0	80	0	0
Accuweather	0	0	0	0	0

With respect to the KKMS portal, the performance appears to be less than satisfactory as experienced by the most of the call centres, see Table 4.18 below. It appears to be slow in response and frequently crashes or fails to respond. Overall many centres particularly Gujarat, Karnataka and Assam report difficulty with the KKMS portal. Regarding the farmers' portal, the experience is mixed. Whereas some centres are not using it at all, others are happy with its response. Many, such as Maharashtra and Punjab centre find that it works well. (See Table 4.19)

Table 4.18: Assessment of KKMS Portal

	Gujarat	Maharashtra	Karnataka	Assam	Punjab	Average
KKMS portal response is fast enough	3	4	4	3	3	3.4
KKMS portal does not fail to respond or crash during use	2	4	3	2	4	3
Overall KKMS portal works well	3	4	1	3	4	3

Scale: 5-Strongly Agree, 4-Agree, 3-Partially Agree/Disagree, 2-Disagree, 1-Strongly Disagree

Table 4.19: Assessment of Farmer Portal Website

	Gujarat	Maharashtra	Karnataka	Assam	Punjab	Average
Website response is fast enough	Not Using	4	3	4	4	3.75
Website does not fail to respond or crash during the use	Not Using	3	2	4	4	3.25
Overall the website works well	Not Using	4	4	4	4	4

Opinion Scale: 5-Strongly Agree, 4-Agree, 3-Partially Agree/Disagree, 2-Disagree, 1-Strongly Disagree

Queries that cannot be solved by the FTAs are taken to colleagues and supervisors and if not solved then escalated to higher levels. The results in the Tables 4.20 and 4.21 below show that the answering by colleagues is quite common, but the escalation to supervisors is not as frequents. The escalation to level 2 is however quite rare and only common in Gujarat. The escalation to level 3 is never of rarely done, in almost all the cases of escalation of queries, the response of the higher-level experts is not found to be. This indicate that this part of the system is not working and the responsibility and action on answering farmers queries largely rest with the FTAs.

Table 4.20: Call Escalation System Frequency

	Gujarat	Maharashtra	Karnataka	Assam	Punjab	Average
1. Frequency of Level 1 calls						
Queries not solved by FTA's are answered by colleagues	5	4	3	3	5	4
Queries not solved by colleagues are answered by Supervisors	5	4	2	3	4	3.6
Queries not solved by supervisors are escalated to level 2	4	1	1	1	2	1.8
2. Frequency of Level 2 calls						
Frequency of calls escalated to level 2	4	1	1	1	2	1.8
Queries not solved in level 2 are escalated to level 3	1	1	1	1	2	1.2
3. Frequency of Level 3 calls						
Frequency of calls escalated to Level 3	1	1	1	1	2	1.2
Queries are solved at level 3	1	1	1	1	2	1.2

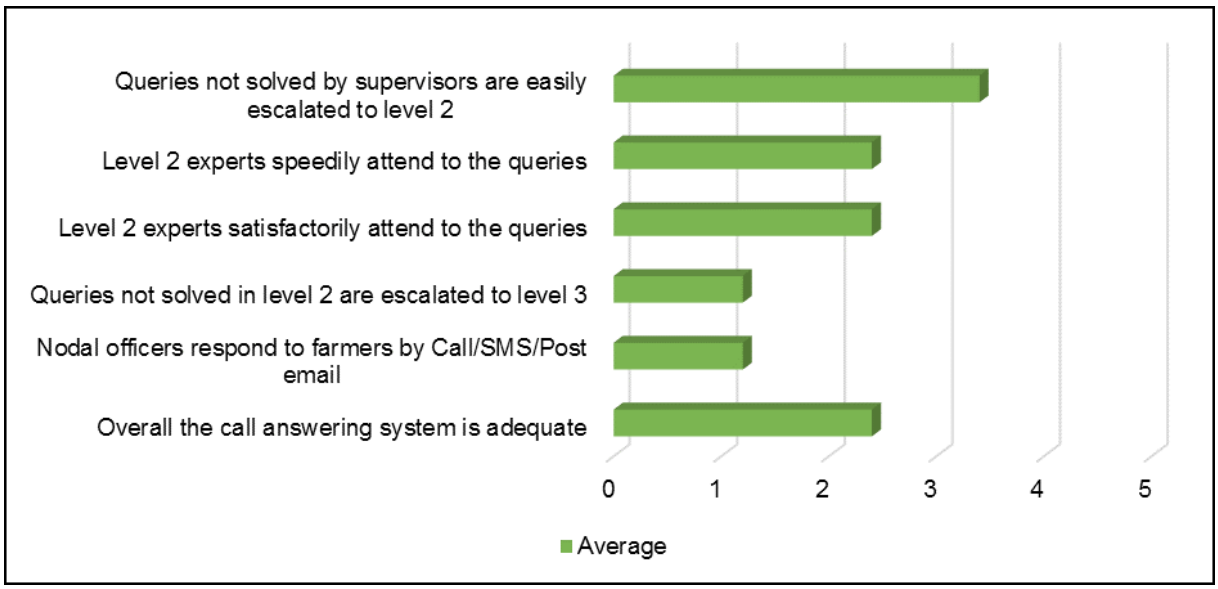
Frequency Scale: 5-Very Frequently, 4-Frequently, 3-Occasionally, 2-Rarley, 1-Never

Table 4.21: Assessing the Call Answering System Efficiency & Effectiveness

	Gujarat	Maharashtra	Karnataka	Assam	Punjab	Average
Queries not solved by supervisors are easily escalated to level 2	5	4	2	2	4	3.4
Level 2 experts speedily attend to the queries	3	2	2	1	4	2.4
Level 2 experts satisfactorily attend to the queries	3	2	2	1	4	2.4
Queries not solved in level 2 are escalated to level 3	1	1	2	1	1	1.2
Nodal officers respond to farmers by Call/SMS/Post email	1	1	1	2	1	1.2
Overall the call answering system is adequate	3	2	2	2	3	2.4

Opinion Scale: 5-Strongly Agree, 4-Agree, 3-Partially Agree/Disagree, 2-Disagree, 1-Strongly Disagree

Figure 4.6: Answering System Assessment



Opinion Scale: 5-Strongly Agree, 4-Agree, 3-Partially Agree/Disagree, 2-Disagree, 1-Strongly Disagree

A number of training programmes are being conducted to train the FTAs in handling the calls. The Table 4.22 below indicates that experience regarding usefulness of the training is highly mixed and not very satisfactory in general. Whereas in the case of Gujarat and Assam, the training is helpful for learning the call procedure and the operation of the hardware and the software, in the case of Maharashtra, Karnataka and Punjab the training is not useful for the operation of the hardware and software. In the case of Gujarat and Karnataka the

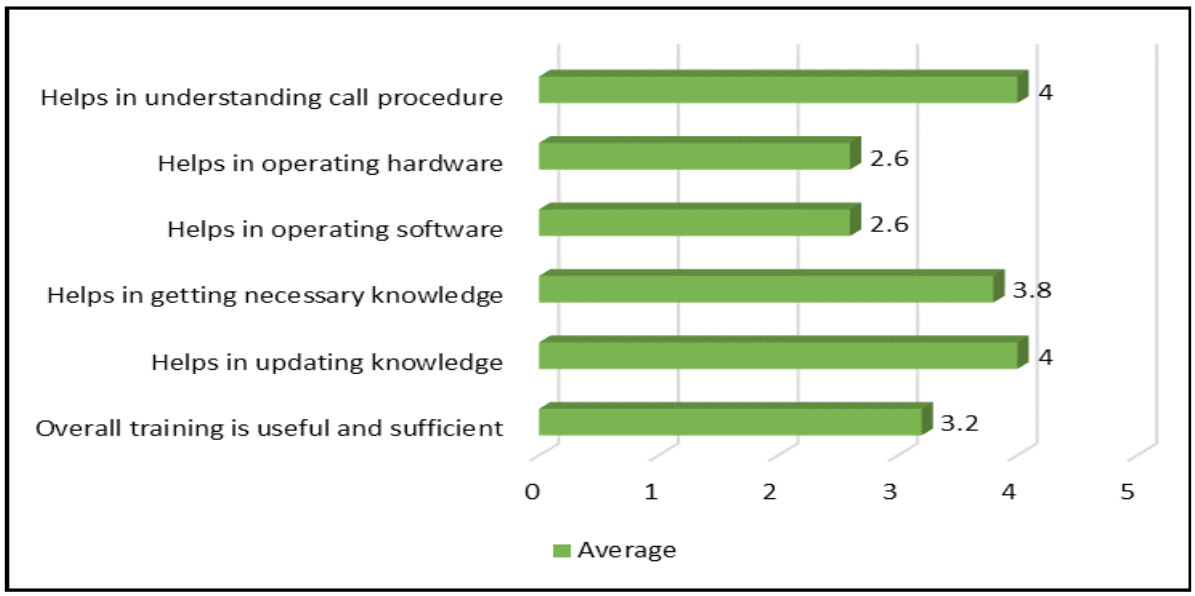
training is not helpful in imparting the necessary or up to date knowledge, but the training seems to be very useful for imparting knowledge in the case of Maharashtra, Assam and Punjab. Overall the training is found to be insufficient and not useful particularly in the case of Gujarat, Maharashtra and Karnataka, but it is reported to be useful in Assam and Punjab.

Table 4.22: Overall Assessment of Usefulness of Training Programmes

	Gujarat	Maharashtra	Karnataka	Assam	Punjab	Average
Helps in understanding call procedure	5	2	3	5	5	4
Helps in operating hardware	4	2	2	4	1	2.6
Helps in operating Software	4	2	2	4	1	2.6
Helps in getting necessary knowledge	3	5	2	4	5	3.8
Helps in updating knowledge	2	5	3	5	5	4
Overall training is useful and sufficient	2	2	3	4	5	3.2

Opinion Scale: 5-Strongly Agree, 4-Agree, 3-Partially Agree/Disagree, 2-Disagree, 1-Strongly Disagree

Figure 4.7: Assessment of training



Opinion Scale: 5-Strongly Agree, 4-Agree, 3-Partially Agree/Disagree, 2-Disagree, 1-Strongly Disagree

In overall assessment, the centres report that a large number of calls are received every day especially in the case of Maharashtra, Karnataka and Punjab, but this is less so in Gujarat and Assam. The handling of the calls is efficient and the call system is good in most of the centres and the farmers and FTA have good communication in all the centres except to some extent in Karnataka. Overall farmers are reported to be satisfied with the call handling. (See Table 4.23)

Table 4.23: Overall Assessment of Call Handling

	Gujarat	Maharashtra	Karnataka	Assam	Punjab	Average
Large number of calls are received everyday	3	4	4	3	5	3.8
All calls are handled efficiently	2	4	4	4	5	3.8
Call handling system are good	4	4	4	3	5	4
Farmer & FTA have good communication	4	4	3	4	5	4
Overall the farmers are satisfied with call handling	4	4	4	4	4	4

Opinion Scale: 5-Strongly Agree, 4-Agree, 3-Partially Agree/Disagree, 2-Disagree, 1-Strongly Disagree

In all the centres, the performance of the hardware is reported to be good and helpful. The performance of the software is also found to be good in all the centres except to some extent in Gujarat. The internet connectivity is less than satisfactory in general. There is dissatisfaction with respect to infrastructure and service support in especially in Gujarat, Assam and Punjab centres. (See Table 4.24)

Table 4.24: Overall Assessment of Hardware, Software & Infrastructure

	Gujarat	Maharashtra	Karnataka	Assam	Punjab	Average
The performance of the hardware used is good & it is helpful	4	4	4	4	4	4
The performance of the software used is good & it is helpful	3	4	4	4	4	3.8
The performance of the internet connectivity is good	4	4	4	3	4	3.8
The infrastructure & service support is good	2	4	4	3	3	3.2

Scale: 5-Strongly Agree, 4-Agree, 3-Partially Agree/Disagree, 2-Disagree, 1-Strongly Disagree

In overall evaluation, the Table 4.25 below indicates that there are some problems faced by different centres regarding availability of information on time, especially in Karnataka and Punjab. Even though the information provided is reported to be easy to understand, there are problems reported in terms of farmer understanding and processing of the information and farmer satisfaction with the information in general and more in the case of Gujarat and Assam.

Table 4.25: Overall Assessment of the information & knowledge available

	Gujarat	Maharashtra	Karnataka	Assam	Punjab	Average
Information is available on time	4	4	3	4	3	3.6
Information available is easy to understand	5	4	3	5	5	4.4
Farmers can understand and process it easily	3	4	4	3	4	3.6
Farmers seems to be satisfied with the information provided	3	4	4	3	4	3.6

Opinion Scale: 5-Strongly Agree, 4-Agree, 3-Partially Agree/Disagree, 2-Disagree, 1-Strongly Disagree

The overall assessment as reported by the Centre supervisors, the performance of the KCC is reported to be good to excellent by all Centres, and own performance is reported to be excellent by all the centres. However, there is considerable dissatisfaction with respect to the systems and policies of the call centres and the ratings range from poor to satisfactory in this. The usefulness of KCC is reported to be good to excellent by all the centres, and all of them agree or strongly agree that the KCC should continue. (See Table 4.26)

Table 4.26: Overall Assessment

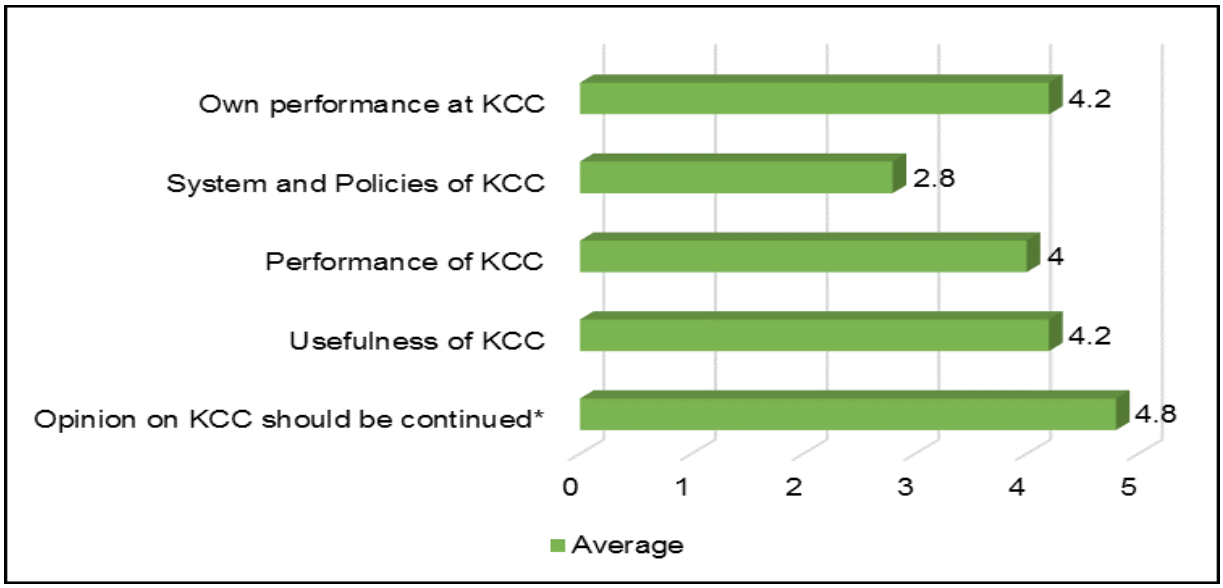
	Gujarat	Maharashtra	Karnataka	Assam	Punjab	Average
Performance of KCC	5	4	4	4	4	4
Own performance at KCC	4	5	4	4	4	4.2
System and Policies of KCC	3	3	3	2	3	2.8
Usefulness of KCC	4	4	4	5	4	4.2

Rating Scale: 5-Excellent, 4-Good, 3-Satisfactory, 2-Somewhat poor, 1-Very Poor

Opinion on KCC should be continued	5	4	5	5	5	4.8

Scale: 5-Strongly Agree, 4-Agree, 3-Partially Agree/Disagree, 2-Disagree, 1-Strongly Disagree

Figure 4.8: Overall Assessment



Rating Scale: 5-Excellent, 4-Good, 3-Satisfactory, 2-Somewhat poor, 1-Very Poor
*__Scale:__ 5-Strongly Agree, 4-Agree, 3-Partially Agree/Disagree, 2-Disagree, 1-Strongly Disagree

The Centres (see Table 4.27 below) request better facilities and these include more air conditioners, cab facilities for ladies, washroom for ladies, food facility, tea/-coffee vending machines and library with recently published books and booklets regarding the required information.

Table 4.27 Infrastructure Facilities Requested

Gujarat	Maharashtra	Karnataka	Assam	Punjab
More AC needed	Cab facilities for ladies	Cab facilities for ladies	Tea/Coffee vending machine	Canteen for Breakfast/lunch/ Dinner
Cab facilities for ladies		Food facility	A library with librarian	Dinner break should be 30 minutes
Washroom for ladies		Clean washroom facility	Recent published books/booklets/ magazines should be provided free of cost.	National/ festival holidays should be given

Chapter 5

Results: Farm Tele Advisors (FTA) Survey

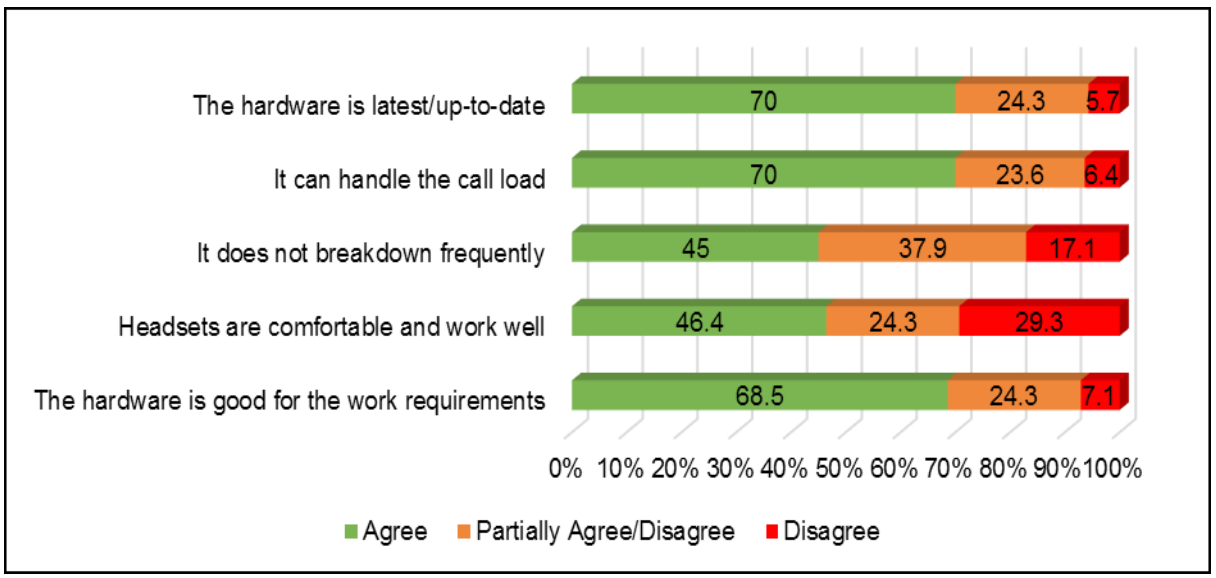
As described above, the study surveyed a total 140 Farm Tele Advisors (FTAs) out of a total of 210 FTAs in the 5 Centers covered. In the case of Ahmedabad all 27 FTAs were surveyed and similarly in Bangalore all 25, and in Guwahati all 30 were surveyed. In the Pune Centre, 32 of the 69 FTAs were covered and in the case of Chandigarh, 26 of the 59 FTAs who were assigned for Punjab were covered. The FTA actually receive and respond to the calls on a daily basis and their responses are from direct experience and are very important.

FTAs have rated the hardware they use for receiving the calls and providing answers to the farmers. By and large about 70 percent of the respondents indicate that the hardware is adequate and works well. They find the display to be good and the hardware can handle the call load that is there on a daily basis. Most of them find that the hardware is able to work even in power outages. Most of them find the interface of keyboard and the mouse to be good and the hardware to be fast and reliable. However, there is variation and a large number of them find that the hardware breaks down frequently and that the headsets are not comfortable. Overall, whereas 68 percent of the FTAs find the hardware to be good for the work requirement, about 32 percent feel that there is scope for improvement. (See Table 5.1)

Table 5.1: Rating of Hardware

	Strongly Agree	Agree	Partially Agree/ Disagree	Disagree	Strongly Disagree
The hardware is latest/up-to-date	23.6	46.4	24.3	5.0	.7
It is reliable	20.7	56.4	19.3	2.9	.7
It is convenient to use for responding to farmer calls	20.0	53.6	20.7	4.3	1.4
It can handle the call load	28.6	41.4	23.6	6.4	0
It does not breakdown frequently	7.9	37.1	37.9	15.0	2.1
The computer display is good	43.6	38.6	12.9	4.3	.7
The interface of keyboard & mouse is good	23.6	41.4	20.7	11.4	2.9
Headsets are comfortable and work well	15.0	31.4	24.3	22.9	6.4
The hardware is good for the work requirements	17.1	51.4	24.3	2.1	5.0

Figure 5.1: Hardware Rating (Per cent)



Considering the variation across the states, see Table 5.1.1 below, whereas Assam, Gujarat and Karnataka indicate high degree of satisfaction with the hardware being used there is dissatisfaction reported from Maharashtra and Punjab with less than 50 percent of the FTAs agreeing that the hardware is good for the work requirements.

Table 5.1.1 The Hardware is good for the Work Requirements

(% within State)

	Assam	Gujarat	Karnataka	Maharashtra	Punjab	Total
Strongly Agree	36.7	14.8	16.0	12.5	3.8	17.1
Agree	46.7	81.5	64.0	34.4	34.6	51.4
Partially Agree/Disagree	16.7	3.7	20.0	40.6	38.5	24.3
Disagree	0.0	0.0	0.0	3.1	7.7	2.1
Strongly Disagree	0.0	0.0	0.0	9.4	15.4	5.0
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

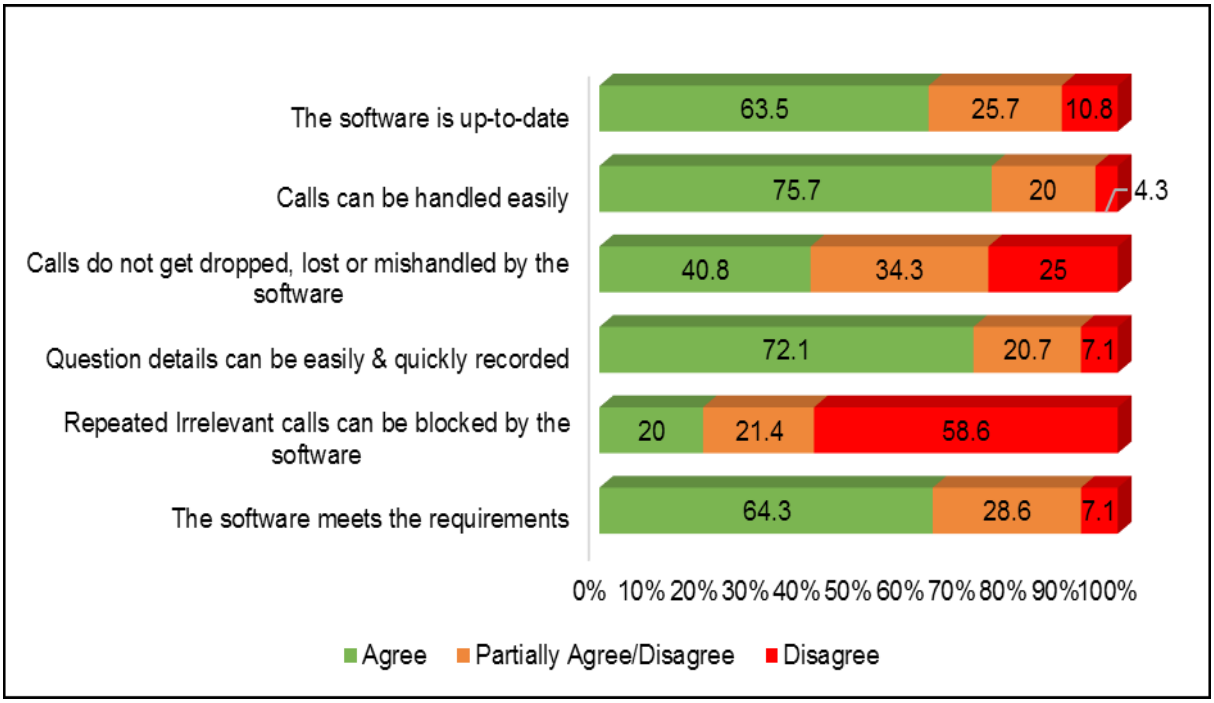
The Table 5.2 below provide the ratings for the software in the KCC used by the FTAs. About 60 to 70 percent of the FTAs feel that the software is up to date, fast and user friendly. Nearly 80 percent indicate that the screen interface is good and the calls can be handled easily. However, more than 50 percent indicate that the voice quality is not good and clear and the calls often get dropped, lost or mishandled by the software. Whereas the software can easily record caller details and the questions and answers, there is an inadequacy in the data base necessary and available to answer the questions. The retrieval of the data is also often difficult and the software does not help much with blocking of irrelevant calls. On the whole, whereas about 65 percent feel that the software meets the requirement, about 35 percent find to be inadequate.

Table 5.2: Rating of Software

	Strongly Agree	Agree	Partially Agree/ Disagree	Disagree	Strongly Disagree
The software is up-to-date	11.4	52.1	25.7	7.9	2.9
It is user friendly	24.3	53.6	16.4	4.3	1.4
The screen interface it shows is good & useful	30.7	48.6	17.1	2.1	1.4
Calls can be handled easily	22.1	53.6	20.0	4.3	0
The voice quality is good & clear	7.1	40.7	35.0	16.4	.7
Calls do not get dropped, lost or mishandled by the software	7.9	32.9	34.3	22.9	2.1
The software can handle heavy call traffic	12.1	45.7	27.9	13.6	.7
Software does not frequently crash	7.1	29.3	28.6	27.1	7.9
Caller details can be easily recorded and registered	40.0	40.7	12.1	5.0	1.4

	Strongly Agree	Agree	Partially Agree/ Disagree	Disagree	Strongly Disagree
Question details can be easily & quickly recorded	27.1	45.0	20.7	7.1	0
Repeated Irrelevant calls can be blocked by the software	4.3	15.7	21.4	15.7	42.9
The software meets the requirements	9.3	55.0	28.6	5.7	1.4

Figure 5.2: Software Rating (Per cent)



The Table 5.2.1 below provides the state-wise analysis of the response on software meeting the requirement. There is variation across the states. Whereas Maharashtra and Gujarat reports good satisfaction with the software available, there is dissatisfaction regarding the software in Punjab. Assam and Karnataka showing a mix picture. Overall nearly 35 percent indicate the dissatisfaction and shows that there is scope for improvement.

Table 5.2.1 Software Meets the Requirements

(% within State)

	Assam	Gujarat	Karnataka	Maharashtra	Punjab	Total
Strongly Agree	0.0	14.8	4.0	25.0	0.0	9.3
Agree	70.0	74.1	48.0	56.3	23.1	55.0
Partially Agree/Disagree	30.0	11.1	32.0	9.4	65.4	28.6
Disagree	0.0	0.0	16.0	9.4	3.8	5.7
Strongly Disagree	0.0	0.0	0.0	0.0	7.7	1.4

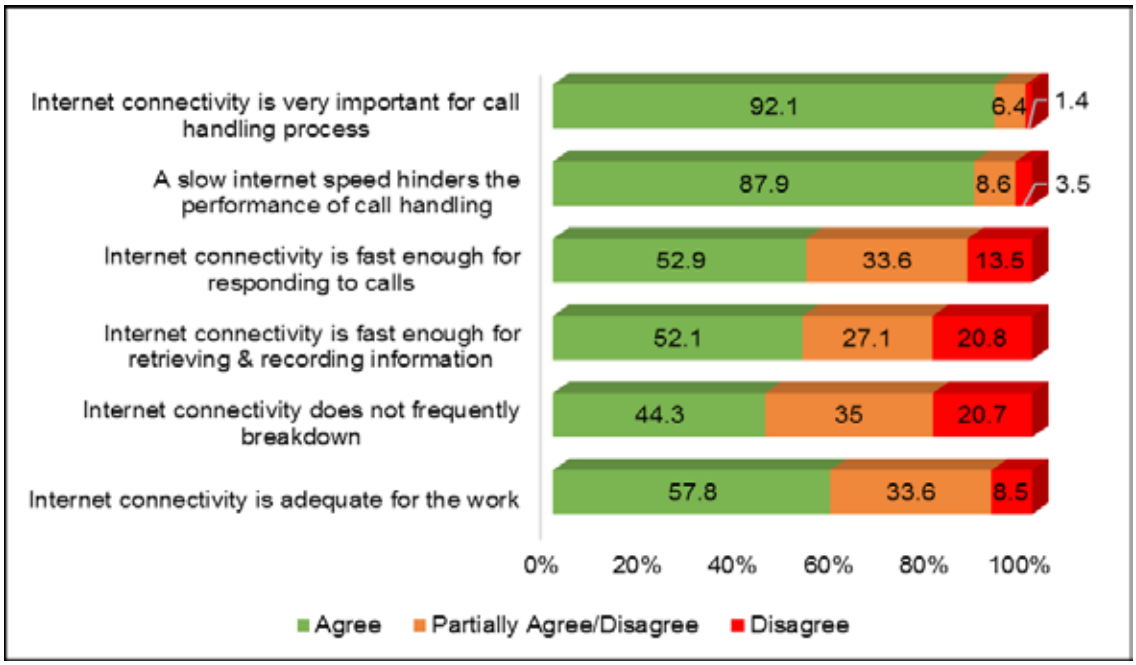
	Assam	Gujarat	Karnataka	Maharashtra	Punjab	Total
Total	100.0	100.0	100.0	100.0	100.0	100.0

The responses of the FTAs, see Table 5.3 below, indicates that internet connectivity is very important for call handling and slow internet speed hinders performance. Little over 50 percent of the FTAs report that the internet connectivity is fast enough for responding to calls and for retrieving and recording information. However, a large number indicate difficulty with the internet speed. Many also indicate that internet connectivity frequently breaks down. 57.8 percent indicate that internet connectivity is adequate for the work but the rest do not find it adequate.

Table 5.3: Internet Connectivity

	Strongly Agree	Agree	Partially Agree/ Disagree	Disagree	Strongly Disagree	Average Rating
Internet connectivity is very important for call handling process	56.4	35.7	6.4	.7	.7	4.5
A slow internet speed hinders the performance of call handling	42.9	45.0	8.6	2.1	1.4	4.3
Internet connectivity is fast enough for responding to calls	17.9	35.0	33.6	11.4	2.1	3.6
Internet connectivity is fast enough for retrieving & recording information	5.7	46.4	27.1	17.9	2.9	3.3
Internet connectivity does not frequently breakdown	7.9	36.4	35.0	17.1	3.6	3.3
Internet connectivity is adequate for the work	10.7	47.1	33.6	7.1	1.4	3.6

Figure: 5.3 Internet Connectivity



On the experience with internet connectivity across the states, there is considerable variation, see Table 5.3.1 below. Whereas in Assam, Gujarat, and Maharashtra the internet connectivity is reported to be reasonably good, in the case of Karnataka particularly, and in the case of Punjab, internet connectivity is seen to be a significant problem by a large number of FTAs. Thus, there is a need for improvement of internet connectivity in these states.

Table 5.3.1: The Internet Connectivity is Adequate for the Work

(% within State)

	Assam	Gujarat	Karnataka	Maharashtra	Punjab	Total
Strongly Agree	16.7	7.4	0.0	25.0	0.0	10.7
Agree	46.7	63.0	20.0	50.0	53.8	47.1
Partially Agree/Disagree	36.7	22.2	72.0	12.5	30.8	33.6
Disagree	0.0	7.4	8.0	9.4	11.5	7.1
Strongly Disagree	0.0	0.0	0.0	3.1	3.8	1.4
Total	100.0	100.0	100.0	100.0	100.0	100.0

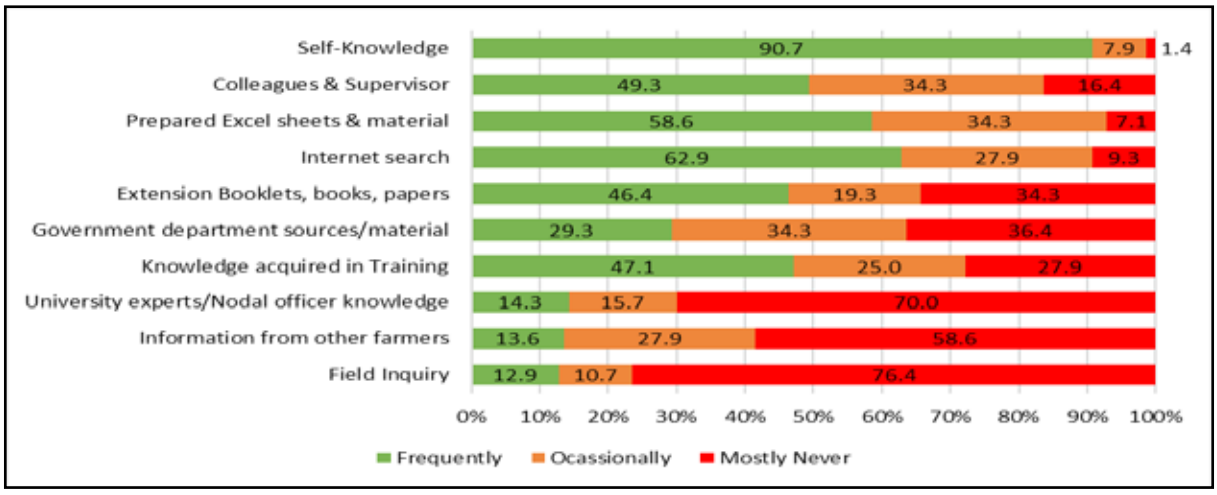
The FTAs depend on many information sources for answering questions. The Table 5.4 below gives the frequency of use of different sources of information used by the FTAs to answer farmers' questions. Clearly, the most frequently used sources is self-knowledge, which is reported to be frequently or very frequently used by over 90 percent of the FTAs. The next most frequently used source is internet search which is reported to be frequently or very frequently used by over 60 percent of the FTAs. The next in frequency of use is prepared

excel sheet and materials which are frequently or very frequently referred by 58 percent of the FTAs followed by colleagues and supervisors at nearly 50 percent. Extension material and knowledge acquired in training are also used but with a lesser frequency. University experts or nodal officers are very rarely or never used. Thus, self-knowledge, internet search and self-prepared excel sheets and material are the most frequently used.

Table 5.4: Frequency of Knowledge Sources used for Answering

	Very Frequently	Frequently	Occasionally	Rarely	Never	Average Rating
Self-Knowledge	56.4	34.3	7.9		1.4	4.4
Colleagues & Supervisor	10.0	39.3	34.3	15.7	.7	3.4
Prepared Excel sheets & material	17.9	40.7	34.3	3.6	3.6	3.7
Internet search	30.0	32.9	27.9	6.4	2.9	3.8
Extension Booklets, books, papers	12.9	33.6	19.3	15.0	19.3	3.1
Government department sources/material	7.1	22.1	34.3	15.7	20.7	2.8
Knowledge acquired in Training	11.4	35.7	25.0	17.9	10.0	3.2
University experts/Nodal officer knowledge	3.6	10.7	15.7	32.1	37.9	2.1
Information from other farmers	4.3	9.3	27.9	29.3	29.3	2.3
Field Inquiry	2.1	10.7	10.7	17.1	59.3	1.8

Figure 5.4: Frequency of Knowledge Sources used for Answering



How good are the different sources of information as considered by the FTAs? Over 90 percent indicate that their self-knowledge is excellent to good, see Table 5.5 below. Over

70 percent indicate that the knowledge of their colleagues and supervisor is also good or excellent. The FTAs also depend on excel sheets and materials they have prepared to answer questions, and over 60 percent indicate that these are good to excellent. Internet search is also considered good to excellent by nearly 80 percent of the FTAs for answering questions. However, a large number of more than 50 percent indicate the inadequacy of extension booklets and government department sources and materials. Whereas the knowledge acquired in training is reported to be good to excellent by nearly 60 percent of the FTAs, a very large number indicate the inadequacy of university experts, nodal officers and information from other farmers.

Table 5.5: Rating Information & Knowledge Sources used

	Excellent	Good	Satisfactory	Somewhat Poor	Very Poor	Average Rating
Self-Knowledge	44.3	47.1	6.4	1.4	.7	4.3
Colleagues & Supervisor	23.6	48.6	23.6	4.3		3.9
Prepared Excel sheets & material	25.7	35.0	32.1	5.0	2.1	3.8
Internet search	32.1	44.3	20.7	2.1	.7	4.1
Extension Booklets, books, papers	10.7	37.1	20.7	12.1	19.3	3.1
Government department sources/material	4.3	21.4	33.6	20.7	20.0	2.7
Knowledge acquired in Training	18.6	40.0	23.6	12.1	5.7	3.5
University experts/Nodal officer knowledge	11.4	23.6	18.6	9.3	37.1	2.6
Information from other farmers	7.9	20.7	26.4	17.9	27.1	2.6
Field Inquiry	2.1	9.3	10.0	24.3	54.3	1.8

There is substantial variation in the quality of extension material available across the states as reported by the FTAs, see Table below. In the case of Gujarat, this is found to be very poor by many FTAs and similarly in Maharashtra, the extension material is found to be lacking in quality. However, in Assam, Karnataka, and Punjab the extension material is reported to be good to excellent by a majority of the FTAs. Thus, there is considerable variation across states in the quality and usefulness of the extension material.

Table: 5.5.1 Extension Booklets, Books, Papers Quality across State

(% within State)

	Assam	Gujarat	Karnataka	Maharashtra	Punjab	Total
Excellent	10.0	0.0	16.0	9.4	19.2	10.7
Good	46.7	14.8	52.0	28.1	46.2	37.1
Satisfactory	33.3	11.1	8.0	15.6	34.6	20.7
Somewhat Poor	10.0	11.1	20.0	18.8	0.0	12.1
Very Poor		63.0	4.0	28.1		19.3
Total	100.0	100.0	100.0	100.0	100.0	100.0

How up to date is the knowledge? The FTAs report that their self-knowledge is frequently updated and they believed that the knowledge of colleagues and supervisors is also frequently updated, see Table 5.6 below. They also consider even the internet sources to be frequently updated. However, it is reported that the extension material and government source materials are not frequently updated, and information from other sources including knowledge through training and even knowledge university experts and Nodal Officers is also not frequently updated. Thus, information from many outside and higher-level sources is reported to be frequently not up to date.

Table 5.6: Frequency of Updating the Information in the Sources

	Very Frequently	Frequently	Occasionally	Rarely	Never	Average Rating
Self-Knowledge	42.1	45.0	11.4	.7	.7	4.3
Colleagues & Supervisor	15.0	48.6	27.1	9.3		3.7
Prepared Excel sheets & material	10.0	37.1	35.7	12.1	5.0	3.4
Internet search	29.3	38.6	27.1	4.3	.7	3.9
Extension Booklets, books, papers	7.1	37.1	17.1	17.1	21.4	2.9
Government department sources/ material	3.6	24.3	31.4	17.9	22.9	2.7
Knowledge acquired in Training	11.4	31.4	27.9	21.4	7.9	3.2
University experts/ Nodal officer knowledge	4.3	15.7	18.6	21.4	40.0	2.2
Information from other farmers	5.7	9.3	28.6	26.4	30.0	2.3
Field Inquiry	.7	7.9	11.4	20.7	59.3	1.7

With respect to technical information, the FTAs report that the information is easily available and that they as well as the farmers are able to easily understand and process the information, see Table 5.7 below. However, often critical information is not available and it is often not up to date and reliable. With respect to making sufficient and quality technical information to the farmers, there is reported to be provided by a majority of the sample but there is deficiency in a large number of cases.

Table 5.7: Overall Assessment of the Information Sources used for Providing Technical Information

	Strongly Agree	Agree	Partially Agree/ Disagree	Disagree	Strongly Disagree	Average Rating
Information is easily available	20.0	60.7	17.9	1.4		4.0
Important and critical information required is easily available	5.7	41.4	34.3	17.9	.7	3.3
The information is reliable	20.0	55.0	19.3	5.0	.7	3.9
The information is up-to-date	12.1	35.7	34.3	16.4	1.4	3.4
Farmers can understand the information and process it easily	25.7	50.0	22.9	1.4		4.0
Farmers seem to be satisfied with the information provided	24.3	50.0	22.9	2.1	.7	4.0
Overall there is sufficient & quality information available to answer farmer's questions	10.7	53.6	27.1	7.9	.7	3.7

With respect to information on government schemes, it is indicated that this is frequently not available especially when it comes to critical information, see Table 5.8 below. The information is frequently not up to date and the satisfaction level with this information is often low. Thus, there is difficulty in providing satisfactory information on government schemes.

Table 5.8: Overall Assessment of the Information Sources used for Providing Government Schemes Related Information

	Strongly Agree	Agree	Partially Agree/ Disagree	Disagree	Strongly Disagree	Average Rating
Information is easily available	13.6	47.9	32.1	4.3	2.1	3.7
Important and critical information required is easily available	6.4	37.9	36.4	16.4	2.9	3.3
The information is reliable	13.6	53.6	24.3	5.7	2.9	3.7
The information is up-to-date	7.1	33.6	36.4	15.7	7.1	3.2
Farmers can understand the information and process it easily	22.9	47.9	21.4	5.0	2.9	3.8
Farmers seem to be satisfied with the information provided	14.3	47.9	25.7	9.3	2.9	3.6
Overall there is sufficient & quality information available to answer farmer's questions	9.3	37.1	38.6	9.3	5.7	3.4

With respect to price and market information, the FTAs report that it is easily available and easy to understand, see Table 5.9 below. However, there is often a lack of critical information lack of critical information and there are problems in terms of the information being available on time and being up to date. Overall, though 60-70 percent say that there is sufficient & quality information available, there is scope for improvement.

Table 5.9: Overall Assessment of the Information Sources used for Providing Price and Market Related Information

	Strongly Agree	Agree	Partially Agree/ Disagree	Disagree	Strongly Disagree	Average Rating
Information is easily available	22.2	55.6	19.8		2.4	4
Important and critical information required is easily available	13.5	46	31	6.3	3.2	3.6
The information is reliable	13.6	49.6	32	1.6	3.2	3.7
The information is up-to-date	22.2	35.7	28.6	8.7	4.8	3.6

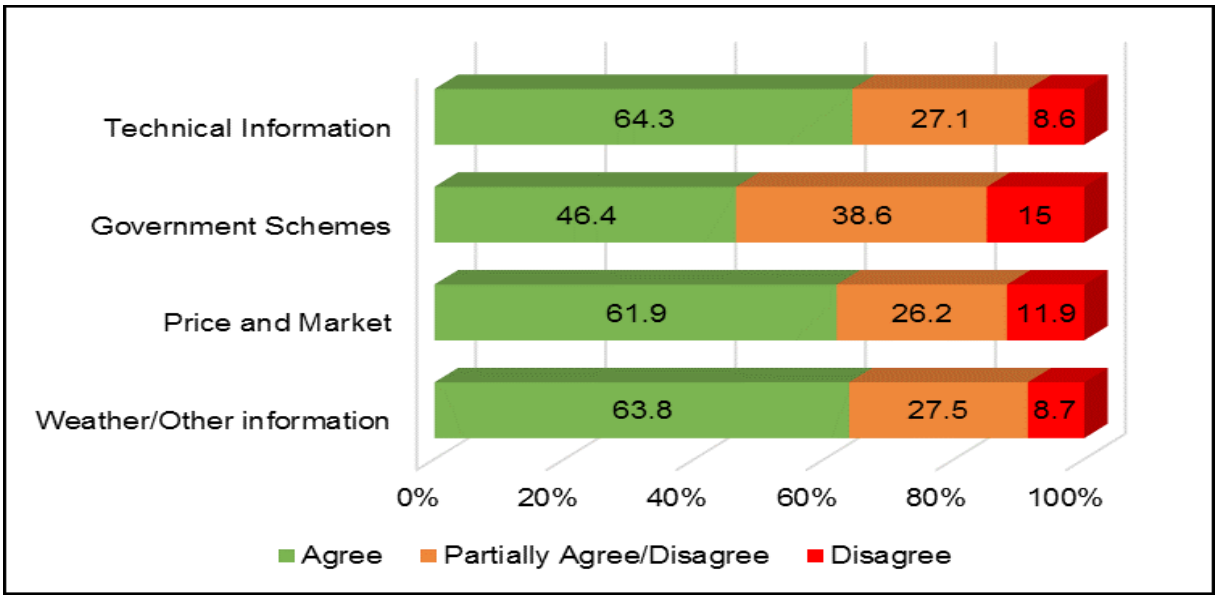
	Strongly Agree	Agree	Partially Agree/ Disagree	Disagree	Strongly Disagree	Average Rating
Farmers can understand the information and process it easily	26.2	46.8	23.8	0.8	2.4	3.9
Farmers seem to be satisfied with the information provided	27.8	41.3	24.6	3.2	3.2	3.9
Overall there is sufficient & quality information available to answer farmer's questions	21.4	40.5	26.2	9.5	2.4	3.7

With respect to other information including weather and general information, the information is easily available and is easy to understand and process, see Table 5.10 below. However, there are problems with respect to the reliability and timeliness of the information. Even though about 60 percent report that the farmers are satisfied with the information, many indicate that this is not so and there is scope for improvement.

Table 5.10 Overall Assessment of the Information Sources used for Providing Price and Market Related Information

	Strongly Agree	Agree	Partially Agree/ Disagree	Disagree	Strongly Disagree	Average Rating
Information is easily available	29.5	55.4	13.7	.7	.7	4.1
Important and critical information required is easily available	19.4	51.1	24.5	3.6	1.4	3.8
The information is reliable	21.7	41.3	21.0	13.8	2.2	3.7
The information is up-to-date	17.4	48.6	25.4	6.5	2.2	3.7
Farmers can understand the information and process it easily	22.5	60.1	14.5	2.2	.7	4.0
Farmers seem to be satisfied with the information provided	22.5	40.6	23.2	12.3	1.4	3.7
Overall there is sufficient & quality information available to answer farmer's questions	19.6	44.2	27.5	8.0	.7	3.7

Figure 5.5: Overall Information Availability to Answer Farmers Questions



The KKMS website is used almost all the time by the FTAs during their work of responding to calls and recording information. The FTAs indicate that the website is easy to use and it is clear and well organized, see Table 5.11 below. However, the response of the website is sometimes found to be slow and the information on it is often not up to date. The website also has the problem of often crashing or responding slowly during use. In terms of retrieving information and making changes in recorded information, the website has difficulties. Overall the performance of the website indicates that there is scope for improvement.

Table 5.11: Assessment of Kisan Knowledge Management System (KKMS) Website

	Strongly Agree	Agree	Partially Agree/ Disagree	Disagree	Strongly Disagree	Average Rating
KKMS website is easy to use	61.4	32.1	6.4			4.6
The organization of information on the system screens is clear	54.7	39.6	5.0	.7		4.5
KKMS website response is fast enough	21.4	45.7	14.3	17.1	1.4	3.7
Information on the website is regularly updated	17.1	35.7	20.0	7.9	19.3	3.2
KKMS website does not fail to respond or crash during use	12.9	33.6	27.9	22.9	2.9	3.3

	Strongly Agree	Agree	Partially Agree/ Disagree	Disagree	Strongly Disagree	Average Rating
You can make changes in the information after the information is recorded	15.7	28.6	20.0	12.1	23.6	3.0
Retrieving information from KKMS is easy	16.4	38.6	20.0	9.3	15.7	3.3
Overall the KKMS website works well	17.9	45.7	28.6	7.1	.7	3.7

With respect to the farmers' portal website, many FTAs indicate that it is not very frequently used though the website is found to be easy to use, see Table 5.12 below. The organization of the material on the website is quite clear. However, the information available is not found to be very up to date, there is problem of it failing/ crashing, and about one third indicate that there is dissatisfaction with its working.

Table 5.12: Assessment of Farmers Portal Website

	Strongly Agree	Agree	Partially Agree/ Disagree	Disagree	Strongly Disagree	Average Rating
The website is frequently used	9.8	54.5	30.4	1.8	3.6	3.7
The website is easy to use	27.7	50.0	19.6	.9	1.8	4.0
The organization of information on the system screens is clear	17.0	64.3	13.4	3.6	1.8	3.9
The website response is fast enough	17.0	50.9	25.9	3.6	2.7	3.8
The website is very useful	17.9	50.9	18.8	10.7	1.8	3.7
Information on the website is regularly updated	13.4	33.0	39.3	11.6	2.7	3.4
The website does not fail to respond or crash during use	8.9	45.5	31.3	10.7	3.6	3.5
Overall the website works well	7.1	60.7	25.9	3.6	2.7	3.7

With respect to the M-Kisan website, there appears to be quite wide dissatisfaction and it is not very frequently used, see Table 5.13 below. The website is also not found to be very useful and it is not very convenient to use. Overall, even though many agree that it works well, a large number are not finding it useful.

Table 5.13: Assessment of m-Kisan Website

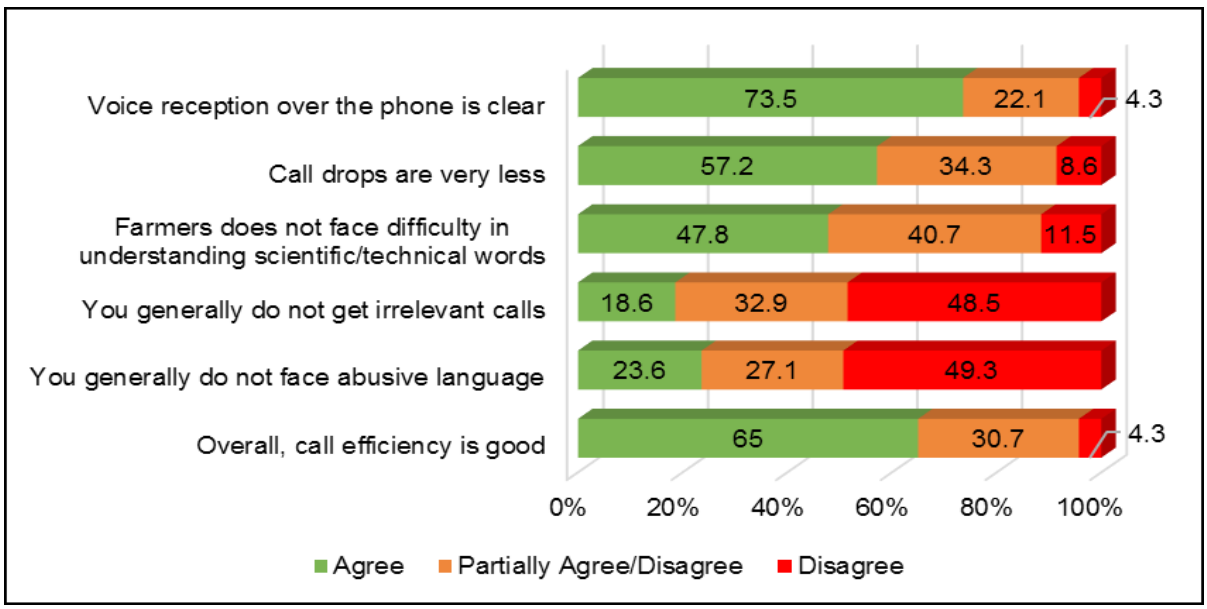
	Strongly Agree	Agree	Partially Agree/ Disagree	Disagree	Strongly Disagree	Average Rating
The website is frequently used	7.9	36.0	22.8	2.6	30.7	2.9
The website is easy to use	11.4	40.4	16.7	2.6	28.9	3.0
The organization of information on the system screens is clear	17.5	35.1	14.9	3.5	28.9	3.1
Registration of SMS is easy	11.4	39.5	13.2	6.1	29.8	3.0
List of services available are useful	9.7	40.7	16.8	3.5	29.2	3.0
The website response is fast enough	7.9	34.2	23.7	5.3	28.9	2.9
Information on the website is regularly updated	7.0	34.2	24.6	6.1	28.1	2.9
The website does not fail to respond or crash during use	7.0	32.5	28.1	2.6	29.8	2.8
Overall the website works well	8.8	46.0	9.7	5.3	30.1	3.0

The Table 5.14 below provides as assessment of the call handling efficiency given by the FTAs. The FTAs find that the voice reception over the phone is clear. But call drops are somewhat of a problem. The FTAs indicate that they don't find much difficulty in understanding the farmers and the farmers do not face much difficulty in understanding the FTA. However, there is some difficulty in understanding scientific and technical words that are used. There exists substantial problem of irrelevant calls and abusive language that is seen. However, overall, 65 per cent of the FTAs consider the call efficiency to be good.

Table 5.14: Assessing Call Efficiency

	Strongly Agree	Agree	Partially Agree/ Disagree	Disagree	Strongly Disagree	Average Rating
Voice reception over the phone is clear	22.1	51.4	22.1	3.6	.7	3.9
Call drops are very less	13.6	43.6	34.3	7.9	.7	3.6
It is easy to understand the queries from farmers	17.1	60.7	20.0	1.4	.7	3.9
Farmers does not face difficulty in understanding your dialect	16.4	59.3	21.4	2.1	.7	3.9
Farmers does not face difficulty in understanding scientific/technical words	10.7	37.1	40.7	8.6	2.9	3.4
You generally do not get irrelevant calls	5.0	13.6	32.9	27.1	21.4	2.5
You generally do not face abusive language	3.6	20.0	27.1	21.4	27.9	2.5
Overall, call efficiency is good	5.7	59.3	30.7	2.9	1.4	3.7

Figure 5.6: Call Efficiency



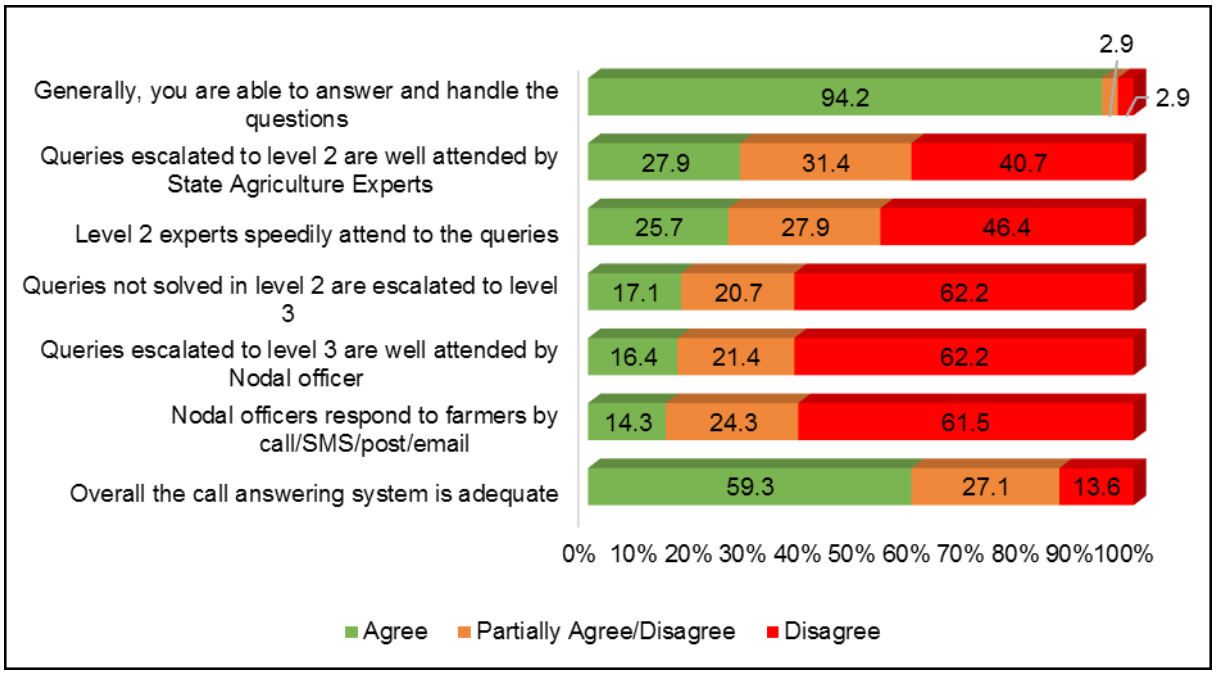
The Table 5.15 below provides an assessment of call answering systems of the KCC and its functioning. The results indicate that, to a large extent, the calls are well handled by the FTAs and they are able to answer and handle the questions themselves. Those questions which they are not able to handle appear to be answered by colleagues and supervisors substantially. The escalation to level 2 is not working very well in many cases and these calls

are frequently not well attended to and not speedily attended to by the state agriculture experts. The escalation to level 3, fares even worse and the nodal officers do not often attend to the questions even through SMS or other means. Overall less than 60 per cent of the FTAs consider the answering systems to be adequate, and there is a substantial scope for improvement.

Table 5.15: Assessing the Call Answering Efficiency & Effectiveness

	Strongly Agree	Agree	Partially Agree/ Disagree	Disagree	Strongly Disagree	Average Rating
Generally, you are able to answer and handle the questions	42.1	52.1	2.9	2.9		4.3
Queries not solved by you are well answered by colleagues	17.1	62.9	17.1	2.9		3.9
Queries not solved by colleagues are well answered by Supervisors	26.4	45.7	20.0	7.9		3.9
Queries not solved by supervisors are easily escalated to level 2	14.3	32.1	19.3	21.4	12.9	3.1
Queries escalated to level 2 are well attended by State Agriculture Experts	5.0	22.9	31.4	25.7	15.0	2.8
Level 2 experts speedily attend to the queries	4.3	21.4	27.9	32.1	14.3	2.7
Queries not solved in level 2 are escalated to level 3	.7	16.4	20.7	17.9	44.3	2.1
Queries escalated to level 3 are well attended by Nodal officer	1.4	15.0	21.4	18.6	43.6	2.1
Nodal officers respond to farmers by call/SMS/post/ email	4.3	10.0	24.3	18.6	42.9	2.1
Overall the call answering system is adequate	12.9	46.4	27.1	7.9	5.7	3.5

Figure 5.7: Call Answering System Effectiveness



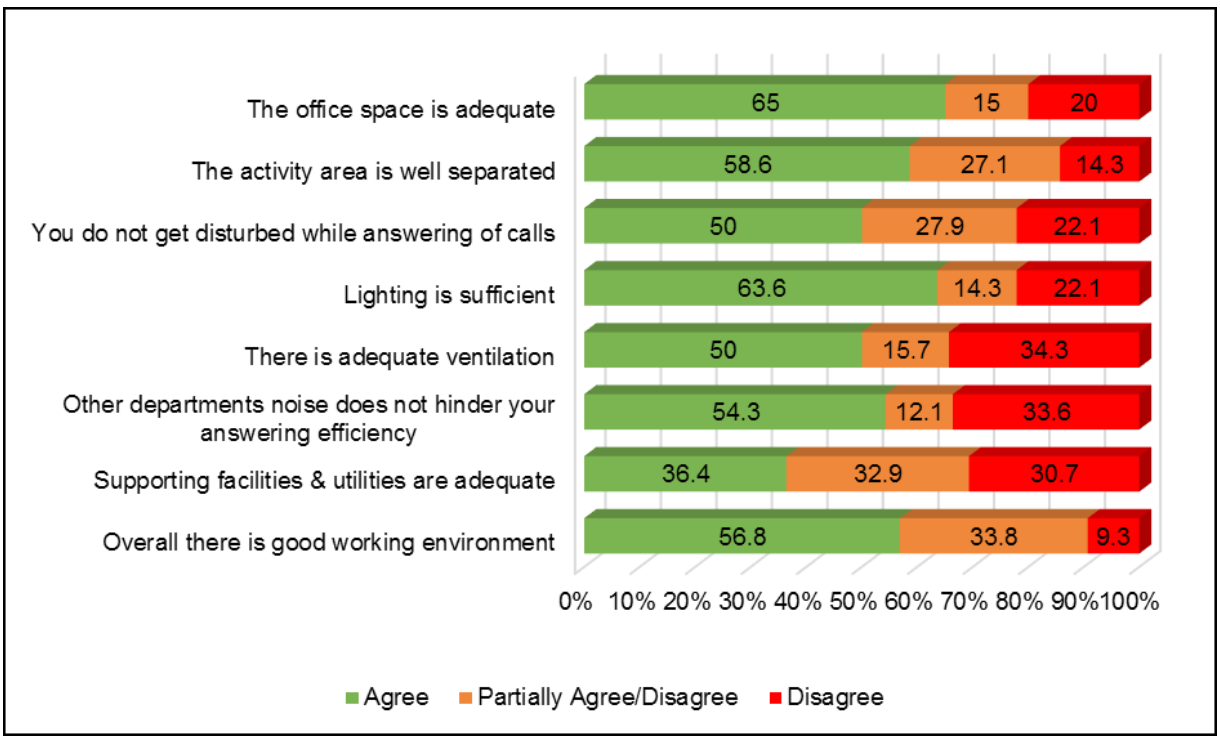
The Table 5.16 below gives the ratings of the infrastructure facility of the call centre. The office space and the activity area are largely found to be adequate. However, the separation of the activity area between FTAs has some problems as a result of which there is disturbance while answering the calls. The lighting is sufficient but the ventilation is reported to be inadequate by a large number of FTAs. The video surveillance is adequate but could be better and frequent power cuts do not seem to be a common problem. The noise from other departments is reported to be a problem by about 45 per cent of the FTAs and there is a scope for improving the supportive facilities and utilities. Overall, the work environment is considered to be reasonable by about 56 per cent of the FTAs and the rest disagree and see scope for improvement.

Table 5.16 Infrastructure Rating

	Strongly Agree	Agree	Partially Agree/ Disagree	Disagree	Strongly Disagree	Average Rating
The office space is adequate	20.7	44.3	15.0	13.6	6.4	3.6
The activity area for calling is sufficient	23.6	46.4	14.3	11.4	4.3	3.7
The activity area is well separated	15.7	42.9	27.1	10.0	4.3	3.6
You do not get disturbed while answering of calls	10.7	39.3	27.9	17.1	5.0	3.3
Lighting is sufficient	39.3	24.3	14.3	17.1	5.0	3.8

	Strongly Agree	Agree	Partially Agree/ Disagree	Disagree	Strongly Disagree	Average Rating
There is adequate ventilation	23.6	26.4	15.7	21.4	12.9	3.3
Video surveillance is sufficient for monitoring	7.1	42.1	29.3	15.0	6.4	3.3
Power cuts are not frequent	11.4	52.9	22.1	10.0	3.6	3.6
Other departments noise does not hinder your answering efficiency	15.0	39.3	12.1	22.9	10.7	3.3
Supporting facilities & utilities are adequate	5.7	30.7	32.9	27.1	3.6	3.1
Overall there is good working environment	14.4	42.4	33.8	7.9	1.4	3.6

Figure 5.8: Office & Infrastructure

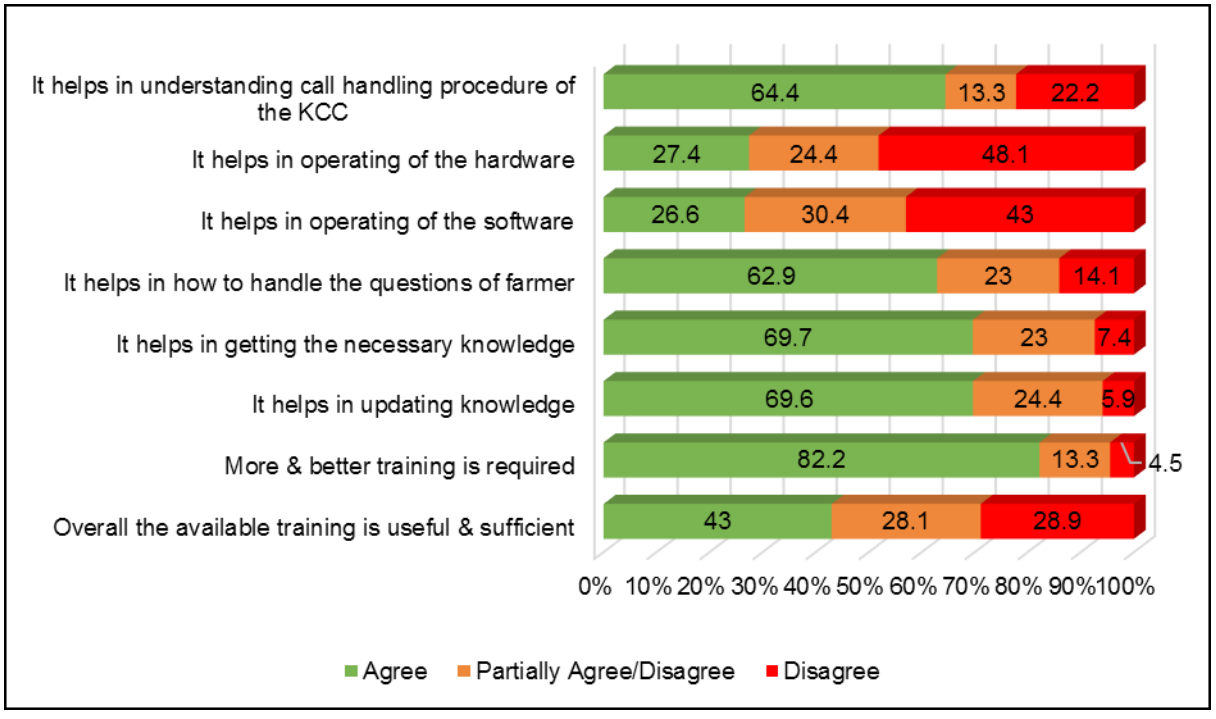


The Table 5.17 below provides as assessment of the training programes that are conducted for the FTAs. According to the responses, the main benefits of the programme appeared to be understanding farmers questions and how to handle them as well as obtaining the necessary and up to date knowledge required. However, the training does not appear to be adequately cover the operation of the hardware and the software as well as the knowledge about government's schemes. Overall the FTAs indicate the substantial need for more better and regular training. Overall only about 43 per cent of the FTAs are satisfied with the training programmes.

Table 5.17: Overall assessment of usefulness of training programmes

	Strongly Agree	Agree	Partially Agree/ Disagree	Disagree	Strongly Disagree	Average Rating
It helps in understanding call handling procedure of the KCC	20.7	43.7	13.3	1.5	20.7	3.4
It helps in operating of the hardware	5.2	22.2	24.4	20.0	28.1	2.6
It helps in operating of the software	5.9	20.7	30.4	14.1	28.9	2.6
It helps in understanding questions of farmer	17.8	44.4	22.2	2.2	13.3	3.5
It helps in how to handle the questions of farmer	22.2	40.7	23.0	3.0	11.1	3.6
It helps in getting the necessary knowledge	19.3	50.4	23.0	5.2	2.2	3.8
It helps in updating knowledge	17.0	52.6	24.4	4.4	1.5	3.8
It helps in getting knowledge of government schemes	5.9	34.8	44.4	11.1	3.7	3.3
More & better training is required	37.0	45.2	13.3	3.0	1.5	4.1
Training should be regularly given	29.6	51.9	12.6	3.0	3.0	4.0
Overall the available training is useful & sufficient	5.2	37.8	28.1	17.8	11.1	3.1

Figure 5.9: Assessment of Training Programmes



The Table 5.18 below provides the results of self-assessment reported by the FTAs. By and large the results indicate that the FTAs considers themselves to be capable of managing the calls well and provide good answers to the farmers either themselves or taking the help of colleagues. But the escalation of calls does not seem to be working well. The FTAs considered themselves to be well motivated and showing good discipline, and take in taking initiative to improve, innovate and perform better. They indicate that they are well trained and overall, they seem to be happy with their performance.

Table 5.18: Self- Assessment of the FTA

	Strongly Agree	Agree	Partially Agree/ Disagree	Disagree	Strongly Disagree	Average Rating
You are quick in responding to calls	52.5	43.2	3.6	-	.7	4.5
You are able to manage the calls efficiently.	38.8	47.5	12.9	-	.7	4.2
You have sufficient knowledge & capability to answer questions	36.7	46.0	14.4	2.2	.7	4.2
You are generally able to answer the questions by yourself	41.0	51.8	6.5	-	.7	4.3
You are able to quickly access the database/ information to answer questions	30.9	57.6	9.4	1.4	.7	4.2
You can take the help of colleagues to answer questions	23.7	54.0	20.9	.7	.7	4.0
You can escalate calls to higher levels to answer questions	10.1	38.1	22.3	20.9	8.6	3.2
You are able to satisfactorily find answers for the farmer's questions	32.4	51.8	15.1	-	.7	4.2
You show good discipline, attendance & punctuality	43.2	48.2	7.2	1.4	-	4.3
You are well motivated	46.0	42.4	7.2	2.9	1.4	4.3
You take good initiative to improve, innovate and perform better	38.1	40.3	19.4	1.4	.7	4.1

	Strongly Agree	Agree	Partially Agree/ Disagree	Disagree	Strongly Disagree	Average Rating
You are well trained	26.6	48.2	22.3	1.4	1.4	4.0
Overall you are satisfied with your performance	30.2	56.1	10.1	2.2	1.4	4.1

The Table 5.19 below provides a brief overall assessment of the call handling effectiveness as reported by the FTAs. It shows that a large number of calls are received by the KCC every day and the FTAs are able to handle them efficiently. The call handling systems and procedures are considered to be good and they feel that they are able to understand the farmers and communicate with them well. Overall the FTAs think that the farmers are satisfied with the handling and the speed of response from the KCC.

Table 5.19: Overall Assessment of Call Handling

	Strongly Agree	Agree	Partially Agree/ Disagree	Disagree	Strongly Disagree	Average Rating
A large number of calls are received every day at the KCC	23.6	52.1	17.1	7.1		3.9
All calls can be handled efficiently at the KCC	22.1	62.1	10.0	5.7		4.0
Call handling systems/ procedures are good	25.7	56.4	15.7	2.1		4.1
The farmer & FTA can understand each other & communicate easily	32.9	61.4	5.0	.7		4.3
Overall the farmers seem satisfied with the handling & speed of response	21.4	67.1	9.3	2.1		4.1

The Table 5.20 below provides the overall assessment of the FTAs for the hardware, software and infrastructure of the KCC. The performance of the hardware and software is not generally considered excellent but is considered to be good or better by 65 to 70 percent of the FTAs. However, over 50 percent of the FTAs are not happy with the internet connectivity. Also, over 65 percent of the FTAs are not happy with the infrastructure and service support that is provided. Thus, there is scope for improvement in these.

Table 5.20: Overall Assessment of Hardware, Software & Infrastructure

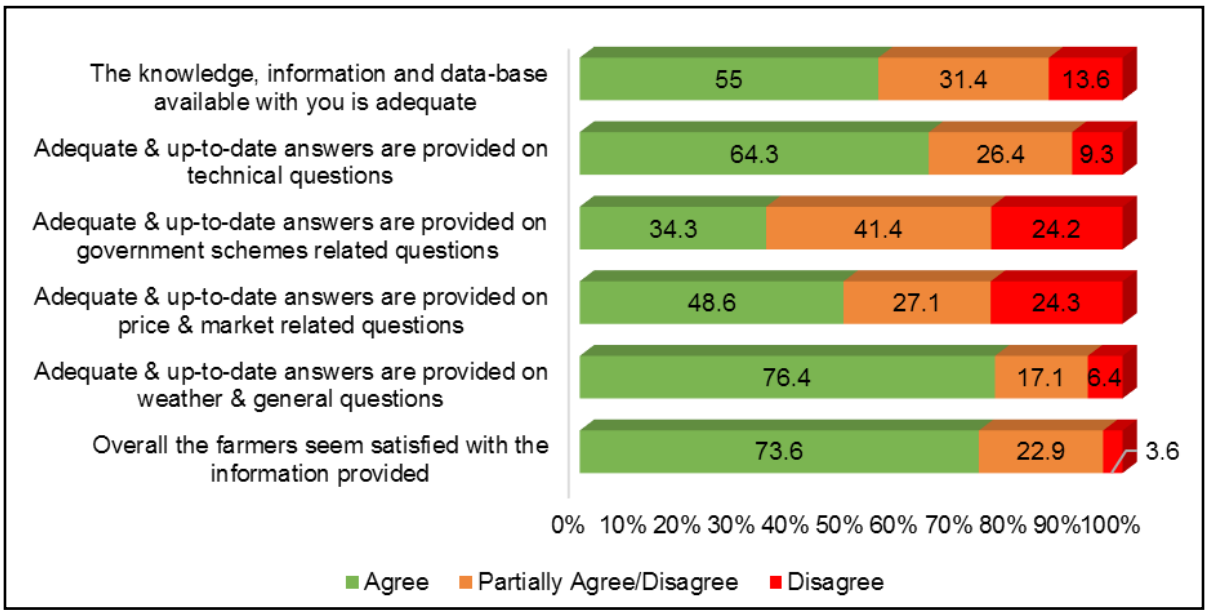
	Strongly Agree	Agree	Partially Agree/ Disagree	Disagree	Strongly Disagree	Average Rating
The performance of the hardware used is good & it is helpful	15.7	52.1	27.9	4.3		3.8
The performance of the software used is good & it is helpful	10.0	54.3	29.3	6.4		3.7
The performance of the internet connectivity is good	8.6	40.7	32.9	17.9		3.4
The infrastructure & service support is good	12.1	31.4	30.7	25.0	.7	3.3

The Table 5.21 below provides an assessment of the knowledge and information delivered by the KCC to the farmers. About 55 per cent of the FTAs think that the knowledge and information available at the KCC is adequate but the rest 45 percent scope for improvement. In terms of technical questions, more than 60 percent think that adequate and up to date answers are provided. However, this is not the case with respect to government schemes and market related information, where a large number consider the information provided as inadequate. In the matter of weather and general information, a large majority consider the information provided to be adequate. Overall, over 70 percent of the FTAs consider the information provided to the farmers as satisfactory.

Table 5.21 Overall Assessment of Information Provided

	Strongly Agree	Agree	Partially Agree/ Disagree	Disagree	Strongly Disagree	Average Rating
The knowledge, information and data-base available with you is adequate	17.1	37.9	31.4	13.6		3.6
Adequate & up-to-date answers are provided on technical questions	15.7	48.6	26.4	8.6	.7	3.7
Adequate & up-to-date answers are provided on price & market related questions	15.7	32.9	27.1	17.9	6.4	3.3
Adequate & up-to-date answers are provided on weather & general questions	26.4	50.0	17.1	6.4		4.0
Overall the farmers seem satisfied with the information provided	15.0	58.6	22.9	3.6		3.9

Figure 5.10: Assessment of Information Provided



The Table 5.22 below provides responses of the FTAs on the overall performance of KCC. It indicates that nearly 70 percent consider the KCC performance to be good to excellent but over 30 percent see scope for improvement. In terms of their own contribution at the KCC, over 80 percent considered to be good to excellent. Regarding the systems and policies under which the KCC is working, there is considerable dissatisfaction with nearly 75 percent considering the situation to be in the range of poor to satisfactory. Regarding the usefulness of the KCC to the farmers and the state agriculture, over 80 per cent consider this to be good to excellent. Almost all the FTAs are of the opinion that the Kisan Call Centre scheme should be continued (Fig 5.12).

Table 5.22: Overall Assessment of Kisan Call Centre

	Excellent	Good	Satisfactory	Somewhat Poor	Very Poor	Average Rating
Please give your overall assessment of the performance of the Kisan Call Centre	12.9	56.4	29.3	1.4		3.8
Please give an overall assessment of your own performance/contribution at the Kisan Call Centre	19.3	62.1	18.6			4.0
Please give your overall assessment of the systems & policies under which the Kisan Call Centre is working	5.0	22.1	42.9	21.4	8.6	2.9

	Excellent	Good	Satisfactory	Somewhat Poor	Very Poor	Average Rating
Please give your overall assessment about the usefulness of the Kisan Call Centre to the farmers & the state's agriculture	30.0	50.7	18.6	.7		4.1
Please give your overall opinion whether the Kisan Call Centre Scheme should be continued	66.2	30.9	2.9			4.6

Figure 5.11: Overall Assessment of KCC

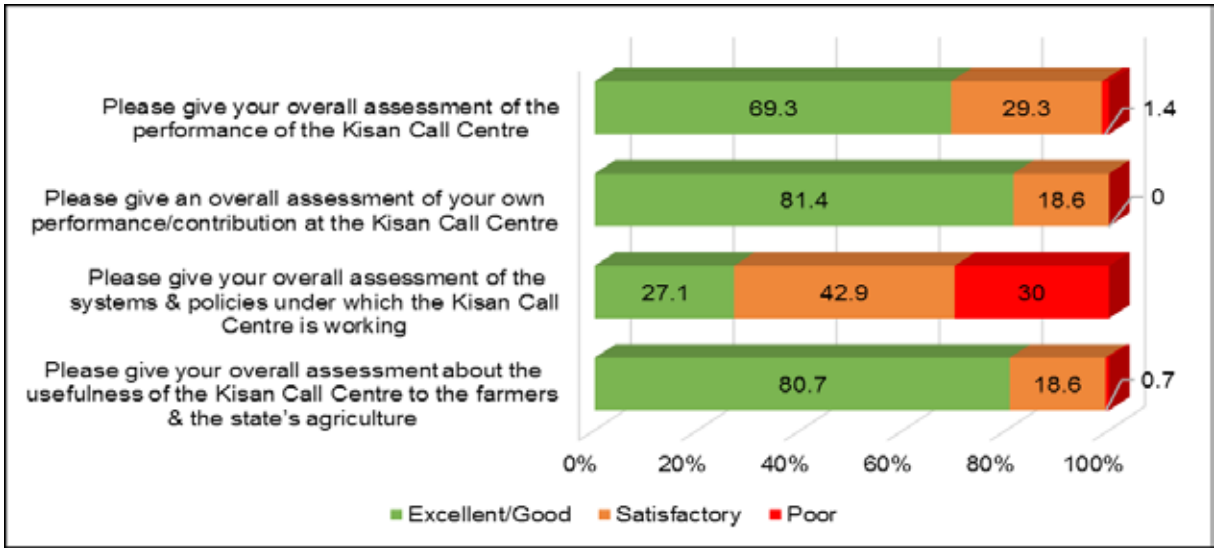


Figure 5.12: Overall opinion whether the Kisan Call Centre Scheme should be continued

Chapter 6

Results: Farmers Survey

As described above, 458 farmer KCC users were covered in the study survey. This includes 98 farmer KCC users from Gujarat, 100 each from Punjab & Karnataka and 80 each from Maharashtra and Assam. Besides this, 103 non-users were also covered with 20 each in Punjab and Assam, 21 in Maharashtra and 22 in Gujarat and 20 in Karnataka. The analysis below is confined to the user farmer data (unless specifically mentioned), given that only they could respond to all the questions.

The Table 6.1 below provides an analysis of the sources of information and advice on farming used by the KCC user farmers. It shows that the farmers are aware of a large number of sources of information and since this sample covers only the users of KCC, all of them are aware of and use of the Kisan Call Centres. In terms of use, after the Kisan Call Centre (100), the next most important source used by the farmers is fellow farmer (93.67), which is followed by input dealers (61.79), and kisan melas and summits (39.96). The next in use comes Krishi Vigyan Kendras (KVKs) (36.90) and agricultural universities and their materials (36.90) and only after this extension workers (31.66). In terms of frequency of use of the different sources, KCCs are found to be frequently or very frequently used by 66.37 percent of the farmer users and this exceeds fellow farmers which stands at 61.54 percent of the farmers. After a large margin follow extension workers which stand at 42.76 percent and input dealers at 33.57 percent. Thus, KCCs have already become the most used source of information by the user farmers. This shows that Kisan Call Centres have come to occupy a very prominent place in terms of sources of information used by the farmers.

In terms of the media or devices used for gathering information the most frequently mentioned is mobile phones (60.92) followed by TV (51.31) and newspapers/magazines (41.48). The above results indicate that mobile phones have become the most frequently used device for communication/ sourcing of information, followed by television.

Table 6.1: Sources of Information/ Advice on Farming – Awareness, Use and Frequency of Use

	Aware (%)	Use (%)	Very Frequently	Frequently	Occasionally	Rarely	Never	Average
Fellow Farmers	97.16	93.67	6.99	54.55	34.50	3.96		3.65
Extension Worker	46.94	31.66	14.48	28.28	47.59	9.66		3.48
Input Dealers/ Shops	83.41	61.79	2.83	30.74	51.24	15.19		3.21
Cooperative societies	48.25	14.41	3.03	19.70	43.94	33.33		2.92
Input Companies	44.98	18.12	2.41	24.10	33.73	39.76		2.89
Local Markets	60.70	28.82	4.55	31.82	46.97	16.67		3.24
Krishi Vigyan Kendra's (KVK's)	60.26	36.90	3.53	24.71	54.12	17.65		3.14
Agricultural Universities & their materials	59.61	36.90	1.18	28.40	49.11	21.30		3.09
Kisan melas/ summits	57.86	39.96	3.28	22.95	40.98	32.79		2.97
Meetings & demonstrations	41.05	28.38	11.36	21.21	39.39	28.03		3.16
Agriculture experts	40.39	23.36	1.87	30.84	51.40	15.89		3.19
Kisan Call Centre (KCC)	100.00	100.00	5.02	61.35	30.79	2.84		3.69
Other Call Centres (Specify)	7.64	6.77		36.36	36.36	27.27		3.09

Figure 6.1: Sources of Information Used-Frequency

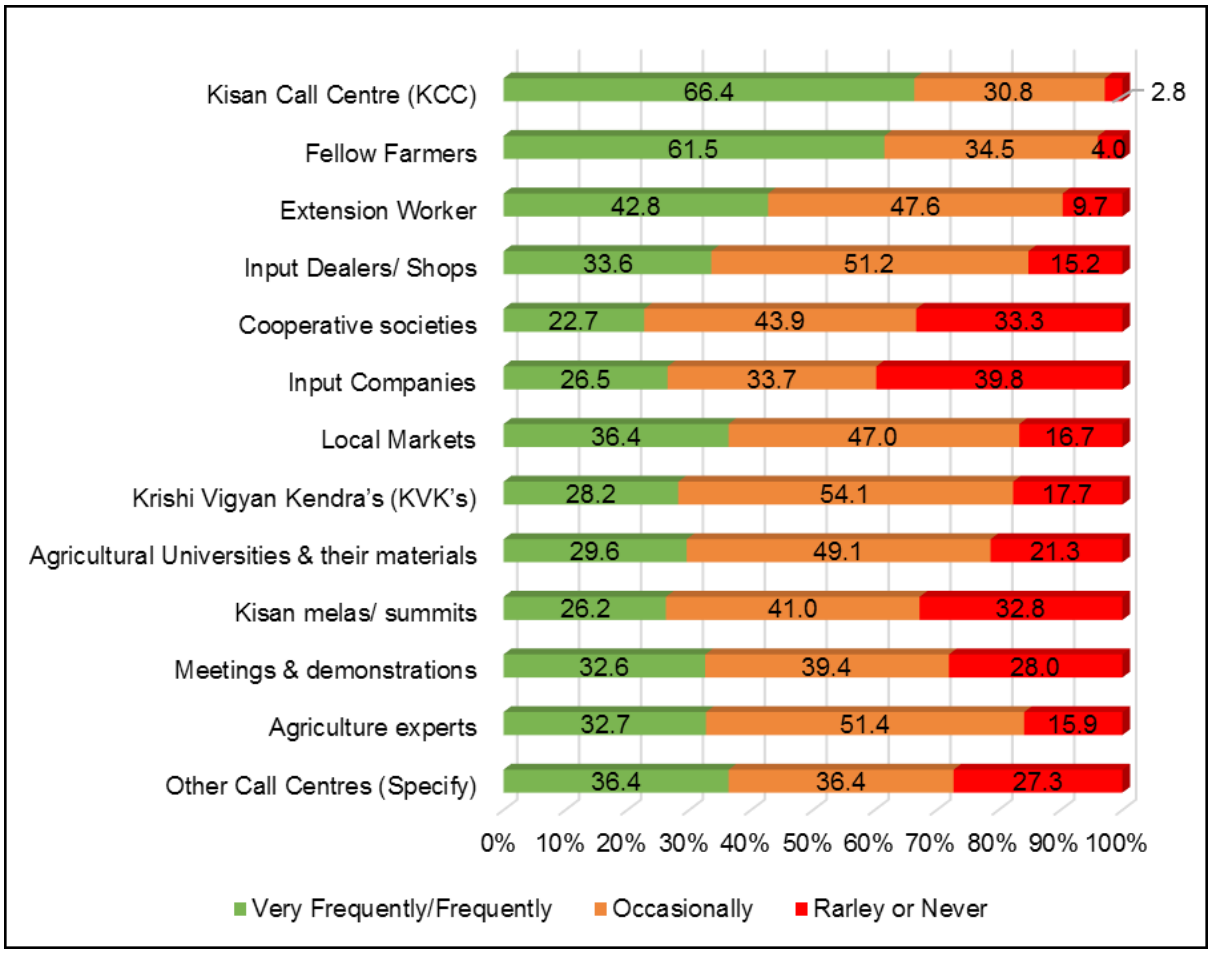
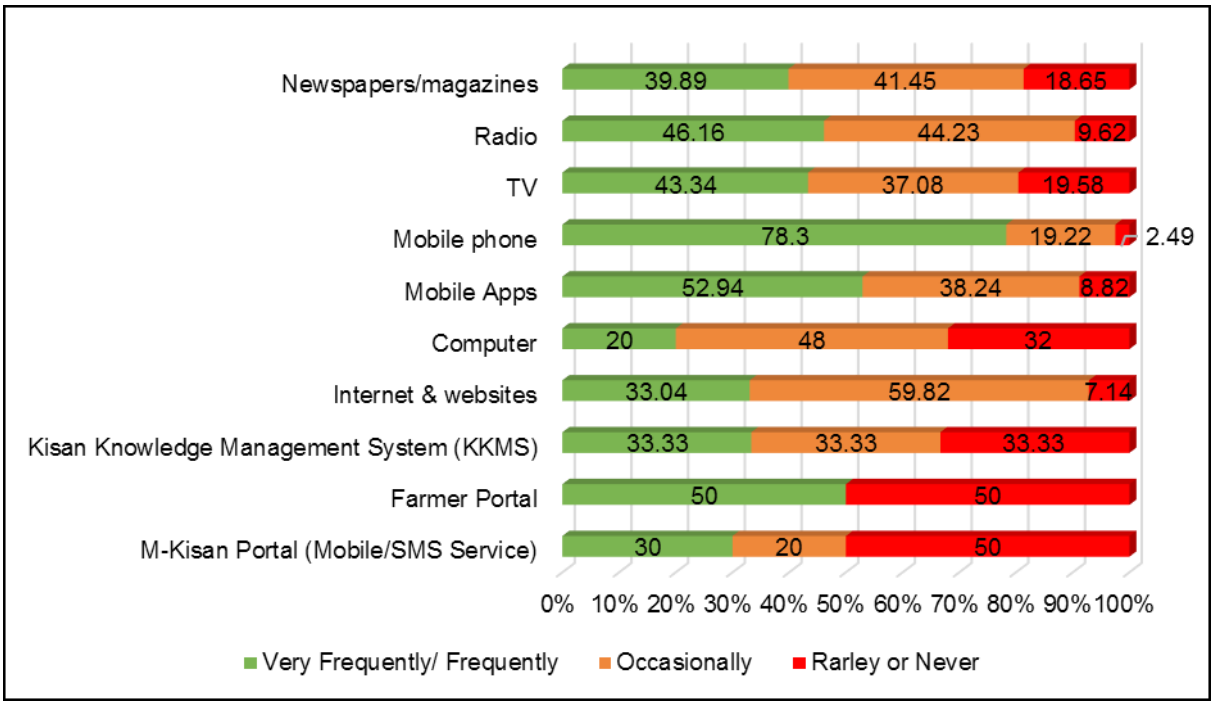


Table 6.2: Communication Media and Devices Used to Source Information Awareness and Use Frequency

	Aware (Valid %)	Use (Valid %)	Very Frequently	Frequently	Occasionally	Rarely	Never	Average
Newspapers/ magazines	75.11	41.48	7.77	32.12	41.45	18.65		3.29
Radio	65.28	22.71	4.81	41.35	44.23	9.62		3.41
TV	78.82	51.31	12.92	30.42	37.08	19.58		3.37
Mobile phone	93.45	60.92	12.46	65.84	19.22	2.49		3.88
Mobile Apps	13.54	7.21	11.76	41.18	38.24	5.88	2.94	3.53
Computer	52.40	5.02	4.00	16.00	48.00	32.00		2.92
Internet & websites	42.79	23.80	1.79	31.25	59.82	7.14		3.28
Kisan Knowledge Management System (KKMS)	1.97	0.66		33.33	33.33	33.33		3.00
Farmer Portal	1.31	0.44	50.00			50.00		3.50
M-Kisan Portal (Mobile/SMS Service)	4.15	2.18		30.00	20.00	40.00	10.00	2.70

Figure 6.2: Media/Device used



The Table 6.3 below provides an analysis of the quality or usefulness of information available from different sources. Here the highest score is obtained by fellow farmers (3.54) but this is followed by Kisan Call Centres (3.51). 55.01 percent of the users rate fellow farmer as good to excellent source of information, followed by 50.22 percent users rating KCCs as a good to excellent source. This indicates that the farmers find the Kisan Call Centre information useful and almost as useful as fellow farmers. The rating of the Kisan Call Centres is higher than that of extension workers, input dealers and other call centres, which are less frequently used and are rated lower in terms of quality of information. This indicate that the farmers find the Kisan Call Centre information useful and almost as useful as that from fellow farmers. It may be noted the rating of the Kisan Call Centres is higher than that of input dealers or input companies and other call centres are not only less frequently used but are also rated much lower in terms of quality of information. Examining media and other devices used to communicate the highest rate is obtained by mobile phones (3.46) followed by KKMS (3.33 – but used by very few)) and then internet (3.35). The ratings of TV, radio and newspapers are considerably lower. Thus, mobile phones and internet have come to be rated very highly as information sources.

Table 6.3: Sources of Information/ Advice on Farming - Awareness/ Usefulness and Quality

	Aware (Valid %)	Use (Valid %)	Excellent	Good	Satisfactory	Somewhat poor	Very Poor	Average
Fellow Farmers	97.4	94.0	2.80	52.21	41.49	3.26	0.23	3.54
Extension Worker	46.4	31.3	3.45	37.24	48.97	8.28	2.07	3.32
Input Dealers/ Shops	83.2	61.8	2.48	28.01	51.77	13.83	3.90	3.11
Cooperative societies	47.5	14.3		24.62	63.08	9.23	3.08	3.09
Input Companies	44.5	17.7	4.88	26.83	53.66	8.54	6.10	3.16
Local Markets	60.5	28.9	2.27	19.70	71.97	5.30	0.76	3.17
Krishi Vigyan Kendra's (KVK's)	60.0	36.5	4.71	26.47	57.65	10.59	0.59	3.24
Agricultural Universities & their materials	59.8	36.3	3.55	29.59	53.25	11.24	2.37	3.21
Kisan melas/ summits	58.1	40.0	2.73	39.34	49.73	6.56	1.64	3.35
Meetings & demonstrations	40.6	28.1	6.06	28.79	55.30	7.58	2.27	3.29
Agriculture experts	39.7	23.1	4.67	31.78	59.81	3.74		3.37
Kisan Call Centre (KCC)	100.0	100.0	6.55	43.67	43.89	5.68	0.22	3.51
Other Call Centres (Specify)	7.6	5.8	1.47	16.18	22.06	2.94	57.35	2.01

Figure 6.3: Sources of information-Quality Rating

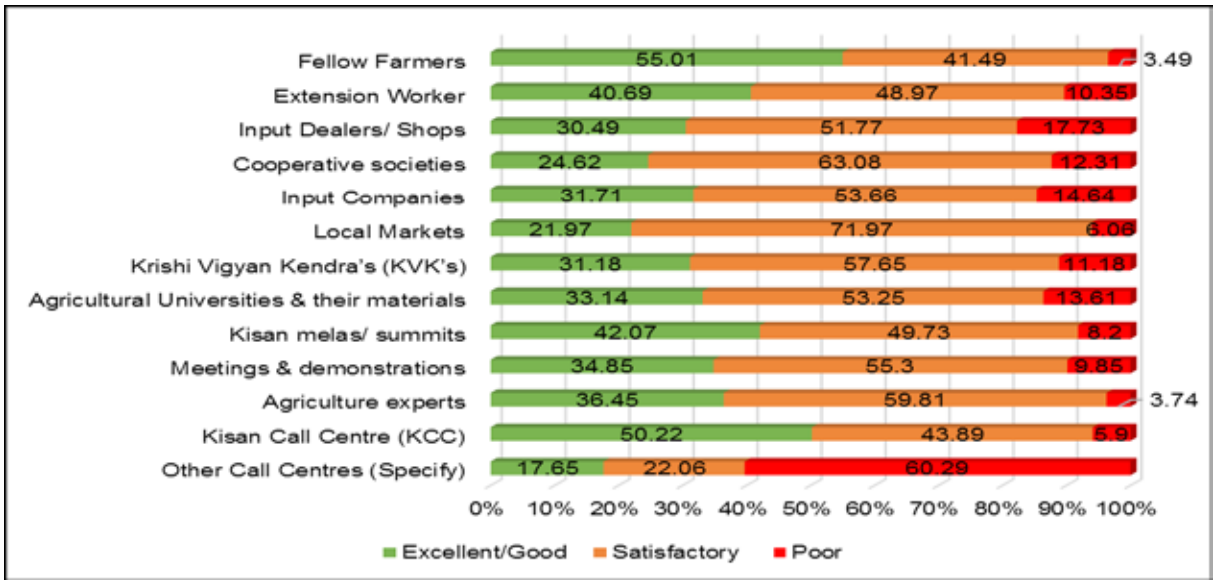


Table 6.4: Communication Media and Devices used to Source Information – Awareness/ Use and Quality

	Aware (Valid %)	Use (Valid %)	Excellent	Good	Satisfactory	Somewhat poor	Very Poor	Average
Newspapers/ magazines	75.11	41.48		22.78	62.66	11.39	3.16	3.05
Radio	65.28	22.71		12.34	42.86	7.79	37.01	2.31
TV	78.82	51.31	0.22	11.57	26.86	2.62	12.88	1.46
Mobile phone	93.45	60.92	0.71	55.71	35.71	4.29	3.57	3.46
Mobile Apps	13.54	7.21	5.88	38.24	41.18	5.88	8.82	3.26
Computer	52.40	5.02		24.00	68.00	8.00		3.16
Internet & websites	42.79	23.80		39.22	57.84	1.96	0.98	3.35
Kisan Knowledge Management System (KKMS)	1.97	0.66		33.33	66.67			3.33
Farmer Portal	1.31	0.44			50.00			1.50
M-Kisan Portal (Mobile/SMS Service)	4.15	2.18		30.00	40.00	10.00	20.00	2.80

Examining ICTs devices used by the farmers to obtain information, the Table 6.5 below indicates that mobile phones are owned by all KCC users and are used by them for reaching

the KCC. On the other hand, landlines are used by only 11.35 percent of the users. It is interesting to note that mobile internet connection is owned by 24.58 percent of the users and used by 56.86 percent of them. This seems to indicate that 24.58 percent own smart phones and 56.86 percent use smart phones. Broadband/Wi-Fi is owned by 4.12 percent of the farmers and used by 25.93 per cent of them. Computers are owned by 7.37 percent of the farmers but used by 40.30 percent of them. In terms of satisfaction of use, mobile phones scored the highest with an average of 3.82 followed by computer at 3.57 and mobile internet connection at 3.34.

Table 6.5: Type of ICT Devices/ Features Used and their Usefulness – per-cent

	Owned	Used	Used for KCC/ Websites/ Portals	Excellent	Good	Satisfactory	Somewhat Poor	Very Poor	Average
Mobile	100.00	100.00	100.00	5.90	72.27	20.09	1.31	0.44	3.82
Landline	4.72	11.35	3.96		25.00	75.00			3.25
STD/PCO	0.30	0.71							0.00
Mobile Internet Connection	24.58	56.86	36.59		46.67	46.67	3.33	3.33	3.37
Broadband/ Wi-Fi	4.12	25.93	42.86		50.00	16.67	33.33		3.17
Computer	7.37	40.30	26.92	14.29	28.57	57.14			3.57

The Table 6.6 below provide an analysis of the number of calls made by the farmer users to the different KCCs. The table shows that on an average a user made 35.1 calls per year to the Kisan Call Centres. The highest number was reported for Karnataka at 55.4 calls per year followed by Maharashtra at 54.7 calls on an average. The lowest number of calls are reported by Punjab at 10.8 calls followed by Assam at 24.9. For Punjab, this may be due to the sample as KKMS data indicates that it is quite high. The data indicates that the average waiting time for the caller was 2.4 minutes with the highest shown for Punjab at 4.5 minutes. The average number of calls not answered was 2.6 and the calls dropped was 2.8. In terms of percentage on the whole, the percentage of calls not answered was 7.9, calls dropped was 8.8 percent and calls were no proper answer was given was 9.7 percent. On the whole, the users reported that the calls that were effectively answered were 75.0 percent, the highest being Assam at 93.9 percent and the lowest being Maharashtra at 63.9 percent. The data shows that the maximum number of calls were regarding technical information and these constituted 60.6 percent of the calls. This was followed by calls regarding prices and markets at 14.6 percent and calls regarding weather at 13.3 percent. The calls regarding

technical information were the highest at 77.8 percent in Assam and the calls regarding weather were the highest in Gujarat at 31.4 percent. Overall, the data indicates that the call efficiency is reasonably good with 82.1 percent of the calls being seen as effectively answered but there is substantial variation from state to state with Assam showing 93.9 percent and Punjab showing 91.9 percent calls being effectively answered.

Table 6.6: Average No. of Calls per User per Year

	Gujarat	Maharashtra	Karnataka	Assam	Punjab	All
No. of calls made	30	54.7	55.4	24.9	10.8	35.1
Average waiting time (minutes per call)	2.2	3.3	2.2	1.6	4.5	2.4
No. of calls not answered	3.07	10.1	0.7	0.0	0.1	2.8
No. of calls dropped	1.73	10.3	0.2	2.8	0.5	3.1
No. of calls in which no proper answers were given	4.04	11.5	0.1	1.0	0.4	3.4
No. of calls effectively answered	13.72	34.9	49.8	23.4	9.9	26.3
No. of calls for technical information	9.93	30.6	38.5	19.4	8.2	21.3
No. of calls for price and market information	3.09	9.6	10.9	1.9	0.2	5.1
No. of calls for government scheme information	3.88	1.3	0.5	1.9	0.4	1.6
No. of calls for other information - weather	9.43	5.9	3.8	2.3	2.0	4.7
No. of calls for other information	0.20	0.3	0.0	0.1	0.1	0.1
Sample no. of Farmers	98	80	100	80	100	458

Table 6.6.1: Average No. of Calls Per User Per Year – Percentage

	Gujarat	Maharashtra	Karnataka	Assam	Punjab	All
No. of calls made - percent	100%	100%	100%	100%	100%	100%
Average waiting time (minutes per call)						
No. of calls not answered	10.2	18.5	1.2	0.2	0.6	7.9
No. of calls dropped	5.8	18.8	0.3	11.4	4.2	8.8

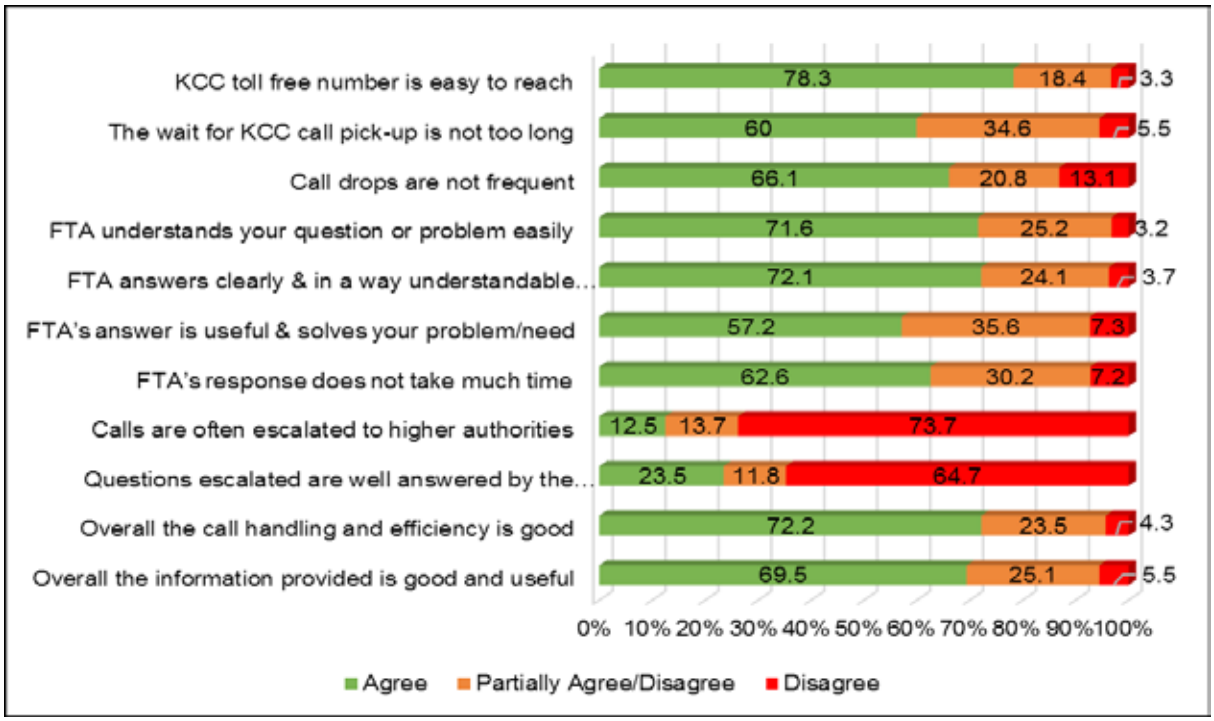
	Gujarat	Maharashtra	Karnataka	Assam	Punjab	All
No. of calls in which no proper answers were given	13.5	21.1	0.2	4.2	3.3	9.7
No. of calls effectively answered	45.7	63.9	89.9	93.9	91.9	75.0
No. of calls for technical information	33.1	55.9	69.5	77.8	75.6	60.6
No. of calls for price and market information	10.3	17.6	19.7	7.6	1.4	14.6
No. of calls for government scheme information	12.9	2.4	1.0	7.8	3.6	4.6
No. of calls for other information -weather	31.4	10.7	6.9	9.1	18.9	13.3
No. of calls for other information (specify)	0.7	0.5	0.0	0.3	0.8	0.4
Sample no. of farmers	98	80	100	80	100	458

The Table 6.7 below provides an analysis of the call response efficiency and quality of the KCC as reported by the farmers. 78 percent of the users indicate that the KCC toll free number is easy to reach and 60 percent report that the wait for KCC to pick up is not too long. More than 70 percent of the users indicate that the voice reception over the phone is clear and over 65 percent report that the call drops are not frequent. Nearly 80 percent indicate that the FTAs greets and speaks courteously and understands and responds in the local language. Over 70 percent report that the FTA understands the question or problem easily and provides answers in a clear and understandable way. However, when it comes to the usefulness of the answer and solving of the problem the percentage drops considerably to about 57 percent with a considerable number indicating that it is only partly helpful. Regarding the escalation of the call to higher authorities, experts or nodal officer, the responses indicate that this is not satisfactory. However, overall, in terms of the call handling efficiency, over 70 percent agree that it is good but a lower percentage indicate that the information provided is good and useful.

Table 6.7: Overall Call Response Efficiency & Quality

	Strongly Agree	Agree	Partially Agree/ Disagree	Disagree	Strongly Disagree	Average
KCC toll free number is easy to reach	17.0	61.4	18.3	2.2	1.1	3.91
The wait for KCC call pick-up is not too long	3.5	56.6	34.5	4.8	.7	3.57
Voice reception over the phone is clear	16.6	55.5	26.2	1.5	.2	3.87
Call drops are not frequent	10.7	55.2	20.7	12.0	1.3	3.62
Farmer Tele Advisor (FTA) greets and speaks courteously	19.9	58.9	17.1	3.5	.7	3.94
FTA understands & responds in your language	20.6	61.5	15.1	2.8		4.00
FTA understands your question or problem easily	12.2	59.4	25.1	2.8	.4	3.80
FTA answers clearly & in a way understandable to you	11.4	60.6	24.1	3.5	.4	3.79
FTA's answer is useful & solves your problem/need	8.6	48.7	35.5	6.6	.7	3.58
FTA's response does not take much time	4.1	58.3	30.3	7.0	.2	3.59
Calls are often escalated to higher authorities	1.5	11.0	13.9	52.4	21.1	2.19
Questions escalated are well answered by the Agriculture Experts or Nodal Officer	4.1	11.8	7.9	29.7	46.5	1.97
Overall the call handling and efficiency is good	6.6	65.6	23.4	3.9	.4	3.74
Overall the information provided is good and useful	7.5	61.8	25.0	4.8	.9	3.70

Figure 6.4: Overall Call Response Efficiency & Quality



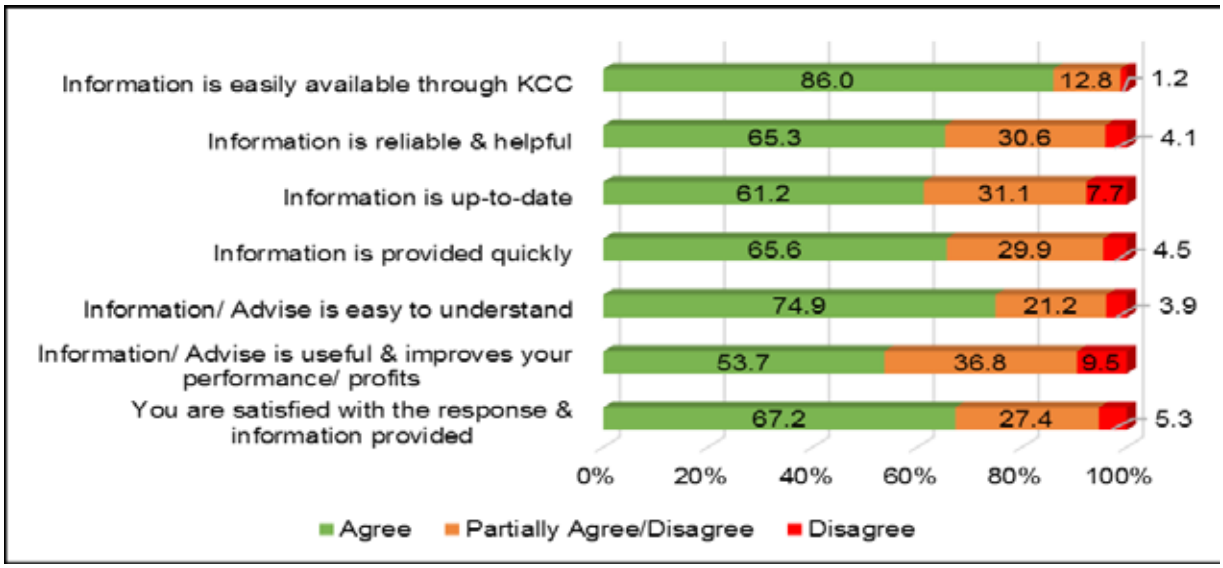
Regarding technical questions, the Table 6.8 below indicate that over 85 percent farmers find the information easily available through the KCC. However, when it comes to it being reliable and useful, the percentage drops to 65 percent and it being up to date, the percentage drops to 60 percent. The farmers indicate that the information provided is easy to understand but in terms of whether it is useful and improves the profit or performance the percentage drops to 55 percent. Overall about 67 percent that they are satisfied with the information.

Table 6.8: Response to Questions on Technical Aspects

	Strongly Agree	Agree	Partially Agree/ Disagree	Disagree	Strongly Disagree	Average
Information is easily available through KCC	13.7	72.3	12.8	1.0	.2	3.98
Information is reliable & helpful	8.4	56.9	30.6	3.6	.5	3.69
Information is up-to-date	8.4	52.8	31.1	7.0	.7	3.61
Information is provided quickly	9.2	56.4	29.9	4.3	.2	3.70
Information/ Advise is easy to understand	10.1	64.8	21.2	3.4	.5	3.81

	Strongly Agree	Agree	Partially Agree/ Disagree	Disagree	Strongly Disagree	Average
Information/ Advise is useful & improves your performance/ profits	5.8	47.9	36.8	8.0	1.5	3.49
You are satisfied with the response & information provided	7.0	60.2	27.4	4.1	1.2	3.68

Figure 6.5: Response to Questions on Technical Information

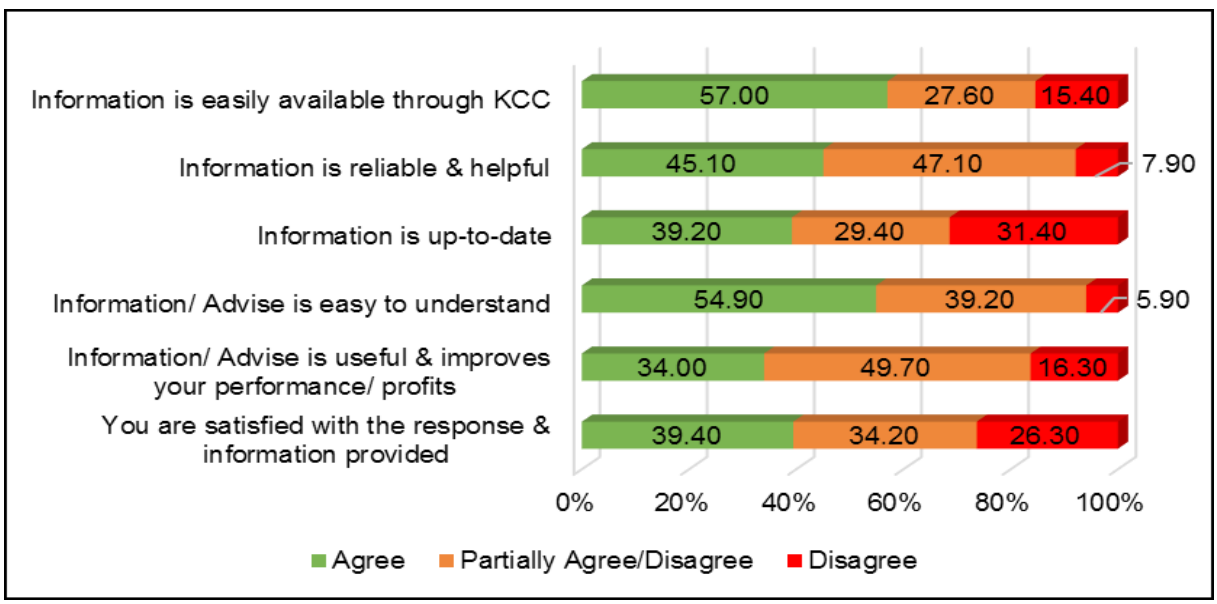


With respect to information on prices and markets, the percentages are much lower, see Table 6.9 below. About 58 percent indicate that the information is easily available but in terms of its help in improving performance or profits, the percentage drops to 33 percent and in satisfaction to 40 percent. With respect to questions on government schemes, only 42 percent indicate that the information is easily available and only 20 percent indicate that it is useful to improve performance or profits and only 28 percent are satisfied with the information. With respect to other questions such as weather, the satisfaction level is much higher, 85 percent indicate that the information is available easily. However, only 55 percent indicate that it is reliable and helpful and it is up to date. Only 40 percent indicate that it helps improve profit or performance and 60 percent indicate that they are satisfied with the service.

Table 6.9: Response to Price and Market Questions

	Strongly Agree	Agree	Partially Agree/ Disagree	Disagree	Strongly Disagree	Average
Information is easily available through KCC	9.6	47.4	27.6	12.2	3.2	3.48
Information is reliable & helpful	7.8	37.3	47.1	4.6	3.3	3.42
Information is up-to-date	3.9	35.3	29.4	25.5	5.9	3.06
Information is provided quickly	12.4	39.9	37.9	5.9	3.9	3.51
Information/ Advise is easy to understand	2.0	52.9	39.2	3.9	2.0	3.49
Information/ Advise is useful & improves your performance/ profits	1.3	32.7	49.7	9.8	6.5	3.12
You are satisfied with the response & information provided	2.6	36.8	34.2	19.7	6.6	3.09

Figure 6.6: Price & Market Information

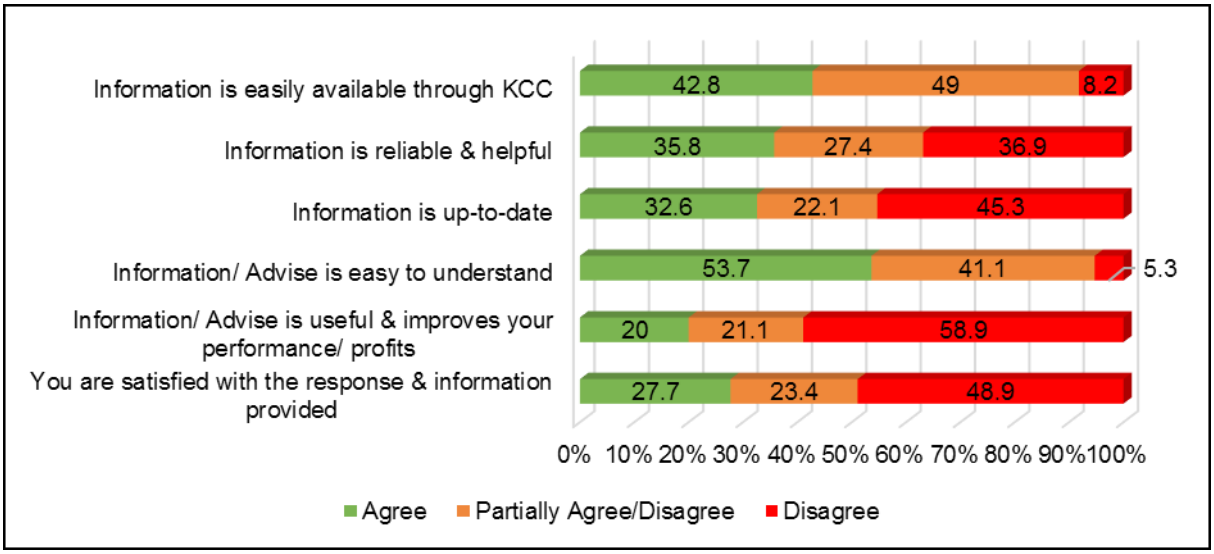


With respect to information on questions of government schemes, see Table 6.10 below, a majority of the farmers indicate that this is not easily available and whatever is available is not reliable, up to date and helpful. The information is often provided quickly but it is not useful in improving performance or profits and large majority of the farmers are not satisfied with the information provided.

Table 6.10: Response to Government Schemes Questions

	Strongly Agree	Agree	Partially Agree/ Disagree	Disagree	Strongly Disagree	Average
Information is easily available through KCC	7.1	35.7	49.0	5.1	3.1	3.39
Information is reliable & helpful	2.1	33.7	27.4	33.7	3.2	2.98
Information is up-to-date	6.3	26.3	22.1	41.1	4.2	2.89
Information is provided quickly	9.5	46.3	30.5	10.5	3.2	3.48
Information/ Advise is easy to understand	4.2	49.5	41.1	3.2	2.1	3.51
Information/ Advise is useful & improves your performance/ profits	6.3	13.7	21.1	48.4	10.5	2.57
You are satisfied with the response & information provided	4.3	23.4	23.4	40.4	8.5	2.74

Figure 6.7: Information on Government Schemes



The response on other questions, particularly weather indicates that this is easily available and many thinks that it is reliable and up to date but a larger number are not satisfied with it, see Table 6.11 below. The information is generally provided quickly and easy to understand but in terms of improving performance and profits, a large number only partially agree or disagree. On the whole, a majority of the farmers are satisfied with the information provided.

Table 6.11 Response to other questions (weather, services, events etc.)

	Strongly Agree	Agree	Partially Agree/ Disagree	Disagree	Strongly Disagree	Average
Information is easily available through KCC	4.9	80.0	13.1	1.2	.8	3.87
Information is reliable & helpful	7.3	48.2	40.0	3.7	.8	3.58
Information is up-to-date	6.5	47.8	36.7	8.2	.8	3.51
Information is provided quickly	11.0	69.4	18.0	1.6		3.90
Information/ Advise is easy to understand	7.8	78.0	12.7	1.6		3.92
Information/ Advise is useful & improves your performance/ profits	5.7	34.8	49.6	8.6	1.2	3.35
You are satisfied with the response & information provided	6.8	52.5	34.7	3.0	3.0	3.57

The need for information comes from the important decisions that farmers have to make and these in turn would be driven by the objectives that the farmers wish to pursue in their farming. The table 6.12 below provides an assessment of the importance given by the farmers and different objectives they may wish to pursue. The results indicate that the most important objective indicated by the farmers is achieving high yields followed by achieving best profits and income. The important secondary objectives related to this are indicated as obtaining the best price for the output, good quality of the output, efficient input use, and correct choice of crops and farm activities. The results indicate that all the decisions closely related to these objectives would be of very high importance to the farmers and therefore information which can help the farmers make these decisions better would be of great value to them, as well as to improve their performance. Even though almost all the stated objectives are widely indicated as very important to extremely important, those that show a little less importance include reducing the risk which is surprisingly considered only moderately, slightly or unimportant by the majority of the farmers, and on consumption needs which is similarly considered less important by almost 45 percent of the farmers. However, personal achievement and knowledge as well as personal safety and health are considered very important by nearly 70 percent of the farmers.

Table 6.12: Major Objectives/ Decisions you Focus on in your Farming

	Extremely Important	Very Important	Moderately Important	Slightly Important	Not Important	Average
Good Choice of Crops/ Farm activities	20.7	63.4	14.6	1.0	.3	4.03
High Yields	44.8	41.3	13.7	.2		4.31
Good Quality of Output	30.1	48.6	21.0	.2		4.09
Efficient Input Use	27.8	49.7	21.1	1.3		4.04
Least Cost of Production	27.8	38.0	30.7	3.3	.2	3.90
Marketability of Output	27.7	44.9	18.4	7.5	1.6	3.90
Best Price for Output	44.5	30.9	14.2	9.5	.9	4.09
Best Profits/ Income	41.3	40.0	14.4	4.3		4.18
Least Crop Loss	16.7	36.2	35.4	11.1	.6	3.57
Less Risk	10.7	33.9	41.8	10.2	3.4	3.38
Own Consumption Needs	9.0	48.9	27.4	11.0	3.7	3.49
Personal Safety & Health	17.4	51.5	17.4	9.4	4.4	3.68
Personal Achievement/ Knowledge	15.5	56.3	17.9	7.6	2.6	3.74
Respect/ Image in Community	10.9	51.8	26.2	7.5	3.6	3.59
Long Term Productivity	12.3	49.1	25.1	11.7	1.8	3.58
Better Environment	12.7	42.8	30.1	12.7	1.7	3.52
Others	35.6	40.0	20.0	4.4		4.07

Related to the objectives, what are the decisions that are considered very important or critical by the farmers? The Table 6.13 below provides responses of the farmers on different farming decisions. It indicates that some of the most important decisions are shown as insect pest control and disease control which are considered very important to extremely important by over 70 percent of the farmers. The next in importance are indicated as

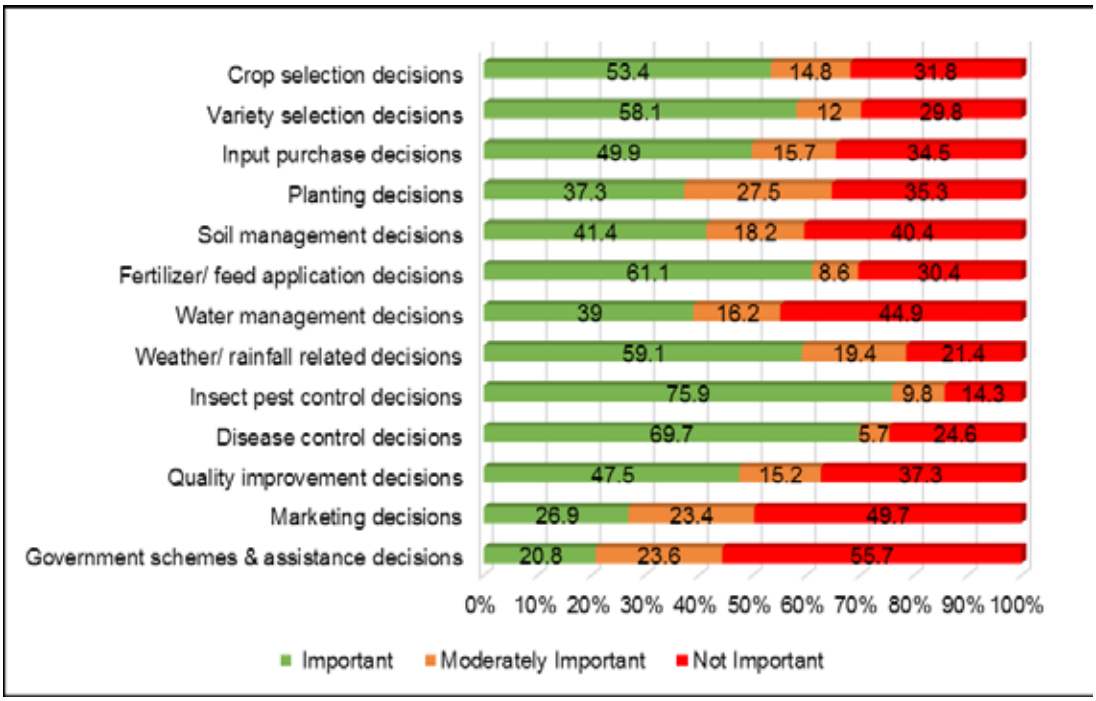
weathers/rainfall related decisions marked as very important to extremely important by 60 percent of the farmers. Following this, in importance are the decisions on variety selection and fertilizer/seed application decisions indicated as important to extremely important by about 55 to 60 percent of the farmers. This is followed by crops selection decisions and input purchase decisions. From the responses, it appears that the decisions related to the major risk elements in agriculture which includes weather, insects and diseases hold a very high importance for the farmers. This is followed by the important choices of farm management such as the choice of variety and the choice of fertilizers and seeds. The information system facilitated through the Kisan Call Centres must make sure that it addresses these decisions, which are considered extremely important by the farmers.

Table 6.13: Importance of KCC on Important Decisions

	Extremely Important	Very Important	Moderately Important	Slightly Important	Not Important	Average
Crop selection decisions	14.5	38.9	14.8	.3	31.5	3.05
Variety selection decisions	25.9	32.2	12.0	2.7	27.1	3.27
Input purchase decisions	14.7	35.2	15.7	1.4	33.1	2.97
Planting decisions	13.6	23.7	27.5	.7	34.6	2.81
Soil management decisions	21.4	20.0	18.2	5.4	35.0	2.88
Fertilizer/ feed application decisions	25.5	35.6	8.6	.3	30.1	3.26
Water management decisions	20.7	18.3	16.2	9.7	35.2	2.80
Weather/ rainfall related decisions	17.1	42.0	19.4	6.3	15.1	3.40
Crop management decisions	10.6	33.6	17.8	2.4	35.6	2.81
Agricultural machinery decisions	3.2	18.2	17.1	24.6	36.8	2.26
Insect pest control decisions	29.3	46.6	9.8	3.7	10.6	3.80

	Extremely Important	Very Important	Moderately Important	Slightly Important	Not Important	Average
Disease control decisions	25.1	44.6	5.7	4.1	20.5	3.50
Weed control decisions	14.0	24.6	14.0	13.0	34.4	2.71
Cost reduction/ efficiency increasing decisions	4.6	20.7	29.3	8.2	37.1	2.48
Quality improvement decisions	18.4	29.1	15.2	.4	36.9	2.92
Harvesting & post-harvest decisions	6.3	12.3	31.9	12.3	37.2	2.38
Marketing decisions	8.0	18.9	23.4	17.5	32.2	2.53
Price & profit related decisions	8.3	19.0	18.0	17.3	37.4	2.44
Supply chain & transport decisions	.4	1.8	18.0	30.5	49.3	1.74
Storage decisions	1.5	12.8	15.7	26.3	43.8	2.02
Risk reduction decisions	1.1	14.2	17.9	19.0	47.8	2.02
Credit decisions	2.9	17.2	12.8	24.9	42.1	2.14
Insurance decisions	2.9	17.2	15.0	16.8	48.0	2.10
Government schemes & assistance decisions	5.5	15.3	23.6	20.4	35.3	2.35
Other decisions	10.8	48.6	40.5			3.70

Figure 6.8: Importance Given to Different Farm Decisions



Given these decision-making needs, what is the kind of information needed by the farmers. The results of this are given in the Table 6.14 below. The information frequently mentioned as required includes: Information on good quality and high yielding varieties, Information on fertilizers and its application, Information on application of pesticide and its measurements, and Up to date information on price and market. The information on prices and markets is the most frequently required and information on variety selection has the highest importance rating.

Table 6.14: Information Needs for Decision Making in Agriculture

Information on fertilizers and its application

Agriculture-Field Crops			
Decisions	**Information needed for decision making**	**Frequency %**	**Average Importance Rating (Weighted)**
Variety selection	Information on good quality and high yielding varieties	25.44	4.14
	Which variety to grow	14.56	
	Information on good quality and high yielding varieties, and also pest resistance	7.77	
	Information on physical identification of seeds	6.80	

Fertilizer use	Information on fertilizers and its application	62.20	4.06
	Fertilizer name	17.60	
	Information on natural fertilizers and its application	5.00	
Pesticide use	Information on application of pesticide and its measurements	30.20	3.97
	Problem identification and which pesticide to use	19.50	
	Information on control of fungus and other problems	14.40	
	Information of Fungus in Rice	10.20	
	Control measures	4.70	
Prices/ price trend	Up to date information on price and market	91.66	3.61
	Information on Minimum and Maximum price	8.33	

Against the information needs, what is the information provided by the KCC and how do farmers rate it? The responses on this are summarized in the Table 6.15 below. The most frequent in this are: Suggested variety name, suggested fertilizers name, quantity and usage, Suggested pesticide name, quantity and usage, and Suggested price rate and market information. The most frequently mentioned is price and market information, and the average ratings of the information provided are somewhat low in the 3.3-3.4 range and the highest among these price and market information at 3.58.

Table 6.15: Information Provided by KCC

Decisions	Information provided by KCC	Frequency %	Average Rating (Weighted)
Variety selection	Suggested variety name	47.80	3.35
	Suggested Seeds Name and way of applying	17.30	
	Explained details use of HYV seeds	4.30	
	Suggested to contact agriculture university	2.90	
Fertilizer use	Suggested fertlizers name, quantity and usage	47.87	3.39
	Suggested fertilizers name and dosages	17.02	
	Suggested ferttilzers name	6.38	
	Suggested traditional method	4.26	
	Explained details	3.19	

Decisions	Information provided by KCC	Frequency %	Average Rating (Weighted)
Pesticide use	Suggested pesticide name, quantity and usage	29.70	3.32
	Suggested pesticide name and its applications	27.70	
	Suggested name and how to apply	20.80	
	Suggested pesticide name, usage and its application	9.40	
	recommended insecticide	6.90	
Prices/ price trend	Suggested price rate and market information	79.17	3.58
	No information given	20.83	

What are the other sources of information for the farmers and what are their ratings? Responses on this are examined in the Table 6.16 below. The most frequently mentioned other source of information is fellow farmer across all the types of questions. For variety selection and fertilizer use information, fellow farmers have a higher rating than KCC, but for pesticide use and prices & market information, KCC has a higher rating than other sources. However, there is substantial scope for improvement.

Table 6.16: Other Sources of Information

Decisions	Other sources of information	Frequency %	Average Rating (Weighted)
Variety selection	Fellow Farmers	38.90	3.70
	Experience and Traditional Method	30.60	
	Agro Shop	13.90	
	Government Officials	5.60	
Fertilizer use	Fellow Farmers	42.57	3.47
	Agro Shop	18.24	
	Input dealers	10.14	
	Experience and Traditional Method	8.11	
	Agriculture Expert	4.05	
Pesticide use	Fellow Farmers	44.00	3.28
	Agro Shop	18.20	
	Extension Worker	12.20	
	Input Dealers	10.00	
	Experience and Traditional Method	8.10	

Decisions	Other sources of information	Frequency %	Average Rating (Weighted)
Prices/ price trend	Fellow Farmers	69.23	2.69
	APMC Organization	7.69	
	Bank	7.69	
	Commission Agents	7.69	
	Market Yard	7.69	

What are the some of the comments on the information gaps stated by the farmers? This is examined in the Table 6.17 below. The most frequently mentioned comments are: need for up to date information on latest seeds, need for information on fertilizers that are effective & known, information on pesticide that is effective and up to date, and need for price/ market information that is up to date. The need for price/ market information is most frequently mentioned.

Table 6.17: Important Gaps/Deficiency

Decisions	Important gaps/deficiency	Frequency %
Variety selection	Requires up to date information on latest seeds	34.40
	KCC should provide up to date information	15.60
	Suggest information according to land/soil	6.30
	Should suggest seeds which are used by fellow farmers	6.30
Fertilizer use	KCC should provide effective information	27.71
	KCC gives known information	21.69
	Application of fertilizers	9.64
	Up to date information is required	6.02
	Fertilizers application measurement should be according to 16 ltr pump	3.61
Pesticide use	KCC should provide effective information	27.70
	KCC should provide up to date information	24.10
	KCC should provide information on how to apply	9.60
Prices/ price trend	Provide up to date information on price and market	50.00

In terms of the current impact of the Kisan Call Centres on improving decisions and creating an impact, the responses of the farmers are given in the Table 6.18 below. The responses indicate that the impact is currently somewhat limited and falls mainly within the range of moderate impact to small impact. The best impact is indicated with respect to disease control and insect pest control decisions. Where it is indicated that the KCC are having moderate to large impact for nearly 50 percent of the farmers. This is followed by impact

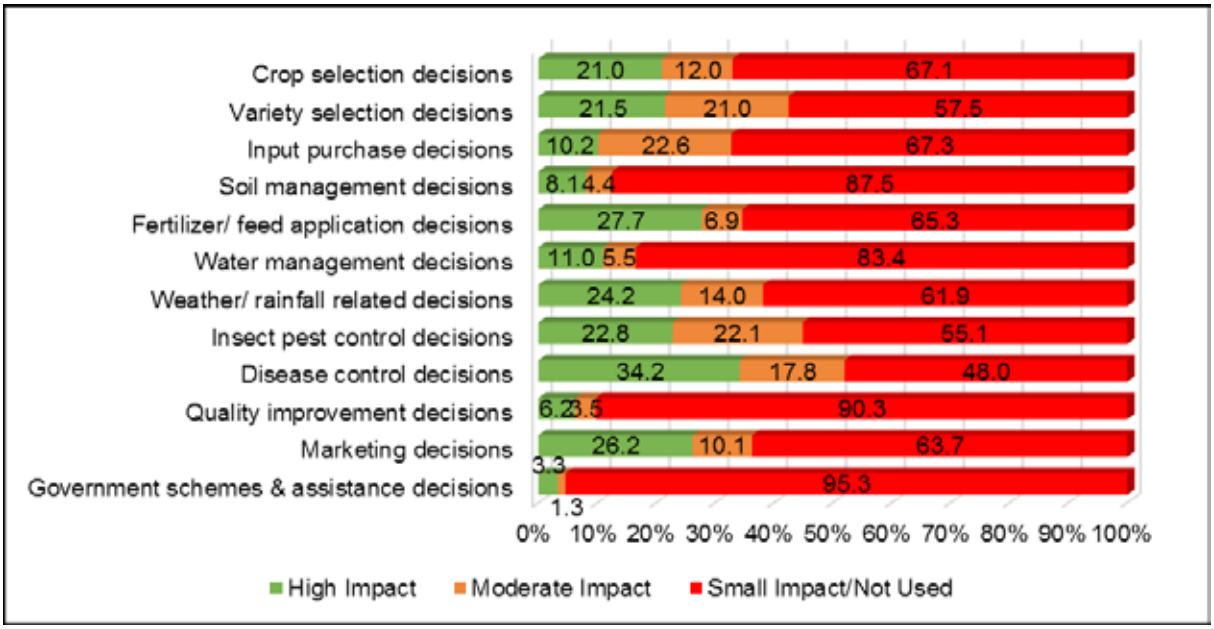
on weather related decisions where it is having a moderate or better impact for about 40 percent of the farmers. Decisions related to variety selection and fertilizer/seed applications also show moderate or better impact for a large number of farmers and there is a good impact for many in terms of marketing decisions. However, many other decisions such as harvest and post-harvest or quality improvement and efficiency improvement are showing very little impact of the Kisan Call Centres.

Table 6.18: Impact of KCC on Important Decisions

	Huge Impact	Significant Impact	Moderate Impact	Small Impact	No Impact	Average
Crop selection decisions	1.2	19.8	12.0	5.4	61.7	1.93
Variety selection decisions	3.5	18.0	21.0	9.0	48.5	2.19
Input purchase decisions	.6	9.6	22.6	8.5	58.8	1.85
Planting decisions	1.5	5.3	12.1	3.0	78.0	1.49
Soil management decisions	1.5	6.6	4.4	12.5	75.0	1.47
Fertilizer/ feed application decisions	5.9	21.8	6.9	16.8	48.5	2.20
Water management decisions	3.9	7.1	5.5	3.1	80.3	1.51
Weather/ rainfall related decisions	3.7	20.5	14.0	22.8	39.1	2.27
Crop management decisions	1.4	10.5	3.5	14.0	70.6	1.58
Agricultural machinery decisions	1.8	2.7	1.8	1.8	92.0	1.21
Insect pest control decisions	5.8	17.0	22.1	27.2	27.9	2.46
Disease control decisions	4.1	30.1	17.8	12.3	35.7	2.55
Weed control decisions	.8	5.5	7.0	7.0	79.7	1.41
Cost reduction/ efficiency increasing decisions		2.7	4.4	3.5	89.4	1.20
Quality improvement decisions	3.5	2.7	3.5	.9	89.4	1.30
Harvesting & post-harvest decisions	2.6	4.3	3.4	1.7	88.0	1.32

	Huge Impact	Significant Impact	Moderate Impact	Small Impact	No Impact	Average
Marketing decisions	4.2	22.0	10.1	1.2	62.5	2.04
Price & profit related decisions	2.4	5.6	5.6	.8	85.5	1.39
Supply chain & transport decisions					100.0	1.00
Storage decisions		1.0	1.0		98.1	1.05
Risk reduction decisions		1.0	1.0	1.0	97.1	1.06
Credit decisions	.9		2.8	3.7	92.7	1.13
Insurance decisions		1.9			98.1	1.06
Government schemes & assistance decisions	2.0	1.3	1.3	3.4	91.9	1.18
Other decisions	8.6	5.7	48.6	20.0	17.1	2.69

Figure 6.9: Areas of Impact of KCC Information on Farm Decisions



What are the responses on the stated impact of KCC information on production and incomes? The overall summary across all the crops is given in the Table 6.19 below. The majority of the farmers (more than 70 percent) indicate that there is some positive impact of the KCC information on their production and incomes. About 41 percent indicate that there is a small impact, and about 30-35 percent farmers indicate that there is a moderate to large impact.

Table 6.19: Overall Impact of KCC

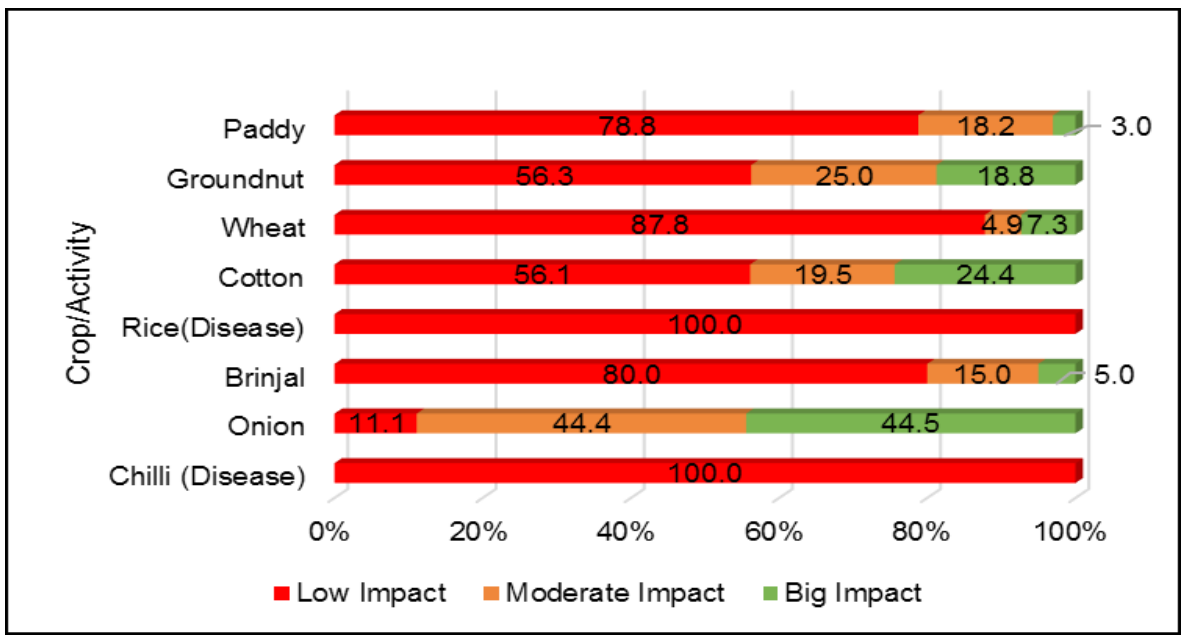
	Huge Impact	Significant Impact	Moderate Impact	Small Impact	No Impact
Impact on Production	2.9	13.1	19.2	40.8	23.9
Impact on Income	2.6	11.4	17.3	40.8	27.8

To obtain more specific information, the question of impact is also examined crop wise. The Table 6.20 and Figure 6.10 below provide an analysis of the response on production crops-wise. The results indicate that KCC information is having a good impact on production in the crops of onion, cotton, and groundnut. Some impact is also seen in the case of paddy.

Table 6.20: Impact of KCC on Production- Crop/Activity wise

Top Ten crops/ activity based on overall crops/ activity	% frequency (Valid Percent)	% frequency (Out of top ten crops)	No Impact	Small Impact	Moderate Impact	Significant Impact	Huge Impact
Paddy	8.6	19.4	15.15	63.64	18.18	1.52	1.52
Groundnut	6.3	14.1	27.08	29.17	25.00	10.42	8.33
Wheat	5.3	12.1	4.88	82.93	4.88	7.32	
Cotton	5.3	12.1	24.39	31.71	19.51	17.07	7.32
Rice(Disease)	3.8	8.5		100.00	0.00		
Brinjal	2.6	5.9		80.00	15.00		5.00
Onion	2.3	5.3		11.11	44.44	38.89	5.56
Chilli (Disease)	2.3	5.3	5.56	94.44			

Figure 6.10: Impact of KCC on Production-Crop/Activity wise

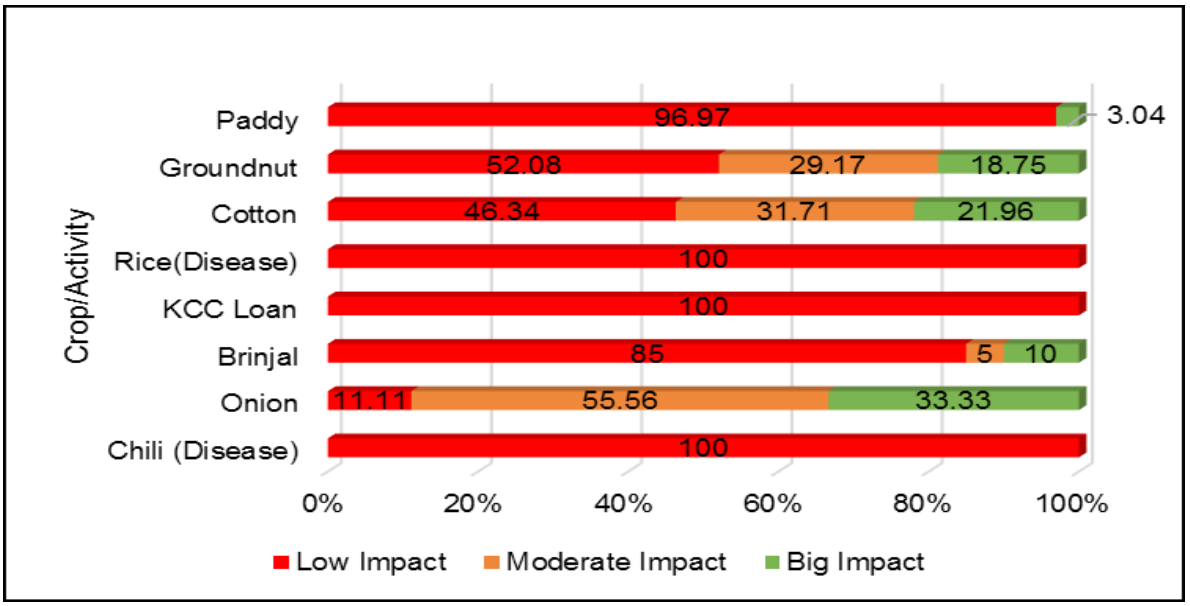


Regarding the impact on incomes by crop, the results are given in the Table 6.21 and Figure 6.11 below. The results indicate a good impact of KCC on the incomes in onion, cotton and groundnut. Thus, the KCC information is reported to produce benefits for farmers in at some important crops.

Table 6.21: Impact of KCC on Income- Crop/Activity wise

Top Ten crops/ activity based on overall crops/activity	% frequency (Valid Percent)	% frequency (Out of top ten crops)	No Impact	Small Impact	Moderate Impact	Significant Impact	Huge Impact
Paddy	8.6	19.4	16.67	80.30		1.52	1.52
Groundnut	6.3	14.1	25.00	27.08	29.17	16.67	2.08
Cotton	5.3	12.1	29.27	17.07	31.71	12.20	9.76
Rice(Disease)	3.8	8.5		100.00			
KCC Loan	2.9	6.5	100.00				
Brinjal	2.6	5.9	5.00	80.00	5.00	10.00	
Onion	2.3	5.3		11.11	55.56	33.33	
Chili (Disease)	2.3	5.3	5.56	94.44			

Figure 6.11: Impact of KCC on Income-Crop/Activity wise



The Table 6.22 below provides the overall assessment given by the farmers regarding the Kisan Call Centres. A majority of the farmers consider the overall assessment of the performance of KCC to be good, though a large number consider the performance to be just satisfactory. In terms of response efficiency, nearly 60 percent of the farmers consider this to be good to excellent and in terms of the quality of the information provided, about 54 percent are happy with it. Overall, a large majority of about 90 percent of the farmers

would like the Kisan Call Centres to be continued. This indicates that farmers find the Kisan Call Centres helpful and would like this scheme to be continued.

Table 6.22: Overall assessment

	Excellent	Good	Satisfactory	Somewhat Poor	Very Poor	Average
Overall assessment of the performance of the Kisan Call Centr	7.5	56.7	30.8	5.1		3.67
Overall assessment for the response and efficiency of Kisan Call Centre	2.6	57.1	33.8	5.7	.7	3.55
Overall assessment of the quality of information provided by Kisan Call Centre	2.6	51.4	36.3	7.7	2.0	3.45
	Strongly Agree	**Agree**	**Partially Agree/ Disagree**	**Disagree**	**Strongly Disagree**	**Average**
Overall opinion whether the Kisan Call Centre should be continued	18.5	69.6	11.2	.7		4.06

Figure 6.12: Overall Assessment

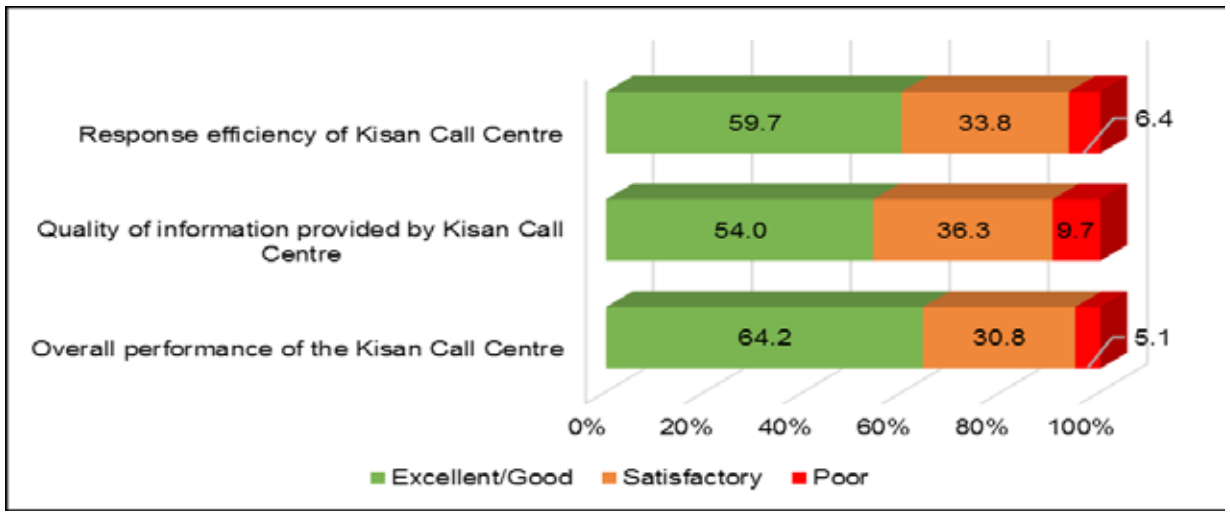
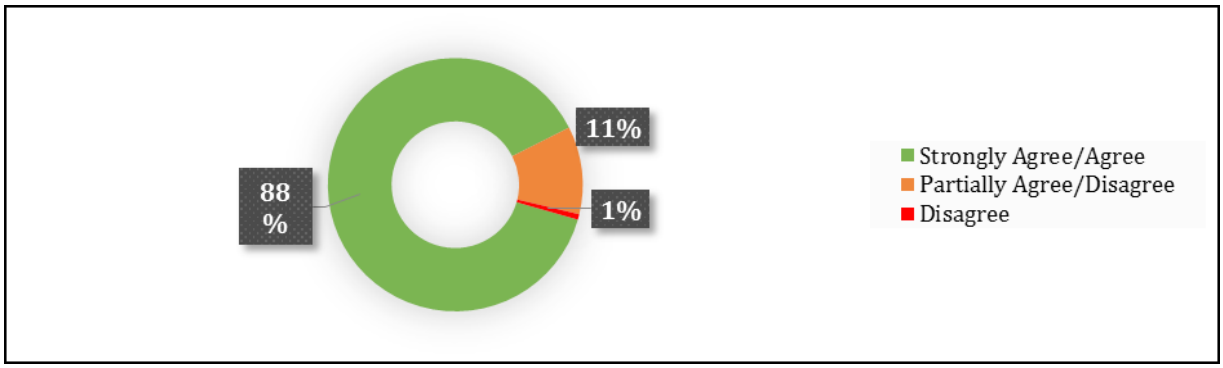


Figure 6.13: Overall Opinion of the Farmers on Continuation of Kisan Call Centres



Chapter 7

Conclusions & Recommendations

The study has examined the design and performance of the major Government of India scheme of Kisan Call Centres (Farmer Call Centres). The scheme was launched in 2004 with the objective of improving the delivery of extension services and information to the farmers by leveraging the rapid development of the telecommunication infrastructure and services in the country. The Kisan Call Centres (KCCs) respond on the spot to questions related to agriculture asked by farmers. Farmers need information on a large number of technical and economic matters to manage their farms successfully in the world today. The information helps them to make correct decisions on various critical matters such as the crop to plant, the variety to use, the inputs to apply, and practices to follow. Inadequate and imperfect information leads to poor decisions, poor crop performance, and even crop failure and suicides.

The objectives of the research were to study the design, implementation and performance of the government scheme of Kisan Call Centres (KCC), primarily, and to also look at the related systems of Kisan Knowledge Management System (KKMS), Farmers Portal, and M-Kisan Portal. The study is conducted in coordination with Agro Economic Research Centres (AERCs) in five different sample states. It is coordinated by Centre for Management in Agriculture (CMA), Indian Institute of Management Ahmedabad (IIMA). The 5 states-Kisan Call Centre units selected for coverage include Punjab – Chandigarh, Gujarat – Ahmedabad, Maharashtra – Pune, Karnataka – Bangalore, and Assam – Guwahati. The study covered 140 Farmer Tele Advisors at these Centers. The study covers a sample of 561

farmers across these states-centers including 458 KCC users and 103 non-users. The data profile indicates that FTAs are all well qualified for the jobs with primarily agriculture related degrees and the right backgrounds. The users are somewhat more educated and younger than the non-users but even illiterate farmers are among the user, and they are found to be from all social backgrounds.

Findings

- An examination of the KCC-KKMS database indicates that a huge number of over 61 lakh live calls were received and recorded at the KCCs in the country in 2016-17. If the IVR system calls are added, the total number of calls recorded in the system rises to 80 lakh calls. Data for the top 10 crops in each state shows that Rice or Paddy has the largest share in the calls among crops followed by Cotton and Wheat. Examining the broad reasons for calling, it is found that the highest number of calls recorded are for weather information, followed after a large margin by plant protection, and then government schemes, market information, fertilizer use/ availability, and then variety choice. The kind of information required varies from state to state but weather and plant protection are major in all of them – indicating that concerns of risk are a major reason for calling.

- Assessment of the Centres by the Centre supervisors indicates that a large number of calls are received every day, the handling of the calls by FTAs is efficient, and the communication between the FTA and farmers is good. The performance of the hardware and software is reported to be good but the internet connectivity is less than satisfactory. There is also dissatisfaction with respect to infrastructure and service support in many Centres. Problems are faced regarding availability of information on time, and though the information is easy to understand, there are some problems in the farmers understanding and processing of the information and farmer satisfaction with the information. There is considerable dissatisfaction with the systems and policies of the call centres, but the performance and usefulness of KCC is reported to be good to excellent and all of Centres agree/ strongly agree that the KCC should continue.

- Assessment of the FTAs shows that about 70 percent of the FTAs find the hardware to be adequate and working well. They find the display to be good and the hardware can handle the call load on a daily basis. Whereas 68 percent find the hardware to be good for the work requirement, about 32 percent feel that there is scope for improvement. About 60 to 70 percent of the FTAs feel that the software is up to date, fast and user friendly. However, a large number indicate difficulty with the internet speed and many indicate that it frequently breaks down and slows down work.

- The FTAs depend on many information sources for answering questions. The main source used is self-knowledge, and over 90 percent indicate that their self-knowledge is excellent to good, and over 70 percent indicate that the knowledge of colleagues and supervisor is also good or excellent. Internet search is also considered good to excellent by nearly 80 percent of the FTAs, and over 60 percent indicate excel sheets and prepared materials as well as knowledge acquired in training as good to excellent. However, a large number of more than 50 percent indicate the inadequacy of extension booklets and government department sources and materials, and a very large number indicate the inadequacy of university experts, and nodal officers.
- The KKMS website is used almost all the time by the FTAs during their work and they indicate that the website is easy to use, clear and well organized. However, the response of the website is often slow and the information on it is often not up to date. The website also has the problem of often crashing or responding slowly during use, and retrieving information and making changes in recorded information is often difficult. With respect to the farmers' portal website, most FTAs indicate that it is not frequently used though it is easy to use and quite clear. With respect to the M-Kisan portal website, there appears to be quite wide dissatisfaction and it is not very frequently used.
- Regarding the call answering systems of the KCC, the FTA survey results indicate that to a large extent, the calls are handled well and FTAs are able to handle and answer the questions themselves. Those they are not able to handle appear to be answered by colleagues and supervisors substantially. The escalation to level 2 is not working very well in most cases and these calls are frequently not well attended and not speedily attended to by the state agriculture experts. The escalation to level 3, fares even worse and the nodal officers do not often attend to the questions even through SMS or other means.
- On the overall assessment of KCC, nearly 70 percent of FTAs consider the KCC performance to be good to excellent but over 30 percent see scope for improvement. In terms of their own contribution at the KCC, over 80 percent considered to be good to excellent. Regarding the systems and policies under which the KCC is working, there is considerable dissatisfaction with nearly 75 percent considering this to be in the range of poor to satisfactory. Regarding the usefulness of the KCC to the farmers and the state agriculture, over 80 per cent consider this to be good to excellent. Almost all the FTAs are of the opinion that the Kisan Call Centre scheme should be continued.
- The survey of 458 farmer users shows that in terms of frequency of use of the different sources of information, KCCs have risen to be frequently or very frequently used by 67.5 percent of the farmer users and this exceeds even fellow farmers which stands at

63.2 percent. After a large margin follow extension workers which stand at 42.8 percent and input dealers at 34.4 percent. Thus, KCCs have become the most used source of information by the user farmers, and Kisan Call Centres have come to occupy a very prominent place in terms of sources of information used by the farmers. In terms of the quality or usefulness of information available from different sources, 56.4 percent of the users rate fellow farmer (who are generally most trusted) as good to excellent source of information, but this is followed by 50.8 percent users rating KCCs as a good to excellent source. This indicate that the Kisan Call Centres rank very high (no. 2) as a quality information source and farmers find the KCC information useful and almost as useful as that from fellow farmers. The Kisan Call Centres rank much higher than extension workers, input dealers and other call centres.

- On call response efficiency and quality, 78 percent of the users indicate that the KCC toll free number is easy to reach and 60 percent report that the wait for KCC to pick up is not too long. More than 70 percent of the users indicate that the voice reception over the phone is clear and over 65 percent report that the call drops are not frequent. Nearly 80 percent indicate that the FTAs greets and speaks courteously and understands and responds in the local language. Over 70 percent report that the FTA understands the question or problem easily and provides answers in a clear and understandable way. However, when it comes to the usefulness of the answer and solving of the problem the percentage drops considerably to about 57 percent. Regarding the escalation of the call to higher authorities, experts or nodal officer, the responses indicate that this is not satisfactory. However, overall, in terms of the call handling efficiency, over 70 percent agree that it is good.

- On the impact of KCC information, results indicate that the impact on decisions is currently somewhat limited - mainly moderate impact to small impact. The best impact is seen on disease control and insect pest control decisions, followed by weather related decisions, variety selection, fertilizer/seed application, and marketing decisions. Regarding impact on production and incomes, majority of the farmers indicate that there is some positive impact of the KCC information on their production and incomes: 41 percent indicate small impact and 30-35 percent indicate moderate to large impact. The impacts vary substantially by crop, and a big impact on production and incomes is reported for cotton, groundnut, and onion, and a good in the case of paddy.

- In overall assessment given by the farmers regarding the Kisan Call Centres, a majority of the farmers indicate that the performance of KCC is good, though many consider it to be satisfactory. Nearly 60 percent of the farmers consider the call response efficiency this to be good to excellent, and in terms of the quality of the information provided, about

54 percent consider it to be good. Overall, a large majority of about 99 percent of the farmers would like the Kisan Call Centres to be continued.

Recommendations

- In a short span of years, the KCCs have become the most frequently used source of information by the farmer users, even exceeding, fellow farmers and all other sources of information including extension workers, dealers, KVKs and universities. This is a significant achievement. The KCC system is receiving a huge amount of call traffic from the farmers of about 22,000 calls per day. 99 percent of the farmer users want the KCC scheme to continue.
- For further enhancing the use of the KCC system, strong publicity to the farming community should be done especially in low use states - to increase awareness about KCCs, how they can help, and how to reach them, so that the user base and the call frequency can be greatly increased.
- There is great need to regularly monitor the call efficiency statistics of the KCCs and seek to reduce the waiting time, the calls not answered, the call drops, and to increase the percentage of calls effectively answered.
- The latest hardware and software for call handling & filtering and excellent internet connectivity is a must for the FTAs and should enable the use of photographs, useful Apps and other means of communication between the farmers and FTAs. There is also a significant need to improve the functioning of the supporting websites including the KKMS, Farmers Portal and the m-Kisan Portal.
- There are substantial inadequacies in the quality of information provided by the KCCs. The information base available with the KCCs/ FTAs to answer farmers' questions needs to be hugely improved – without this, the system will not be very useful and will not have much impact. The information needs to be made comprehensive, extensive and up to date and put into a quick access digital database system. A special Unit should be setup to build and maintain such a database.
- Escalation of questions to higher levels is not working in most KCCs. A special in-house Unit of experts should be setup in each KCC to continuously access, compile, and update the required knowledge base and provide it to the FTAs. The unit could consist of qualified experts or even of qualified or experienced FTAs who are dedicated to this task. They should create, build and maintain the quick access digital database for the FTAs mentioned above.

- Weather information is a major reason for calling and should be substantially strengthened and kept up to date. The information on government schemes is another major reason for calling and needs considerable strengthening. Besides, market/ price and technical information needs substantial improvement.
- Frequent and good training programmes for the FTAs are a must to regularly enhance their skills and knowledge include in system operation, and new/ better sources of information, and updating of information including on government schemes.
- Given the availability of good long-distance telecommunication technology and its growing reach, having a larger number of Centres may not be necessary – a limited number of well manned, well equipped and high expertise Centres may be better than many thinly or poorly manned Centres. There may not be a need for highly local Centres – in fact, larger aggregate Centres would better be able to share knowledge & solutions across areas/ regions.
- The FTAs play the most important role in the KCC system and need to be well compensated and supported. There is need to provide good office infrastructure facilities and create a good working environment for them, and the terms and compensation of FTAs need to be enhanced to attract the best talent, motivate them, get the good performance, and retain them. They play the most important role in helping the farmers and delivering the KCC service.

References

Aker, J C and Mbiti, I M (2010): 'Mobile Phones and in Africa Economic Development', Center for Global Development, Working Paper No 211, Washington DC.

Bera, S (2014, July 29): 'Farm distress calls hit record high but many go unanswered'. Live Mint. Retrieved from http://www.livemint.com/Politics/rUUCn9kKYklCORPcEtGkVM/Farm-distress-calls-hit-record-high-but-many-go-unanswered.html.

Chitradon (eds), *Proceedings of the AFITA-WCCA Joint Congress on IT in Agriculture*, August 9-12, 2004, Bangkok, Hydro and Agro Informatics Institute, Thailand.

Chouhan, R S, Kumar, D and Sharma, H O (2011): 'Performance of Kisan Call Centre: A Case Study of Kisan Call Centre of Indian Society of Agribusiness Professionals Bhopal (Madhya Pradesh)', *Indian Journal of Agricultural Economics*, Vol.66, No. 3, July-Sept.

Cole, S A and Fernando, N (2012): 'The Value of Advice: Evidence from Mobile- Phone based Agriculture Extension', Working Paper No 13-047, Harvard Business School, November 21.

Day, George and Rashi Glazer (1994): 'Harnessing the Marketing Information Revolution: Toward the Market-Driven Learning Organization, in Blatberge, Robert C. et al. (eds.), The Marketing Information Revolution, Harvard Business School Press, Boston, Massachusetts.

Gandhi, Vasant P. (2004): 'An IT Based Market Information System for Improving Marketing Efficiency of Fruits and Vegetables in India', in Fedro Zazueta, Seishi Ninomiya and Royol Chitradon (eds), *Proceedings of the AFITA-WCCA Joint Congress on IT in Agriculture*, August 9-12, 2004, Bangkok, Hydro and Agro Informatics Institute, Thailand.

Gandhi, Vasant P. (2011): 'ICT Based Knowledge and Information System for Brand-Variety Selection by Farmers': Study and Design Using the Crop-Cutting Survey System in Cotton, *Indian Journal of Agricultural Economics*, Vol.66, No.3, July-Sept.

Kant, D and Pandey, A (2011): 'Impact of Kisan Call Centre in Madhya Pradesh', *Indian Journal of Extension Education,* Vol 47, No. 3 and 4, Diva Enterprises Pvt Ltd, pp 86-88.

Kaushal, A. (2015): 'How Kisan Call Centre Work'. *Business Standard,* June 20. Retrieved from *http://www.business-standard.com/article/current-affairs/how-kisan-call-centres-work-115062000022_1.html.*

Khanal, V. (2015): 'Farmers in a fix over Kisan Call Centre's tech language'. *The Times Of India,* August 2. Retrieved from http://timesofindia.indiatimes.com/city/allahabad/Farmers-in-a-fix-over-Kisan-Call-Centres-tech-language/articleshow/48313139.cms.

Laudon, Kenneth C. and Jane P. Laudon. (2002): 'Management Information Systems: Managing the Digital Firm' Pearson Education Ltd, Essex.

McGuire, E, Bell, M, and Crump, A (2015): 'Agriculture Call Centres- An Infrastructure and Demand Audit', MEAS project, USAID.

Ministry of Agriculture, Government of India. (2014). Agricultural Statistics at a Glance. (1st ed.), New Delhi, India, Oxford University Press

Mkisan. (n.d.). Retrieved from http://mkisan.gov.in/

Rediff. (2007): 'Kisan Call Centres (KCC) ring in Hope for farmers', *Rediff News,* March 20. Retrieved from http://www.rediff.com/money/2007/mar/20kisan.htm.

Sharma, B.R, Singh, P, and Sharma, A. (2011): 'Role of Kisan Call Centres in Hill Agriculture'. *Indian Journal of Agricultural Economics*. Vol.66, No. 3, July-Sept.

Tripathi, R.K, (2015): ''Key issues on Kisan Knowledge Management System through Kisan Call Centre'. National Initiatives under NeGP-A, Centre for Innovations in Public Systems, Hyderabad. July-August.

Zani, William M. (1970): 'Blueprint for MIS', *Harvard Business Review*, Vol 48, No 6, Nov-Dec.

विद्याविनियोगाद्विकासः
IIM AHMEDABAD

Centre for Management in Agriculture (CMA)
Indian Institute of Management Ahmedabad (IIMA)
Vastrapur, Ahmedabad, Gujarat 380015

e-mail: cma@iima.ac.in | **Phone:** +91-79-6632-4650, 6632-4651 | **Fax:** +91-79-6632-4652
Web: www.iima.ac.in