

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

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Chapter: 1

Introduction

Introduction

To manage their farms successfully, farmers require information on a number of different technical and economic aspects and problems of their farming. They need this to make correct decisions on many matters such as crops, seeds, and different practices to follow, often among many available choices. This includes decisions such as the crop to plant, the variety/ brand of seeds to use, kind of inputs to apply for good crop production and protection, as well as how much, when, and how to use. With rapid development, the number of choices has increased tremendously and so has the knowledge base in agriculture. The risks have also increased with growing volatility in the markets and agro-climatic environment with liberalization, globalization and climate change.

This is making proper decision-making critical as well as more difficult and complex. For example, farmers have to make crucial decisions every season on what brand-variety seeds to plant. There is huge variation in the performance across varieties in different areas, and farmers' livelihoods depend critically on this decision. However, extension systems have become weak, and no systematic and current information is often available to the farmers. Invariably they have to decide based on hearsay and often dealer advice which are frequently imperfect. Systems to provide good information and knowledge to farmers to help them in their decision making are thus becoming increasingly crucial.

Kisan Call Centres

The Department of Agriculture & Cooperation, Ministry of Agriculture, Govt. of India launched *Kisan Call Centers* with a view to leverage the extensive telecommunication infrastructure in the country to deliver extension services to the farming community. The purpose of these Call Centers has been to respond to issues raised by farmers instantly in the local language, on a continuous basis. It has been proposed to target the entire country in all the major languages by a network of Call Centers to enable the farmers to get expert advice through a toll free number 1551.

In the planned design, the farmer reaches an agriculture graduate or expert who would be able to respond to his queries and problems. In case the respondent at the Level-I is not able to satisfy the farmer, the call can be 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 will get further advice through post or by visit of extension worker. The services would be available round the clock. While during the working hours there would be immediate response, but beyond working hours and on holidays, the call would be recorded and the queries answered later or by post. The network has been made available from 21st January 2004 throughout the country.

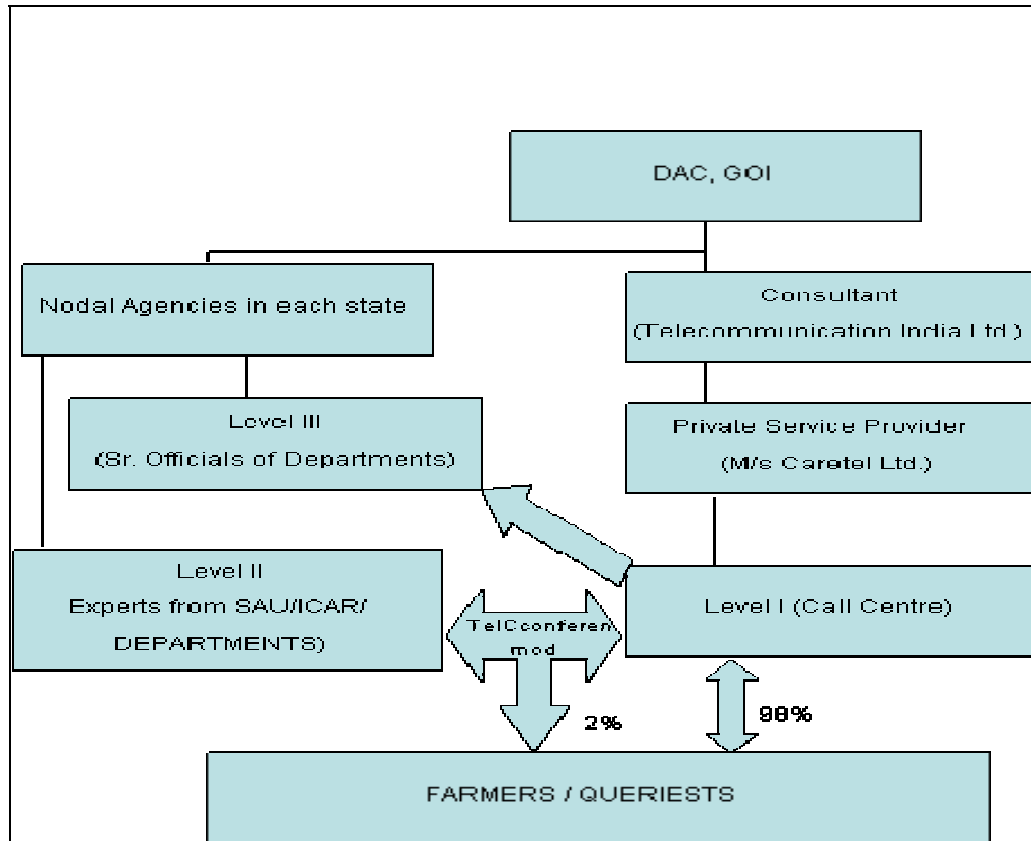


Fig. 1.1 Kisan Call Centre (KCC): Flow Chart

Source: www.mkisan.gov.in

Currently, it is reported that about 144 Call Centre Agents are engaged in 25 KCC for answering farmers' queries in 22 local dialects from 6 A.M. to 10 P.M. 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). They are accessible through landlines and mobiles of any service provider. The reply is given in the local language. The service is available from 6 A.M. to 10 P.M. for 16 hours a day. It is open 7 days a week 365 days a year. Figure 1

provides an outline of the KCC-KKMS system. Table 1 provides information on the number of KCC calls recorded across the states in 2014-15, as well as the rural population.

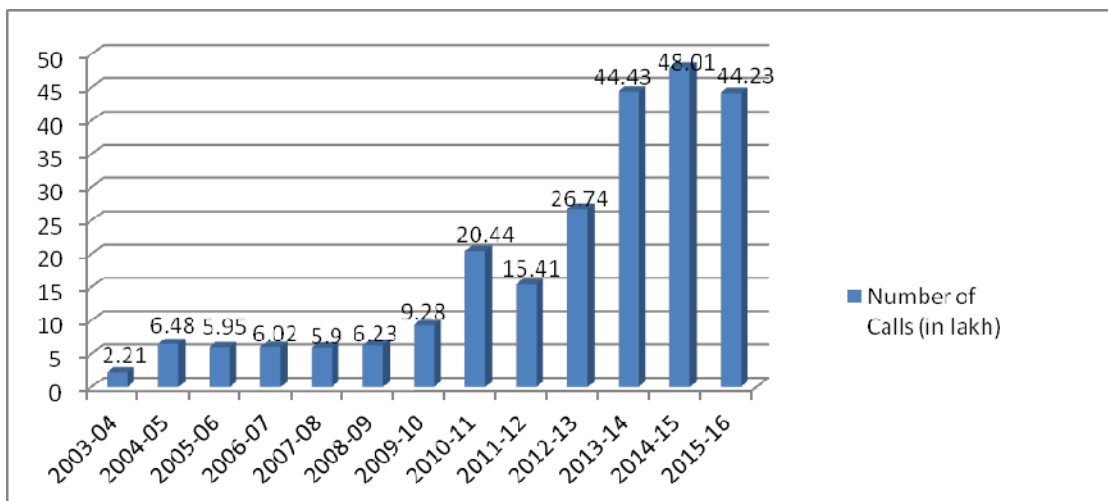


Fig 1.2: Year wise Number of Calls received by KCC since inception (Jan, 2004 to March, 2016)

Source: www.mkisan.gov.in

The original design and 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 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 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 holidays, the calls us recorded and calls answered later.

However, the call escalation process has been restricted from April 2011, and it involves (i) the state Agricultural Department from the block level to the state level, (ii) State Agriculture Universities (SAU) and (iii) Krishi Vignyan Kendras (KVK). When the KCC agent is not able to answer farmer's question, then experts from those organizations are connected through conference call.

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

	States/UTs	KCC Calls Registered	Rural Population	Calls per Lakh Rural Population
		2014-15	'000'	2014-15
	Andaman and Nicobar Islands	40	244	16
	Andhra Pradesh	223929	56312	398
	Arunachal Pradesh	459	1069	43
	Assam	43204	26781	161
	Bihar	138198	92075	150
	Chhattisgarh	61378	19604	313
	Dadra and Nagar Haveli	9	183	5
	Delhi	33139	419	7903
	Goa, Daman and Diu	109	612	18
	Gujarat	245713	34671	709
	Haryana	240654	16531	1456
	Himachal Pradesh	75298	6168	1221
	Jammu and Kashmir	108654	9135	1189
	Jharkhand	41571	25037	166
	Karnataka	249976	37553	666
	Kerala	28181	17456	161
	Lakshadweep	11	14	78
	Madhya Pradesh	417643	52538	795
	Maharashtra	598443	61545	972
	Manipur	1762	1900	93
	Meghalaya	791	2369	33
	Mizoram	364	529	69
	Nagaland	345	1407	25
	Odisha	252649	34951	723
	Punjab	287731	17317	1662
	Rajasthan	408322	51540	792
	Sikkim	2667	456	585
	Tamil Nadu and Puducherry	222972	37584	593
	Tripura	4418	2710	163
	Uttar Pradesh	753842	155111	486
	Uttarakhand	46132	7026	657
	West Bengal	306992	62214	493
	India	4795596	833088	576

Involvement of Common Service Centres (CSCs) and other stakeholders is also envisaged. In the revised plan, since Level II of escalation after KCC is at the block level, it is necessary to have at least one expert on each specialty/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) 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 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 is also be available at KCCs and vice versa. Thus, a KCC agent cans convey solutions to a CSC query by making an outbound call to the farmer. Figure 3 provides an outline of the original and revised KCC-KKMS system

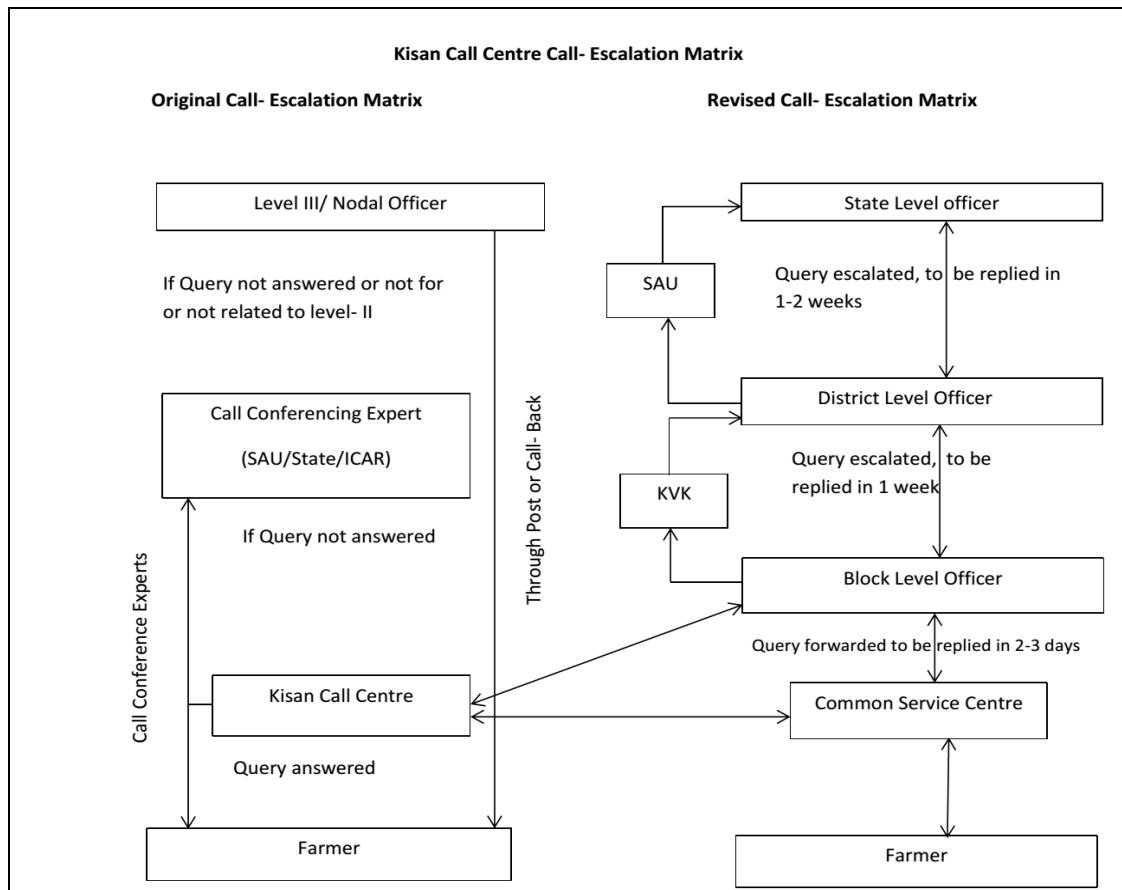


Figure 1.3: Original and Revised KCC matrix

Kisan Knowledge Management System

Kisan Knowledge Management Systems (KKMS) is the web portal system application software which records detail of 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, crops and topics.

Farmer's Portal- One Stop Shop Farmers

A centralised knowledge base was first created purely from the farmer's perspective and was termed Farmers Portal (www.farmer.gov.in) (in Beta version). Through 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 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 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 delivered in the form of text, SMS, email and audio/video in 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 Framers' 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 and 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 Centre, Kisan Call Centres, and integrated platforms in the departmental offices coupled with physical outreach of extension personnel equipped with pico-projectors and held devices. However, mobile telephony (with or without internet) can be the most potent tool of agricultural extension. As

per TRAI data (may2014), through 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 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 m-kisan 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 organization from ministry headquarters to the block level has been authorised to use this portal to provide information to farmers on 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 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 Literature

Narayana Swamy (2008) reported that use of ICT has become imperative in Agriculture. ICT means development and use of electronic and allied gadgetry for effective generation, collection, processing, storage, retrieval and use of the information for maximum and speedy output. It is observed that in agricultural field there are more than 1000 websites but, there are only a few in regional languages, which the farmers can use. The use of internet was made by 7.9 million people in 2001. Only 0.6 per cent population uses internet. However, in 2008, it was expected that nearly 40 million i.e. 3.8 per cent population will use internet. Undoubtedly, the use of ICT and specifically internet is practically nil in the farming community, except for a few high-tech farmers, or their co-operatives. Hence, large scope exists for ICT use in agriculture, Graphics Processing Unit (GPU) technology is making computers very cheap and possibilities of its spread in rural areas have increased. Further, the perception of farmers about utility of websites for agriculture information is very high. Hence, it can be a direct tool for increasing productivity and empowering the farmers for decision making.

Sowmyashree (2007) in her study on critical analysis on the functioning of Kisan call centres in Karnataka state revealed that 51.25 per cent showed medium level of extension participation while the remaining half of the farmers were more less equally distributed between low and high categories.

Veda Murthy (2002) in his study on arecanut growers of Shimoga district in Karnataka observed that relatively more number of growers (48%) were medium mass media users while 37.00 per cent had high mass media use and 27.33 percent were of low mass media users.

Savithamma (2011) conducted study on Farmers' Awareness of Kisan Call Centre and the Symbolic Adoption of Advice in Karnataka and reported that cent per cent of the respondents had access to mobile phone and only 2.5 per cent of them had access to both landline and mobile.

A Conceptual Framework for Designing the Information System

The approach for designing a good information system for the farmers can be based on the modern conceptual approach for designing a management information system for today's organizations. In the old traditional systems, information was just a by-product of the operations, and was generated in a routine or random manner, and was transmitted across the organization bureaucratically, producing benefits only by chance (Fig 2). Decision-making often remained ad hoc. In the modern approach for designing an information system, the process begins by identifying the key activities and tasks that need to be performed to achieve the objectives of the individual/ organization or implement the decided strategy. Then, the key decisions that need to be taken for effectively undertaking these activities and tasks are identified. Then, the key/ important information that is required for soundly making these key decisions is identified. This includes the what, when, where and who of the key decisions. Then, squarely based on these information needs, a tailor-made information system is designed that can directly and effectively provide the key information needed to the right person for the key/ important decisions. The result is an information system which is squarely focused on the decision-making needs and which then directly leads to better decisions and performance (Laudon and Laudon 2002, Zani 1970, Gandhi 2004).

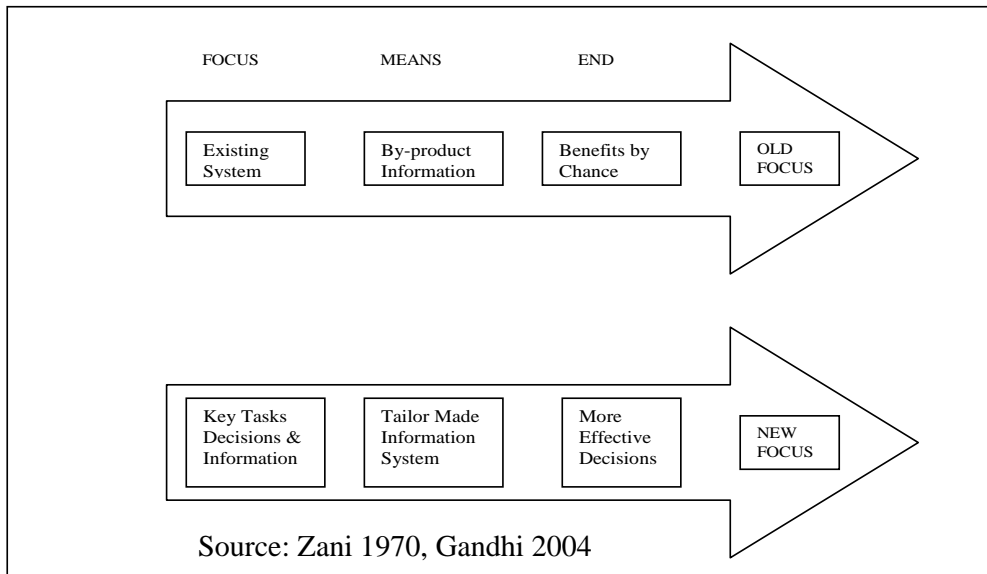


Figure 1.4: Design of Information Systems: Old and New Focus

The revolution in information technology is creating enormous stress in traditional systems. As information volume grows exponentially, and as its useful life shortens, organizations are being challenged to learn faster. This means absorbing more information, making sense of it quickly, and sharing new insights so that decision-makers can act well and in time. Information has to be acquired, given meaning through interpretation, and then either acted upon immediately or properly stored in memory for later use (Figure 3) (Day and Glazer 1994). The process is initiated by the acquisition of information through field sourcing, scanning, internet, experimentation, and field inquiries. The extent of learning 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.

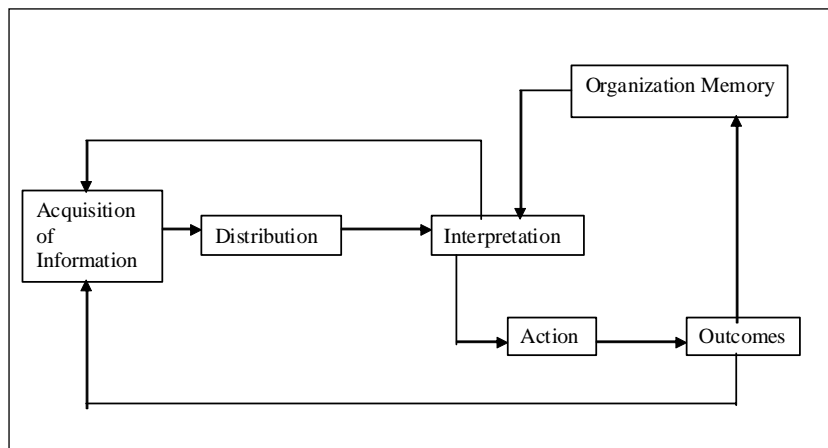


Figure 1.5: Information and the Organizational Learning Process

Objective of the Research

The objective of the research would be to examine the structure, design, and implementation of Kisan Call Centres (KCC) and Kisan Knowledge Management System (KKMS) from the point of view of its effectiveness in providing information and guidance to the farmers to help them in their important decisions related to the best management and performance of their farms. Specifically:

1. It will examine the organizational setup and governance of the KCC-KKMS system
2. It will look into the technology used – the Information & Communication Technology (ICT) and the systems.
3. It will look into the type and quality of the servers – manpower engaged
4. It will examine the use of the system - the information content that is available and provided – the number and profile of the calls
5. It will examine the information provided in relation to the decision-making needs of the farmers – the usefulness – what they want and what they get
6. It will make suggestions on how the system can be improved.

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

In Karnataka, Kisan Call Center - Bangalore are covered by Agricultural Development and Rural Transformation Centre, ISEC - Bangalore, with coordination CMA, IIM - Ahmedabad.

The methodology provides for:

- Study of the structure and implementation of the systems in KCC - Bangalore
- 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.
- Analyse 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

The current study was conducted in Vijapur and Tumkur districts of Karnataka and it was purposively selected as farmers of these districts were exposed to most of the Kisan call centre. A total 100 farmers were selected from the two districts randomly as a sample for study and 25 farm tele advisors were drawn from Bangalore Kisan Call Centre for the study.

Table 2.1: Basic Profile of Kisan Call Centres Sampled

Kisan Call Centre Location	States Covered	Local Language	FTA's	Center Super-visors	Total FTA's
Karnataka-Bangalore	Karnataka	Kannada	19	1	25
	Kerala	Malayalam	6		
	Lakshadweep				

Table 2.2: Kisan Call Centre and FTA Sampling

State	States Covered	Total FTA's	Total FTA Surveyed in Study
Karnataka-Bangalore	Karnataka	25	25
	Kerala		
	Lakshadweep		

Results of Farmer Tele Advisers (FTA) Study

In Kisan Call Centre Bangalore, they are covering three states by using local languages such as Kannada for Karnataka and Malayalam for Kerala and Lakshadweep. The total number of FTAs covered was 25 out of which 19 FTAs for Karnataka state and six FTAs for Kerala and Lakshadweep. (see table no 2.1 & 2.2)

The Tables below provide a basic profile of the 25 FTAs sampled & surveyed. In Table 2.3 on the profile by gender, it is found that about 64.00 percent of the FTAs were male and 36.00 percent were female. In terms of the education, table 2.4 shows that 92 percent of the

FTAs were graduates and remaining eight percent of FTAs were post graduates in Agriculture and allied fields.

In terms of the subject of specialization, the maximum of 68 percent has agriculture as their subject of specialization followed by 16 percent of Agricultural marketing and co-operation and four percent graduates from each subjects viz., Agricultural Engineering, Agricultural economics, soil science and Cooperation & banking. In terms of work experience, four percent of the FTAs have work experience whereas 96 percent do not have any work experience and are fresh recruits from the universities. The kind of work experience is not known.

Table 2.3: Gender Profile of FTA’s surveyed

Gender	Number	Percent (%)
Male	16	64.00
Female	09	36.00
Total	25	100.00

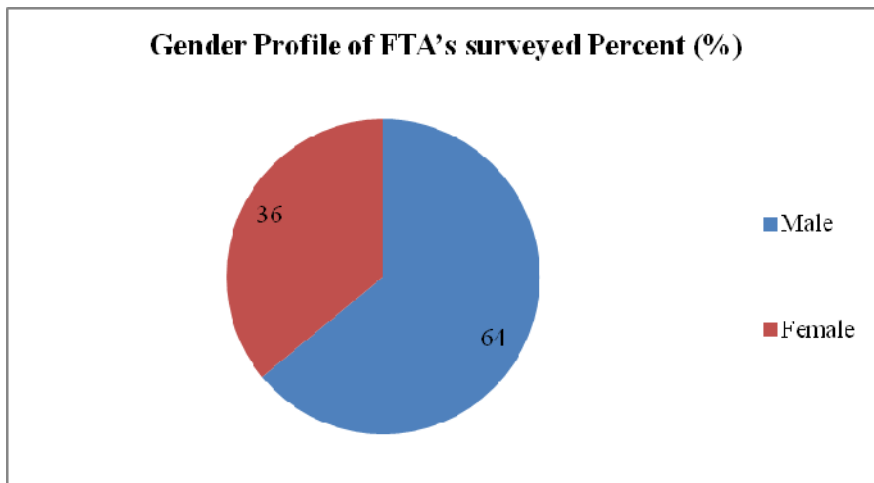


Fig. 2.1: Gender Profile of FTA’s

Table 2.4: Education profile of FTAs surveyed

Degree	Number	Percent (%)
Graduation	23	92.00
Post-Graduation	02	08.00
Total	25	100.00

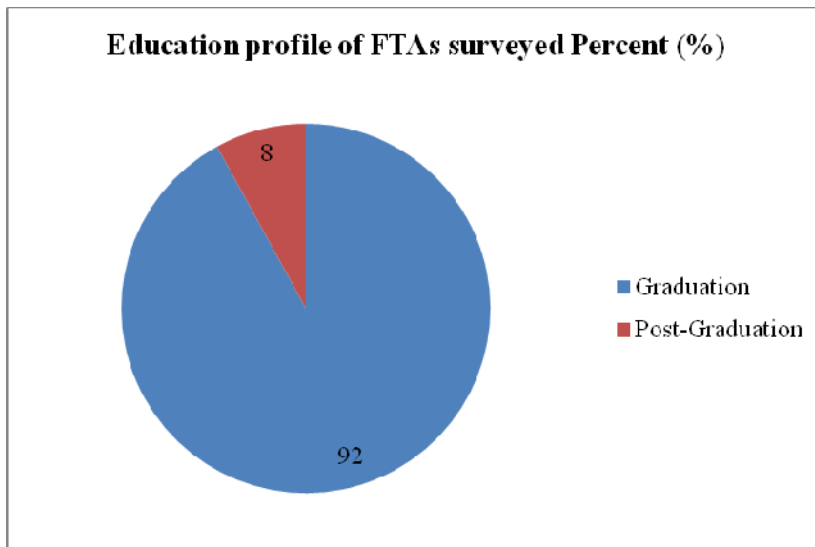


Fig. 2.2: Education profile of FTAs

Table: 2.5: Stated subjects of specialization of FTAs surveyed

Subjects	Number	Percent (%)
Agriculture	17	68.00
Agricultural Marketing &Co-Operation	04	16.00
Agricultural Engineering	01	4.00
Agricultural Economics	01	4.00
Soil Science	01	4.00
Cooperation & Banking	01	4.00
Total	25	100.00

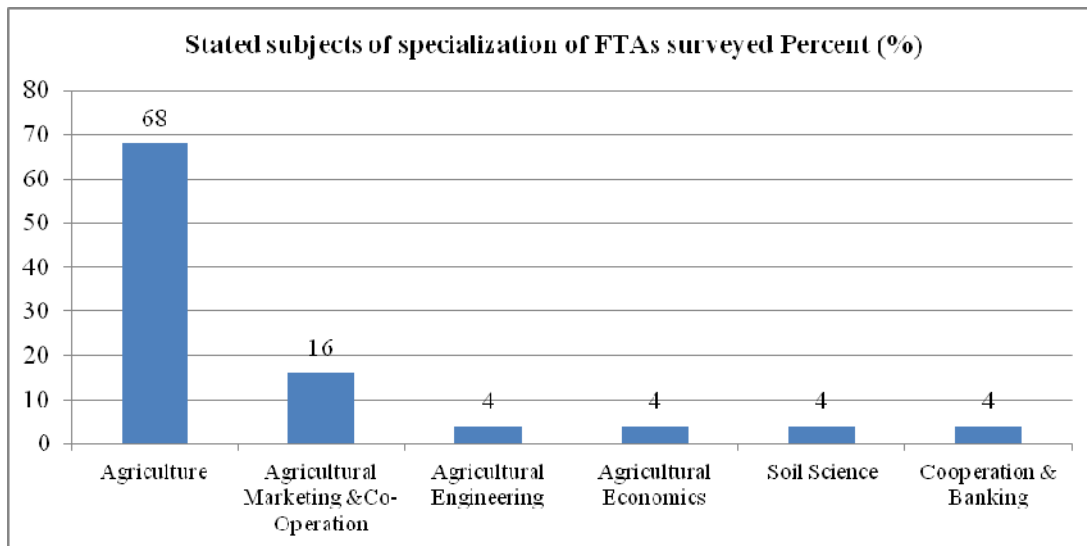


Fig. 2.3: Subjects Specialization of FTAs

Table: 2.6 FTAs with Work Experience

Work experience	Number	Percent (%)
Yes	1	4.00
No	24	96.00
Total	25	100.00

Data: Farmer Sample Survey & Profile

In Karnataka total 100 farmers had surveyed from two districts namely Bijapur and Tumkur. From each of the district 50 farmers had been surveyed. (Table 2.7)The Table 2.8 below provides the education profile of the farmers. The Table indicates that 87 percent of the KCC sample farmers were literates and only 13 percent of the Sample farmers were illiterates. Among literates 38 percent of the sample farmers had completed higher secondary education followed by primary education (24), College (20) and post-graduation (5).

The Table 2.9 below provides the caste profile of the sample. It shows that 71 percent of the sample farmers were belong other backward class (OBC) followed by ST (16.00%), SC (10.00%) and general category (3.00%).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 58 percent belonging to ages below 40 and the rest of 40 & above.

Table 2.7: District-wise Profile of KCC users

Districts	Number	Per cent (%)
Bijapur	50	50.00
Tumkur	50	50.00
Total	100	100.00

Table 2.8: Education profile of farmers (KCC user) sample

	Percent (%)
Post- Graduation	5
College	20
Higher Secondary	38
Primary	24
Illiterate	13
Total	100

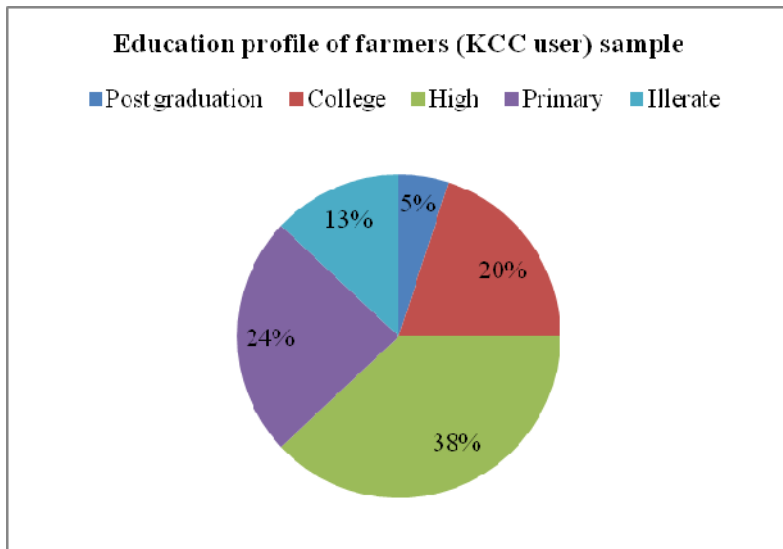


Fig. 2.4: Education profile of KCC sample farmers.

Table 2.9: Caste profile of farmer (KCC users) sample

Caste	Percent (%)
Others/General	3
OBC	71
ST	16
SC	10
Total	100

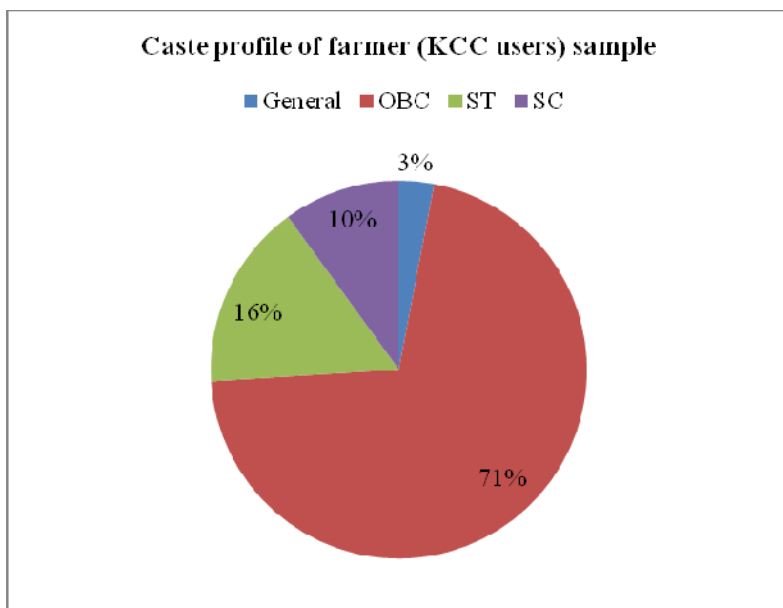


Fig. 2.5: Caste profile of KCC sample farmers.

Table 2.10: Age Profile Sample Farmers (KCC Users)

Age Group	Number	Per cent (%)
18-29	22	22
30-39	36	36
40-49	27	27
50-59	10	10
60-69	4	4
70 and Above	1	1
Total	100	100

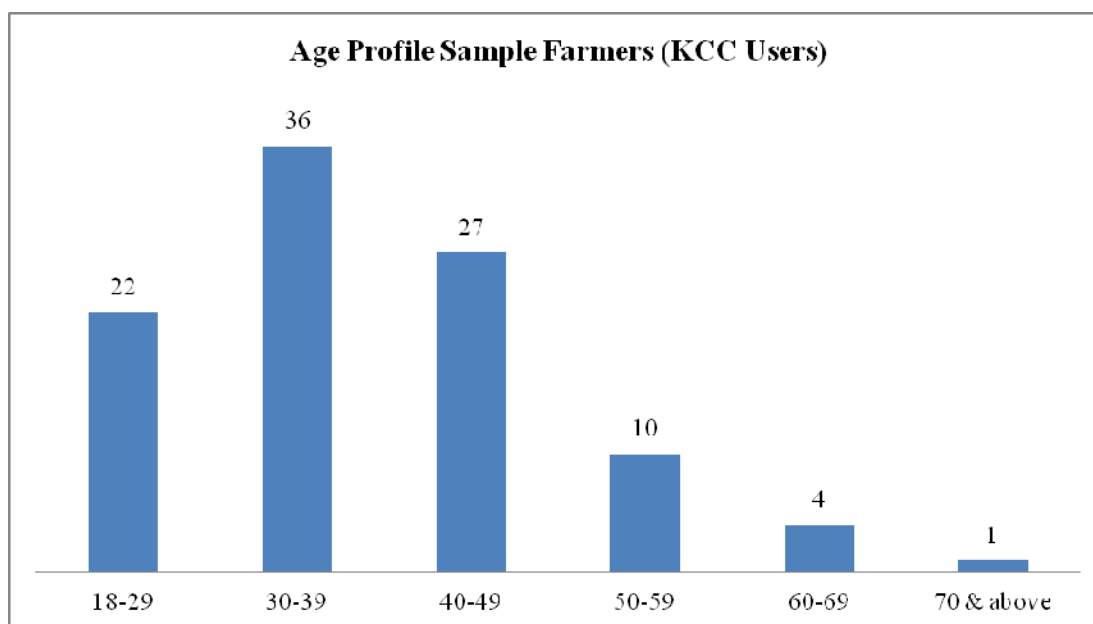


Fig. 2.6: Age profile of KCC sample farmers.

Non-users Sample

Table 2.11 shows that along with KCC users, non- KCC users also covered in the survey. Total of 20 non-KCC farmers covered in the state out of which 10 farmers belongs to Bijapur and remaining 10 farmers belongs to Tumkur district.

The Tables 2.12, 2.13 and 2.14 below give the education, caste and age profiles of the non-users. About 55 percent of the non-users have education of higher secondary or above and 10 percent are illiterate. By caste 30.00 percent belong to ST and remaining 70.00 percent belong to other backward classes. By age profile, the sample shows a wide coverage with about 50 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 2.11: Non-user Sample across Districts

District	Number	Percent (%)
Bijapur	10	50.00
Tumkur	10	50.00
Total	20	100.00

Table 2.12: Education profile – Non-users

Education	Percent (%)
Post-Graduation	0
College	15
Higher Secondary	40
Primary	35
Illiterate	10
Total	100

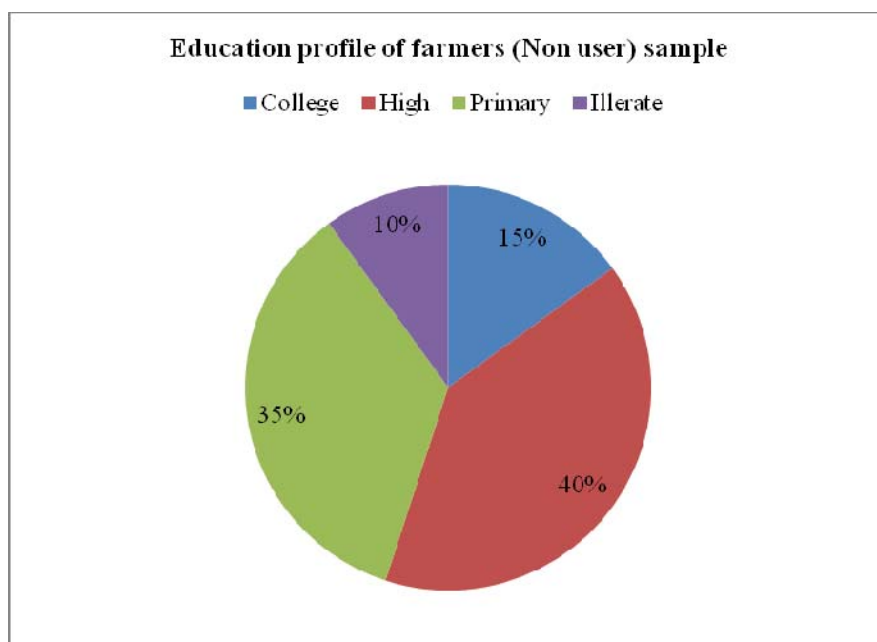


Fig. 2.7: Education profile of non-KCC sample farmers

Table 2.13: Caste Profile-Non-Users

Caste	Per cent (%)
Others/General	0
OBC	70
ST	30
SC	0
Total	100

Table 2.14: Age Profile Farmers (Non-Users)

Age Group	Frequency	Percent (%)
18-29	2	10
30-39	8	40
40-49	6	30
50-59	3	15
60-69	0	0
70 and Above	1	5
Total	20	100

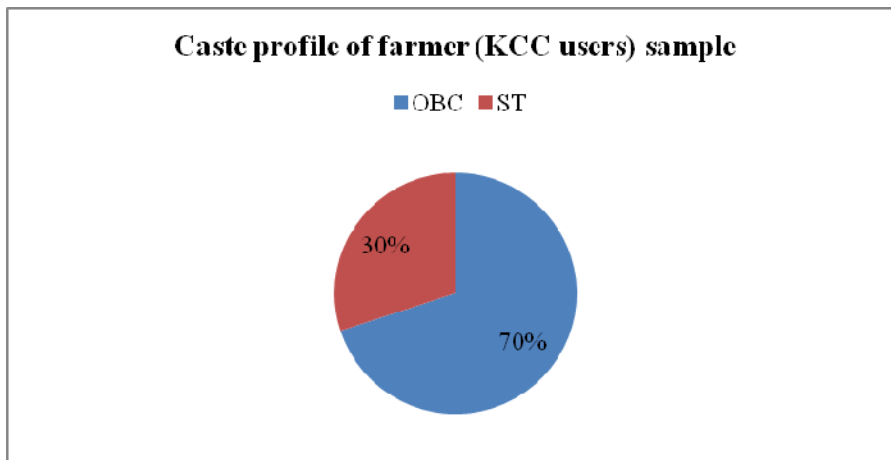


Fig.2.8: Caste profile of farmer (KCC users) sample

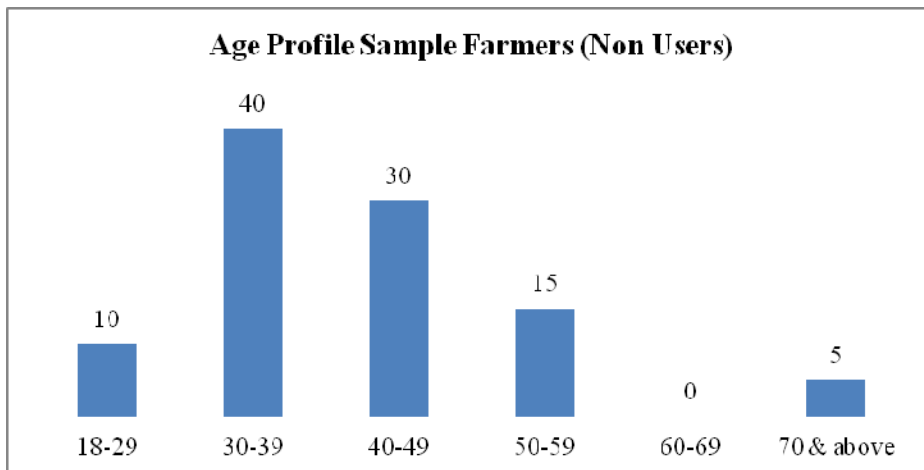


Fig.2.9: Age profile of non- KCC sample farmers

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 was 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
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

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
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 in Karnataka. It indicates that 288608 live calls have landed in the year 2016-17 and total number of recorded in IVR was 288735.

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

State	Live Calls	Total Calls Incl. IVR
Karnataka	288608	288735

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 Karnataka and then compiled and analyzed. The Table 3.3 below indicates that among major crops, Pigeon pea got highest number of calls i.e., 5981 followed by Chillies (3289) and Cotton (3277).

Table 3.3: Calls by Crop

Crop/Activity	Total calls
Cotton	3277
Pigeon pea (red gram/arhar/tur)	5981
Onion	2877
Chillies	3289
Sugarcane (Noble Cane)	2000
Tomato	2667
Maize	2445
Coconut	1699
Arecanut	2338

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

Agriculture Related Topics	Karnataka	Percentage
Weather	138399	76.74
Plant protection	10985	6.09
Government schemes	1671	0.93
Market information	13177	7.31
Fertilizer use and availability	860	0.48
Varieties	3372	1.87
Cultural practices	3273	1.81
Field preparation	1414	0.78
Nutrient management	2286	1.27
Weed management	1423	0.79
Seeds	754	0.42
Sowing time and weather	610	0.34
Bio pesticides and bio fertilizers	136	0.08
Agriculture mechanization	194	0.11
Training and exposure visits	349	0.19
Crop insurance	491	0.27
Water management	211	0.12
Soil testing	251	0.14
Organic farming	155	0.09
Credit	201	0.11
Storage	75	0.04
Post-harvest preservation	41	0.02
Powers, road etc.	21	0.01
Total Calls	180349	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 is for weather information, amounting to as much about 76 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 market information which reflects another major need.

Chapter 4

Results: Kisan Call Centres – Centre Survey

The Kisan Call Centres that were covered in this study sample. 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 Center covers more than one state or territory. In Kanataka Bangalore Centre covers Karnataka, Kerala and Lakshadweep and the languages used both in Kannada and Malayalam. The total number of Farm Tele Advisers (FTA) are in Karnataka was 25. (See Table 4.1)

The Karnataka Call Centre started in 2004 and relocated in 2012 with the number of FTAs increasing from 2 to 25. Thus, the KCC have undergone a process of development, with major changes especially in 2012. (See Table 4.2)

Table 4.1: Profile of Kisan Call Centre

Particulars	Details
States Covered	Karnataka, Kerala & Lakshadweep
Languages Used	Kannada & Malayalam
Number of FTA's	25

Table 4.2: History of Development of Kisan Call Centre

Particulars	Location		
	1st	2nd	3rd
Year of Start/ relocation	Shanthinagar Bangalore	Chamarajpet Bangalore	-
Number of FTA's/ KCC Agents	2	25	-

Responses on comparing the past call centre to the present call centre, all the call centre strongly agree or agree that the change brought about better hardware, better connectivity, better software, better database and better ability to respond to farmers' calls. 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 4.3: Comparison of present and past KCC

	Strongly Agree	Agree	Partially Agree/Disagree	Disagree	Strongly Disagree
Better Hardware/equipment	Yes	-	-	-	-
Better Software	Yes	-	-	-	-
Better Connectivity	-	Yes	-	-	-
Better farmer database	-	Yes	-	-	-
Better ability to respond farmers calls	-	Yes	-	-	-

The call centre is equipped with personal computers, headphones, and printers/scanners. They have 12 personal computers with advanced processor. They have 15 headphones of Jabra type in the Centre and the performance of this has rated as excellent. The printers/scanners are HP LaserJet and the performance is found to be to excellent. (See Table 4.4)

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 the call center. The performance of the Agent Openscape Contract Centre software is found to be excellent. The performance of the Openscape Desktop and Real Time Viewer is found to be good. (See Table 4.5)

Table 4.4: Present Hardware Profile

Particulars	Type	No.	Rating
PC's	HP Compac	12	Excellent
Headphones	Jabra	15	Excellent
Printers and scanners	HP Laser Jet M1216	1	Excellent

With respect to the performance of the hardware, the Centre strongly agree or agree that it can handle the call load, does not breakdown calls frequently and interface of key board and mouse is good. However, the Centre agrees that the hardware fulfils the requirements.(See Table 4.6)

Table 4.5: Present Software Profile

Call Handling Software	Available	Rating
Agent Openscape Contact Centre	Yes	Excellent
Openscape Desktop	Yes	Good
Real Time Viewer	Yes	Good

In terms of the performance of the software, the Centre reports that it can handle the call load including under heavy call traffic but sometimes they are facing the problem of call drop and mishandling is a problem and is reported to be significant. The data-base for answering question is not found to be adequate. The centre also reported that software does not crash frequently. Overall they agree with software generally meets the requirements. (See Table 4.7)

The Tables 4.8 and 4.9 below indicate that when hardware or software problems are faced, the Centre solve them either by themselves or through IT experts.

The problem with internet connectivity is significant in the Centre report problems with internet connectivity. The major problem is the internet slowdown during heavy call load so they are not able respond quickly. (See Table 4.10)

Table 4.6: Hardware Overall Ratings

Particulars	Strongly Agree	Agree	Partially Agree/Disagree	Disagree	Strongly Disagree
It can handle call load	Yes	-	-	-	-
Does not breakdown frequently	Yes	-	-	-	-
interface of Key board and mouse is good	Yes	-	-	-	-
Mouse works well	-	Yes	-	-	-
Fulfils Requirements	-	Yes	-	-	-

The Call Centre have a good infrastructure facility, it have six air conditioners, Drinking water and washroom facility. Even though good infrastructure FTAs are facing some

problems like disturbance while other FTA is attending call and they also facing poor ventilation problem. Overall, they agreed with good working environment in call centre. (See Table 4.11 and 4.12)

The FTAs play a most important role in the performance of the Kisan Call Centre. 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 the centre, 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 somewhat poor in the center. FTAs are agreed with they are motivated by higher authority and also getting trained in various subjects for improve in their performance. (See Table 4.13)

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 occasionally take the help of colleagues and supervisors to answer the farmer queries. They also use prepared excel sheets and materials, internet search, help from experts frequently for solving farmer queries. (See Table 4.14)

Table 4.7: Software Overall Ratings

Particulars	Strongly Agree	Agree	Partially Agree/Disagree	Disagree	Strongly Disagree
Calls can be handled easily	-	Yes	-	-	-
Calls does not get dropped, or mishandled by the software	-	-	Yes	-	-
Heavy call traffic can be handled	-	Yes		-	-
Adequate database for answering questions	-	-	Yes	-	-
Software does not frequently crash	-	Yes	-	-	-
Software meet the requirements	-	Yes	-	-	-

Table 4.8: How do you Resolve Hardware Problem?

State	Details
Karnataka	Self

Table 4.9: How do you Resolve Software Problem?

State	Details
Karnataka	IT Expert

Table 4.10: Internet Connectivity

Particulars	Strongly Agree	Agree	Partially Agree/Disagree	Disagree	Strongly Disagree
During heavy call loads, internet does not slowdown	-	-	Yes	-	-
Fast enough to respond calls	-	-	Yes	-	-
Fast enough for retrieving & recording information	-	-	Yes	-	-
Does not frequently breakdown	-	-	Yes	-	-
Adequate for work	-	-	Yes	-	-

In general, self-knowledge, colleagues and supervisors, prepared excel sheet and internet search are considered good sources of information. The centre was not getting any information from government departments. (See Table 4.15)

The knowledge data base available is reported not satisfactory in centre, see Table 4.16 below. Whereas the technical questions are being adequately answered, the question related to government schemes is generally not adequately answered. The price and market related information is reported to be answered well in all centre. The weather related and other questions are answered well by the entire centre. Overall the farmers are reported to be satisfied with the information provided in the centre.

The Table 4.17 below provides information regarding usage of different relevant websites by the Kisan Call Centre. The Kisan Call Centre using the Kisan Knowledge Management System (KKMS) all the time. Whereas the farmers' portal is also being used in the centre. The Krishimaratavahini.kar.nic.in website is also used almost all the time in the centre to solve queries related marketing of produce. And also the Centre uses the Agricultural University Portal and the State Seeds Corporation portal most of the time. The Accuweather portal is being used by the centre to solve the weather related queries.

With respect to the KKMS portal, the performance appears to be less than satisfactory as experienced in the call centre, see Table 4.18 below. It appears to be slow in response and frequently crashes or fails to respond. The centre is not happy with overall performance of the KKMS portal. With respect to Farmers portal, the centre is agreeing with overall performance of the website and also reporting some problems like website sometimes slow and crash during the use. (See Table 4.19)

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 frequent. The escalation to level 2 and 3 is very poor. This indicates that this part of the system is not working and the responsibility and action on answering farmers queries largely rest with the FTAs.

Table 4.11: Infrastructure/ Office Equipment's

Facilities	No.
No. of AC's Installed	6
No. of CCTV Cameras	0
Drinking Water Facility	2
Washroom Facility	2
Lunch/Dinner Facility	0

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. The training programmes are not helpful in imparting the necessary knowledge, the centre opined that on field training required to get sufficient knowledge.

Table 4.12: Infrastructure Rating

Particulars	Strongly Agree	Agree	Partially Agree/Disagree	Disagree	Strongly Disagree
Sufficient Activity Area	-	Yes	-	-	-
No disturbance while other FTA are attending call	-	-	Yes	-	-
Adequate Ventilation	-	-	Yes	-	-
Sufficient Video Surveillance	-	Yes	-	-	-
No Disturbance from other departments	-	Yes	-	-	-
Overall good working environment	-	Yes	-	-	-

Table 4.13: Assessment of FTA Efficiency

Particulars	Strongly Agree	Agree	Partially Agree/Disagree	Disagree	Strongly Disagree
FTAs are quick in responding to calls	-	Yes	-	-	-
FTA's are able to manage the calls efficiently.	-	Yes	-	-	-
The FTAs have sufficient knowledge & capability to answer questions	-	Yes	-	-	-
FTAs are able to quickly access the database/information to answer questions	-	-	Yes	-	-
FTAs often take the help of colleagues to answer questions	-	-	Yes	-	-
FTAs often escalate to higher levels to answer questions	-	Yes	-	-	-
FTAs are able to satisfactorily find answer the farmers questions	-	-	Yes	-	-
FTAs show good discipline, attendance & punctuality	-	Yes	-	-	-
FTAs are well motivated	-	Yes	-	-	-
FTAs take good initiative to improve, innovate and perform better	-	Yes	-	-	-
FTAs are well trained	-	Yes	-	-	-
Overall the performance of the FTAs is good	-	Yes	-	-	-

In overall assessment, the centre report that a large number of calls are received every day. The handling of the calls is efficient and the call system is good in the centre. They have reported that the communication between farmers and FTAs somewhat poor in the centre. Overall farmers are reported to be satisfied with the call handling. (See Table 4.23)

Table 4.14: Assessment of information & knowledge sources and databases uses

(Frequency of Use)

Particulars	Very Frequently	Frequently	Occasionally	Rarely	Never
Self-Knowledge	Yes	-	-	-	-
Colleagues & Supervisor	-	-	Yes	-	-
Prepared Excel sheets & material	-	Yes	-	-	-
Internet search	-	Yes	-	-	-
Extension Booklets, books, papers	-	-	Yes	-	-
Government department sources/material	-	-	-	-	Yes
Knowledge acquired in Training	-	-	Yes	-	-
University experts/Nodal officer knowledge	-	Yes	-	-	-
Information from other farmers	-	-	-	Yes	-

In the centre, the performance of the hardware and software is reported to be good and helpful. The internet connectivity is also satisfactory. The center is good in infrastructure facility and service support. (See Table 4.24)

In overall evaluation, the Table 4.25 below indicates that there are some problems faced by centre regarding availability of information on time. Even though the information provided is reported to be difficult to understand, there are reported that farmers can understand and process the information and also farmer satisfied with the information provided by Kisan call centre.

The overall assessment as reported by the Centre supervisors, the performance of the KCC is reported to be good in the center. Own performance is reported to be good in the center. They also satisfied with respect to the systems and policies of the call center. The usefulness of

KCC is reported to be good by the center, and all of them agree or strongly agree that the KCC should continue. (See Table 4.26)

The Center (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 4.15: Assessment of information & knowledge sources and databases uses

(Rating)

Particulars	Strongly Agree	Agree	Partially Agree/Disagree	Disagree	Strongly Disagree
Self-Knowledge	-	Yes	-	-	-
Colleagues & Supervisor	-	Yes	-	-	-
Prepared Excel sheets & material	-	Yes	-	-	-
Internet search	-	Yes	-	-	-
Extension Booklets, books, papers	-	-	Yes	-	-
Government department sources/material	-	-	-	-	Yes
Knowledge acquired in Training	-	-	Yes	-	-
University experts/Nodal officer knowledge	-	Yes	-	-	-
Information from other farmers	-	Yes	-	-	-

Table 4.16: Overall Assessment of Information Provided

Particulars	Strongly Agree	Agree	Partially Agree/Disagree	Disagree	Strongly Disagree
The knowledge, information and data-base available with you is adequate	-	-	Yes	-	-
Adequate & up-to-date answers are provided on technical questions	-	Yes	-	-	-
Adequate & up-to-date answers are provided on government schemes related questions	-	-	Yes	-	-
Adequate & up-to-date answers are provided on price & market related questions	-	Yes	-	-	-
Adequate & up-to-date answers are provided on weather & general questions	-	Yes	-	-	-
Overall the farmers seem satisfied with the information provided	-	Yes	-	-	-

Table 4.17: Websites used for information source (%) usage in percentage of time
(%)

Websites	Percentage of use
Farmer's Portal	55
Kisan Knowledge Management System	100
Krishimarata vahini.kar.nic.in	80
Agricultural University Portal	80
I-Kedut Portal	0
State Seeds Corporation Ltd	80
Accuweather	0

Table 4.18: Assessment of KKMS Portal

Particulars	Strongly Agree	Agree	Partially Agree/Disagree	Disagree	Strongly Disagree
KKMS portal response is fast enough	-	Yes	-	-	-
KKMS portal does not fail to respond or crash during use	-	-	Yes	-	-
Overall KKMS portal works well	-	-	-	-	Yes

Table 4.19: Assessment of Farmer Portal Website

Particulars	Strongly Agree	Agree	Partially Agree/Disagree	Disagree	Strongly Disagree
Website response is fast enough	-	-	Yes	-	-
Website does not fail to respond or crash during the use	-	-	-	Yes	-
Overall the website works well	-	Yes	-	-	-

Table 4.20: Call Escalation System Frequency

Particulars	Very Frequently	Frequently	Occasionally	Rarely	Never
1. Frequency of Level 1 calls					
Queries not solved by FTA's are answered by colleagues	-	-	Yes	-	-
Queries not solved by colleagues are answered by Supervisors	-	-	-	Yes	-
Queries not solved by supervisors are escalated to level 2	-	-	-	-	Yes

2. Frequency of Level 2 calls					
Frequency of calls escalated to level 2	-	-	-	-	Yes
Queries not solved in level 2 are escalated to level 3	-	-	-	-	Yes
3. Frequency of Level 3 calls					
Frequency of calls escalated to Level 3	-	-	-	-	Yes
Queries are solved at level 3	-	-	-	-	Yes

Table 4.21: Assessing the call answering system efficiency & effectiveness

Particulars	Strongly Agree	Agree	Partially Agree/Disagree	Disagree	Strongly Disagree
Queries not solved by supervisors are easily escalated to level 2	-	-	-	Yes	-
Level 2 experts speedily attend to the queries	-	-	-	Yes	-
Level 2 experts satisfactorily attend to the queries	-	-	-	Yes	-
Queries not solved in level 2 are escalated to level 3	-	-	-	Yes	-
Nodal officers respond to farmers by Call/SMS/Postemail	-	-	-	-	Yes
Overall the call answering system is adequate	-	-	-	Yes	-

Table 4.22: Overall assessment of usefulness of training programmes

Particulars	Strongly Agree	Agree	Partially Agree/Disagree	Disagree	Strongly Disagree
Helps in understanding call procedure	-	-	Yes	-	-
Helps in operating hardware	-	-	-	Yes	-
Helps in operating Software	-	-	-	Yes	-
Helps in getting necessary knowledge	-	-	-	Yes	-
Helps in updating knowledge	-	-	Yes	-	-
Overall training is useful and sufficient	-	-	Yes	-	-

Table 4.23: Overall Assessment of call handling

Particulars	Strongly Agree	Agree	Partially Agree/Disagree	Disagree	Strongly Disagree
Large number of calls are received everyday	-	Yes	-	-	-
All calls are handled efficiently	-	Yes	-	-	-
Call handling system are good	-	Yes	-	-	-
Farmer & FTA have good communication	-	-	Yes	-	-
Overall the farmers are satisfied with call handling	-	Yes	-	-	-

Table 4.24: Overall Assessment of Hardware, Software & Infrastructure

Particulars	Strongly Agree	Agree	Partially Agree/Disagree	Disagree	Strongly Disagree
The performance of the hardware used is good & it is helpful	-	Yes	-	-	-
The performance of the software used is good & it is helpful	-	Yes	-	-	-
The performance of the internet connectivity is good	-	Yes	-	-	-
The infrastructure & service support is good	-	Yes	-	-	-

Table 4.25: Overall Assessment of the information & knowledge available

	Strongly Agree	Agree	Partially Agree/Disagree	Disagree	Strongly Disagree
Information is available on time	-	-	Yes	-	-
Information available is easy to understand	-	-	Yes	-	-
Farmers can understand and process it easily	-	Yes	-	-	-
Farmers seems to be satisfied with the information provided	-	Yes	-	-	-

Table 4.26: Overall Assessment

Particulars	Excellent	Good	Satisfactory	Somewhat Poor	Very Poor
Performance of KCC	-	Yes	-	-	-
Own performance at KCC	-	Yes	-	-	-
System and Policies of KCC	-	Yes	-	-	-
Usefulness of KCC	-	Yes	-	-	-

Table 4.27: opinion on KCC continued

Particulars	Strongly Agree	Agree	Partially Agree/Disagree	Disagree	Strongly Disagree
Opinion on KCC should be continued	Yes	-	-	-	-

Chapter 5

Results: Farm Tele Advisors (FTA) Survey

FTAs have rated the hardware they use for receiving the calls and providing answers to the farmers. By and large about 84 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 80 percent of the FTAs find the hardware to be good for the work requirement, about 20 percent feel that there is scope for improvement. (See Table 5.1)

Table 5.1: Rating of Hardware - Percent

Particulars	Strongly Agree	Agree	Partially Agree/Disagree	Disagree	Strongly Disagree	Average Rating
The hardware is latest/up-to-date	20.00	48.00	32.00	0.00	0.00	3.88
It is reliable	12.00	68.00	20.00	0.00	0.00	3.92
It is convenient to use for responding to farmer calls	28.00	56.00	12.00	00.00	4.00	4.04
It can handle the call load	32.00	32.00	32.00	4.00	0.00	3.92
It does not breakdown frequently	12.00	44.00	36.00	8.00	0.00	3.60
The computer display is good	44.00	36.00	16.00	0.00	4.00	4.16
The interface of keyboard & mouse is good	32.00	36.00	28.00	0.00	4.00	3.92
Headsets are comfortable and work well	28.00	36.00	28.00	4.00	4.00	3.80
The hardware is good for the work requirements	16.00	64.00	20.00	0.00	0.00	3.96

The Table 5.2 below provides the ratings for the software in the KCC used by the FTAs. About 56 percent of the FTAs feel that the software is up to date, fast and user friendly. Nearly 92 percent indicate that the screen interface is good and the calls can be handled easily. However, 80 percent indicate that the voice quality is good and clear. More than 60 percent indicated that 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 52 percent feel that the software meets the requirement, about 48 percent find to be inadequate.

Table 5.2: Rating of Software - Percent

Particulars	Strongly Agree	Agree	Partially Agree/Di sagree	Disagree	Strongly Disagree	Average Rating
The software is up-to-date	4.00	52.00	24.00	12.00	8.00	3.32
It is user friendly	16.00	64.00	12.00	0.00	8.00	3.80
The screen interface it shows is good & useful	44.00	48.00	4.00	0.00	4.00	4.28
Calls can be handled easily	24.00	56.00	16.00	4.00	0.00	4.00
The voice quality is good & clear	16.00	64.00	12.00	8.00	0.00	3.88
Calls do not get dropped, lost or mishandled by the software	4.00	36.00	40.00	16.00	4.00	3.20
The software can handle heavy call traffic	16.00	48.00	24.00	12.00	0.00	3.68
Software does not frequently crash	12.00	44.00	28.00	12.00	4.00	3.48
Caller details can be easily recorded and registered	32.00	36.00	28.00	0.00	4.00	3.92
Question details can be easily & quickly recorded	16.00	52.00	24.00	8.00	0.00	3.76
Repeated Irrelevant calls can be blocked by the software	16.00	40.00	28.00	0.00	16.00	3.40
The software meets the requirements	4.00	48.00	32.00	16.00	0.00	3.40

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 44 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.

64 percent indicate that internet connectivity is adequate for the work but the rest do not find it adequate.

Table 5.3: Internet Connectivity - Percent

Particulars	Strongly Agree	Agree	Partially Agree/Disagree	Disagree	Strongly Disagree	Average Rating
Internet connectivity is very important for call handling process	60.00	36.00	4.00	0.00	0.00	4.44
A slow internet speed hinders the performance of call handling	48.00	40.00	12.00	0.00	0.00	4.36
Internet connectivity is fast enough for responding to calls	20.00	24.00	44.00	8.00	4.00	3.48
Internet connectivity is fast enough for retrieving & recording information	16.00	48.00	32.00	4.00	0.00	3.72
Internet connectivity does not frequently breakdown	4.00	44.00	32.00	4.00	16.00	3.16
Internet connectivity is adequate for the work	20.00	44.00	32.00	0.00	4.00	3.76

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 82 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 80 percent of the FTAs. The next in frequency of use is prepared excel sheet and materials which are frequently or very frequently referred by 74 percent of the FTAs followed by colleagues and supervisors at nearly 70 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 - Percent

Particulars	Very Frequently	Frequently	Occasionally	Rarely	Never	Average Rating
Self-Knowledge	44.00	38.00	6.00	8.00	4.00	4.31
Colleagues & Supervisor	26.00	44.00	18.00	12.00	0.00	3.96
Prepared Excel sheets & material	32.00	42.00	26.00	0.00	0.00	4.16
Internet search	44.00	36.00	16.00	0.00	4.00	4.16
Extension Booklets, books, papers	16.00	52.00	8.00	20.00	4.00	3.56
Government department sources/material	12.00	44.00	36.00	0.00	8.00	3.52
Knowledge acquired in Training	32.00	40.00	20.00	8.00	0.00	3.96
University experts/Nodal officer knowledge	20.00	48.00	20.00	8.00	4.00	3.72
Information from other farmers	24.00	32.00	24.00	20.00	0.00	3.60
Field Inquiry	12.00	32.00	32.00	20.00	4.00	3.28

How good are the different sources of information as considered by the FTAs? Over 84 percent indicate that their Internet search is excellent to good, see Table 5.5 below. Over 76 percent indicate that the self-knowledge is also good or excellent. The FTAs also depend on extension booklets, books and papers to answer questions and over 74 percent indicate that these are good to excellent. Whereas the knowledge acquired in training is reported to be good to excellent by nearly 72 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 - Percent

Particulars	Excellent	Good	Satisfactory	Somewhat Poor	Very Poor	Average Rating
Self-Knowledge	48.00	28.00	20.00	0.00	4.00	4.16
Colleagues & Supervisor	12.00	52.00	12.00	20.00	4.00	3.48
Prepared Excel sheets & material	24.00	48.00	24.00	0.00	4.00	3.88
Internet search	48.00	36.00	12.00	0.00	4.00	4.24
Extension Booklets, books, papers	18.00	56.00	12.00	14.00	0.00	4.04
Government department sources/material	8.00	56.00	32.00	0.00	4.00	3.64
Knowledge acquired in Training	24.00	48.00	16.00	12.00	0.00	3.84
University experts/Nodal officer knowledge	8.00	44.00	24.00	24.00	0.00	3.36
Information from other farmers	12.00	16.00	52.00	16.00	4.00	3.16
Field Inquiry	4.00	36.00	24.00	16.00	20.00	2.88

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 - Percent

Particulars	Very Frequently	Frequently	Occasionally	Rarely	Never	Average Rating
Self-Knowledge	32.00	48.00	16.00	0.00	4.00	4.04
Colleagues & Supervisor	12.00	56.00	20.00	12.00	0.00	3.68
Prepared Excel sheets & material	8.00	68.00	16.00	8.00	0.00	3.76
Internet search	48.00	44.00	8.00	0.00	0.00	4.4
Extension Booklets, books, papers	12.00	44.00	20.00	24.00	0.00	3.44
Government department sources/material	8.00	36.00	36.00	8.00	12.00	3.2
Knowledge acquired in Training	20.00	36.00	24.00	20.00	0.00	3.56
University experts/Nodal officer knowledge	16.00	8.00	48.00	28.00	0.00	3.12
Information from other farmers	16.00	12.00	44.00	24.00	4.00	3.12
Field Inquiry	0.00	28.00	24.00	24.00	24.00	2.56

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, about 68 percent of the sample was reported positively.

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 5.7: Overall Assessment of the Information Sources used for providing technical information - Percent

Particulars	Very Frequently	Frequently	Occasionally	Rarely	Never	Average Rating
Information is easily available	32.00	44.00	20.00	4.00	0.00	4.04
Important and critical information required is easily available	0.00	28.00	32.00	36.00	4.00	2.84
The information is reliable	16.00	56.00	20.00	4.00	4.00	3.76
The information is up-to-date	4.00	48.00	24.00	24.00	0.00	3.32
Farmers can understand the information and process it easily	40.00	28.00	28.00	4.00	0.00	4.04
Farmers seem to be satisfied with the information provided	32.00	40.00	24.00	4.00	0.00	4.00
Overall there is sufficient & quality information available to answer farmer's questions	16.00	52.00	8.00	24.00	0.00	3.60

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. About 80 percent say that there is sufficient & quality information available.

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 72 percent report that the farmers are satisfied with the information, many indicate that this is not so and there is scope for improvement.

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 5.8: Overall Assessment of the Information Sources used for providing government schemes related information - Percent

Particulars	Very Frequently	Frequently	Occasionally	Rarely	Never	Average Rating
Information is easily available	8.00	16.00	60.00	12.00	4.00	3.12
Important and critical information required is easily available	0.00	32.00	52.00	12.00	4.00	3.12
The information is reliable	12.00	36.00	36.00	8.00	8.00	3.36
The information is up-to-date	0.00	20.00	40.00	36.00	4.00	3.16
Farmers can understand the information and process it easily	28.00	32.00	24.00	8.00	8.00	3.64
Farmers seem to be satisfied with the information provided	16.00	36.00	46.00	4.00	8.00	3.68
Overall there is sufficient & quality information available to answer farmer's questions	16.00	28.00	44.00	4.00	8.00	3.60

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 nearly 48 percent indicate that there is dissatisfaction with its working.

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 5.9: Overall Assessment of the Information Sources used for providing price and market related information - Percent

Particulars	Very Frequently	Frequently	Occasionally	Rarely	Never	Average Rating
Information is easily available	28.00	64.00	4.00	0.00	4.00	4.12
Important and critical information required is easily available	12.00	64.00	20.00	0.00	4.00	3.80
The information is reliable	8.00	56.00	32.00	0.00	4.00	3.64
The information is up-to-date	20.00	44.00	24.00	8.00	4.00	3.68
Farmers can understand the information and process it easily	28.00	44.00	24.00	0.00	4.00	3.92
Farmers seem to be satisfied with the information provided	28.00	52.00	16.00	0.00	4.00	4.00
Overall there is sufficient & quality information available to answer farmer's questions	32.00	48.00	16.00	4.00	0.00	4.08

Table 5.10 Overall Assessment of the Information Sources used for providing weather and other information- Percent

Particulars	Very Frequently	Frequently	Occasionally	Rarely	Never	Average Rating
Information is easily available	20.00	56.00	16.00	0.00	8.00	3.80
Important and critical information required is easily available	8.00	52.00	32.00	4.00	4.00	3.56
The information is reliable	12.00	36.00	40.00	4.00	8.00	3.60
The information is up-to-date	4.00	60.00	24.00	8.00	4.00	3.52
Farmers can understand the information and process it easily	20.00	48.00	20.00	4.00	8.00	3.68
Farmers seem to be satisfied with the information provided	16.00	56.00	20.00	4.00	4.00	3.76
Overall there is sufficient & quality information available to answer farmer's questions	20.00	52.00	20.00	0.00	8.00	3.76

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

Particulars	Very Frequently	Frequently	Occasionally	Rarely	Never	Average Rating
KKMS website is easy to use	60.00	20.00	20.00	0.00	0.00	4.40
The organization of information on the system screens is clear	64.00	24.00	8.00	4.00	0.00	4.48
KKMS website response is fast enough	12.00	68.00	16.00	4.00	0.00	3.88
Information on the website is regularly updated	12.00	44.00	28.00	12.00	4.00	3.48
KKMS website does not fail to respond or crash during use	8.00	24.00	56.00	8.00	4.00	3.24
You can make changes in the information after the information is recorded	12.00	28.00	40.00	4.00	16.00	3.16
Retrieving information from KKMS is easy	12.00	72.00	12.00	4.00	0.00	3.92
Overall the KKMS website works well	8.00	60.00	24.00	8.00	0.00	3.68

Table 5.12: Assessment of Farmers Portal Website - Percent

Particulars	Very Frequently	Frequently	Occasionally	Rarely	Never	Average Rating
The website is frequently used	8.00	60.00	16.00	0.00	16.00	3.44
The website is easy to use	20.00	48.00	20.00	0.00	12.00	3.64
The organization of information on the system screens is clear	24.00	52.00	12.00	0.00	12.00	3.76
The website response is fast enough	0.00	76.00	12.00	4.00	8.00	3.56
The website is very useful	12.00	60.00	12.00	8.00	8.00	3.60
Information on the website is regularly updated	4.00	34.00	46.00	8.00	8.00	3.48
The website does not fail to respond or crash during use	0.00	60.00	28.00	4.00	8.00	3.40
Overall the website works well	4.00	48.00	32.00	8.00	8.00	3.52

Table 5.13: Assessment of m-Kisan Website - Percent

	Very Frequently	Frequently	Occasionally	Rarely	Never	Average Rating
The website is frequently used	8.00	40.00	40.00	4.00	8.00	3.36
The website is easy to use	0.00	60.00	28.00	4.00	8.00	3.40
The organization of information on the system screens is clear	16.00	52.00	16.00	8.00	8.00	3.60
Registration of SMS is easy	8.00	56.00	20.00	8.00	8.00	3.48
List of services available are useful	12.00	60.00	16.00	4.00	8.00	3.64
The website response is fast enough	8.00	40.00	36.00	12.00	4.00	3.36
Information on the website is regularly updated	4.00	40.00	40.00	12.00	4.00	3.28
The website does not fail to respond or crash during use	4.00	28.00	52.00	8.00	8.00	3.12
Overall the website works well	4.00	64.00	12.00	12.00	8.00	3.44

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, 76 per cent of the FTAs consider the call efficiency to be good.

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 44 per cent of the FTAs consider the answering systems to be adequate, and there is a substantial scope for improvement.

Table 5.14: Assessing Call Efficiency – Percent

Particulars	Very Frequently	Frequently	Occasionally	Rarely	Never	Average Rating
Voice reception over the phone is clear	24.00	64.00	8.00	0.00	4.00	4.04
Call drops are very less	8.00	60.00	28.00	4.00	0.00	3.72
It is easy to understand the queries from farmers	16.00	80.00	0.00	0.00	4.00	4.04
Farmers does not face difficulty in understanding your dialect	8.00	76.00	12.00	0.00	4.00	3.84
Farmers does not face difficulty in understanding scientific/technical words	4.00	48.00	40.00	4.00	4.00	3.44
You generally do not get irrelevant calls	0.00	24.00	40.00	32.00	4.00	2.84
You generally do not face abusive language	4.00	32.00	32.00	28.00	4.00	3.04
Overall, call efficiency is good	4.00	72.00	20.00	0.00	4.00	3.72

Table 5.15: Assessing the call answering efficiency & effectiveness - Percent

Particulars	Very Frequently	Frequently	Occasionally	Rarely	Never	Average Rating
Generally, you are able to answer and handle the questions	52.00	40.00	4.00	4.00	0.00	4.40
Queries not solved by you are well answered by colleagues	0.00	84.00	12.00	4.00	0.00	3.80
Queries not solved by colleagues are well answered by Supervisors	16.00	44.00	28.00	12.00	0.00	3.64
Queries not solved by supervisors are easily escalated to level 2	16.00	24.00	40.00	12.00	8.00	3.28
Queries escalated to level 2 are well attended by State Agriculture Experts	16.00	28.00	40.00	12.00	4.00	3.40
Level 2 experts speedily attend to the queries	0.00	24.00	60.00	4.00	12.00	2.96
Queries not solved in level 2 are escalated to level 3	0.00	16.00	44.00	22.00	8.00	2.88
Queries escalated to level 3 are well attended by Nodal officer	0.00	36.00	44.00	8.00	12.00	3.04
Nodal officers respond to farmers by call/SMS/post/email	12.00	24.00	40.00	16.00	8.00	3.16
Overall the call answering system is adequate	4.00	40.00	48.00	4.00	4.00	3.36

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 84 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 74 per cent of the FTAs and the rest disagree and see scope for improvement.

Table 5.16 Infrastructure rating - Percent

Particulars	Very Frequently	Frequently	Occasionally	Rarely	Never	Average Rating
The office space is adequate	28.00	60.00	8.00	0.00	4.00	4.08
The activity area for calling is sufficient	28.00	64.00	0.00	4.00	4.00	4.08
The activity area is well separated	28.00	60.00	0.00	8.00	4.00	4.00
You do not get disturbed while answering of calls	28.00	56.00	4.00	8.00	4.00	3.96
Lighting is sufficient	32.00	60.00	4.00	0.00	4.00	4.16
There is adequate ventilation	20.00	44.00	24.00	0.00	12.00	3.60
Video surveillance is sufficient for monitoring	16.00	56.00	24.00	4.00	0.00	3.84
Power cuts are not frequent	24.00	52.00	8.00	16.00	0.00	3.84
Other departments noise does not hinder your answering efficiency	24.00	60.00	4.00	12.00	0.00	3.96
Supporting facilities & utilities are adequate	16.00	44.00	32.00	4.00	4.00	3.64
Overall there is good working environment	24.00	50.00	18.00	4.00	4.00	3.96

The Table 5.17 below provides an assessment of the training programmes 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 60 per cent of the FTAs are satisfied with the training programmes.

Table 5.17: Overall assessment of usefulness of training programmes

Particulars	Very Frequently	Frequently	Occasionally	Rarely	Never	Average Rating
It helps in understanding call handling procedure of the KCC	8.00	80.00	8.00	0.00	4.00	3.88
It helps in operating of the hardware	0.00	28.00	44.00	20.00	8.00	2.92
It helps in operating of the software	0.00	20.00	52.00	20.00	8.00	2.84
It helps in understanding questions of farmer	36.00	36.00	24.00	0.00	4.00	4.00
It helps in how to handle the questions of farmer	0.00	72.00	24.00	4.00	0.00	3.68
It helps in getting the necessary knowledge	4.00	64.00	28.00	4.00	0.00	3.68
It helps in updating knowledge	0.00	52.00	40.00	8.00	0.00	3.44
It helps in getting knowledge of government schemes	4.00	12.00	60.00	16.00	8.00	2.88
More & better training is required	4.00	56.00	36.00	0.00	4.00	3.56
Training should be regularly given	4.00	44.00	36.00	12.00	4.00	3.32
Overall the available training is useful & sufficient	4.00	56.00	36.00	0.00	4.00	3.56

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.

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 5.18: Self- Assessment of the FTA

Particulars	Very Frequently	Frequently	Occasionally	Rarely	Never	Average Rating
You are quick in responding to calls	68.00	28.00	0.00	0.00	4.00	4.56
You are able to manage the calls efficiently.	36.00	60.00	0.00	0.00	4.00	4.24
You have sufficient knowledge & capability to answer questions	60.00	36.00	0.00	0.00	4.00	4.48
You are generally able to answer the questions by yourself	44.00	52.00	0.00	0.00	4.00	4.32
You are able to quickly access the database/information to answer questions	16.00	76.00	4.00	0.00	4.00	4.00
You can take the help of colleagues to answer questions	24.00	68.00	4.00	0.00	4.00	4.08
You can escalate calls to higher levels to answer questions	12.00	32.00	40.00	12.00	4.00	3.36
You are able to satisfactorily find answers for the farmer's questions	20.00	76.00	0.00	0.00	4.00	4.08
You show good discipline, attendance & punctuality	60.00	36.00	0.00	4.00	0.00	4.52
You are well motivated	40.00	52.00	0.00	0.00	8.00	4.16
You take good initiative to improve, innovate and perform better	52.00	32.00	12.00	0.00	4.00	4.28
You are well trained	44.00	40.00	8.00	0.00	8.00	4.12
Overall you are satisfied with your performance	28.00	64.00	4.00	0.00	4.00	4.12

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 52 percent of the FTAs. However, over 56 percent of the FTAs are not happy with the internet connectivity. Also, over 48 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 5.19: Overall Assessment of Call Handling

Particulars	Very Frequently	Frequently	Occasionally	Rarely	Never	Average Rating
A large number of calls are received every day at the KCC	32.00	56.00	12.00	0.00	0.00	4.20
All calls can be handled efficiently at the KCC	36.00	60.00	4.00	0.00	0.00	4.32
Call handling systems/procedures are good	36.00	44.00	20.00	0.00	0.00	4.16
The farmer & FTA can understand each other & communicate easily	20.00	76.00	4.00	0.00	0.00	4.16
Overall the farmers seem satisfied with the handling & speed of response	24.00	72.00	4.00	0.00	0.00	4.20

Table 5.20: Overall Assessment of Hardware, Software & Infrastructure

	Very Frequently	Frequently	Occasionally	Rarely	Never	Average Rating
The performance of the hardware used is good & it is helpful	12.00	40.00	40.00	8.00	0.00	3.56
The performance of the software used is good & it is helpful	8.00	40.00	44.00	8.00	0.00	3.48
The performance of the internet connectivity is good	4.00	40.00	40.00	16.00	0.00	3.32
The infrastructure & service support is good	12.00	40.00	20.00	28.00	0.00	3.36

The Table 5.21 below provides an assessment of the knowledge and information delivered by the KCC to the farmers. About 48 per cent of the FTAs think that the knowledge and information available at the KCC is adequate but the rest 52 percent scope for improvement. In terms of technical questions, more than 72 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 76 percent of the FTAs consider the information provided to the farmers as satisfactory.

Table 5.21 Overall Assessment of Information Provided

Particulars	Very Frequently	Frequently	Occasionally	Rarely	Never	Average Rating
The knowledge, information and data-base available with you is adequate	12.00	36.00	36.00	16.00	0.00	3.44
Adequate & up-to-date answers are provided on technical questions	12.00	60.00	12.00	12.00	4.00	3.64
Adequate & up-to-date answers are provided on government schemes related questions	8.00	20.00	52.00	16.00	4.00	3.12
Adequate & up-to-date answers are provided on price & market related questions	12.00	32.00	40.00	12.00	4.00	3.36
Adequate & up-to-date answers are provided on weather & general questions	24.00	64.00	8.00	4.00	0.00	4.08
Overall the farmers seem satisfied with the information provided	12.00	64.00	20.00	4.00	0.00	3.84

Table 5.22: Overall Assessment of Kisan Call Centre - Percent

Particulars	Excellent	Good	Satisfactory	Somewhat Poor	Very Poor	Average Rating
Please give your overall assessment of the performance of the Kisan Call Centre	20.00	40.00	40.00	0.00	0.00	3.80
Please give an overall assessment of your own performance/contribution at the Kisan Call Centre	20.00	48.00	32.00	0.00	0.00	3.88
Please give your overall assessment of the systems & policies under which the Kisan Call Centre is working	4.00	40.00	52.00	4.00	0.00	3.44
Please give your overall assessment about the usefulness of the Kisan Call Centre to the farmers & the state's agriculture	20.00	72.00	8.00	0.00	0.00	4.12
Please give your overall opinion whether the Kisan Call Centre Scheme should be continued	80.00	20.00	0.00	0.00	0.00	4.80

The Table 5.22 below provides responses of the FTAs on the overall performance of KCC. It indicates that nearly 60 percent consider the KCC performance to be good to excellent but over 40 percent see scope for improvement. In terms of their own contribution at the KCC, over 68 percent considered to be good to excellent. Regarding the systems and policies under which the KCC is working, there is considerable dissatisfaction with nearly 66 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 92 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.

Chapter 6

Results: Farmers' Survey

As described above, 100 farmer KCC users and 20 non users were covered in the study survey 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, sent percent of the farmers using Kisan Call Centre (KCC) as well as fellow farmers and the next most important source used by the farmers is input dealers / shops (78.00), which is followed by Krishi Vigyan Kendras (KVK) (57.00), local markets (41.00) and kisan melas and summits (40.00). In terms of frequency of use of the different sources, KCCs are found to be frequently or very frequently used by 73.00 percent of the farmer users and this followed by fellow farmers (67.00), local markets (56.09), farmer's helpline (50.00) and input dealers (48.71). 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 TV (78.56) followed by Mobile phones (58.33) and Radio (54.27). Only two KCC farmers have installed mobile apps and they use more frequently (Table 6.2). The above results indicate that TV and mobile phones have become the most frequently used device for communication/ sourcing of information.

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 Kisan Call centres KCC (3.58) but this is followed by Fellow farmers (3.45). 52.00 percent of the users rate Kisan call centre and fellow farmer as good to excellent source of information, followed by 42.85 percent users rating meetings and demonstrations 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 TV (3.21) followed by radio (3.11).

Table 6.1: Sources of information/ advice on farming – awareness, use and frequency of use - Percent

Particulars	Aware (Valid %)	Use (Valid %)	Very Frequently	Frequently	Occasionally	Rarely	Never	Average
Fellow Farmers	100.00	100.00	1.00	66.00	33.00	-	-	3.69
Extension Worker	13.00	12.00	-	15.38	53.84	30.76	-	2.61
Input Dealers/ Shops	93.00	78.00	3.84	44.87	46.15	5.12	-	3.47
Cooperative societies	71.00	23.00	-	17.39	52.17	30.23	-	2.86
Input Companies	61.00	18.00	-	23.33	50.00	27.77	-	2.94
Local Markets	76.00	41.00	7.31	48.78	41.46	2.43	-	3.60
Krishi Vigyan Kendra's (KVK's)	68.00	57.00	1.75	21.05	64.91	24.56	-	3.12
Agricultural Universities & their materials	52.00	33.00	-	15.15	42.42	42.42	-	2.72
Kisan melas/ summits	50.00	40.00	-	7.50	52.50	40.00	-	2.67
Meetings & demonstrations	7.00	7.00	-	28.57	42.85	28.57	-	3.00
Agriculture experts	7.00	7.00	14.28	-	71.42	14.28	-	3.14
Kisan Call Centre (KCC)	100.00	100.00	6.00	67.00	27.00	-	-	3.79
Farmers helpline	4.00	4.00	-	50.00	-	50.00	-	3.00
Varunamitra	1.00	1.00	-	-	-	100.00	-	2.00

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. It is interesting to note that mobile internet connection is owned by 6.00 percent of the users and used by 100.00 percent of them. None of the users have landline, STD/PCO, Broadband/Wi-Fi and computer.

The Table 6.6 below provide an analysis of the number of calls made by the farmer users to the KCC. The table shows that on an average a user made 60 calls per year to the Kisan Call Centres. The data indicates that the average waiting time for the caller was 2.02 minutes. The average number of calls not answered was 0.7 percent and the calls dropped was 0.2 per

cent. On the whole, the users reported that the calls that were effectively answered were 49.80 percent. The data shows that the maximum number of calls were regarding technical information and these constituted 69.5 percent of the calls. This was followed by calls regarding prices and markets at 19.70 percent and calls regarding weather at 6.90 per cent.

Table 6.2: Communication media and devices used to source information Awareness and use frequency - Percent

Particulars	Aware (Valid %)	Use (Valid %)	Very Frequently	Frequently	Occasionally	Rarely	Never	Average
Newspapers/magazines	100.00	40.00	7.50	37.50	25.00	20.00	-	3.32
Radio	100.00	35.00	2.85	51.42	31.42	14.28	-	3.42
TV	100.00	28.00	21.42	57.14	17.85	3.57	-	3.96
Mobile phone	100.00	24.00	8.33	50.00	33.33	8.33	-	3.58
Mobile Apps	2.00	2.00	-	100.00	-	-	-	3.00
Computer	86.00	3.00	-	-	66.67	33.33	-	2.33
Internet & websites	6.00	6.00	-	50.00	50.00	-	-	3.50
Kisan Knowledge Management System (KKMS)	1.00	1.00	-	100.00	-	-	-	4.00
Farmer Portal	-	-	-	-	-	-	-	-
M-Kisan Portal (Mobile/SMS Service)	-	-	-	-	-	-	-	-

Table 6.3: Sources of information/ advice on farming - awareness/ usefulness and quality - Percent

Particulars	Aware (Valid %)	Use (Valid %)	Excellent	Good	Satisfactory	Somewh at poor	Very Poor	Average
Fellow Farmers	100.00	100.00	-	52.00	41.00	7.00	-	3.45
Extension Worker	13.00	12.00	-	16.67	66.67	16.67	-	3.00
Input Dealers/ Shops	93.00	78.00	-	29.48	64.10	2.56	-	3.23
Cooperative societies	71.00	23.00	-	4.34	82.60	13.03	-	2.91
Input Companies	61.00	18.00	-	11.11	66.67	16.67	5.56	2.83
Local Markets	76.00	41.00	4.87	31.70	60.97	2.43	-	3.39
Krishi Vigyan Kendra's	68.00	57.00	-	12.28	80.70	5.26	1.75	3.03
Agricultural Universities & their materials	52.00	33.00	-	18.18	60.06	15.15	6.06	2.90
Kisan melas/ summits	50.00	40.00	-	15.00	82.50	2.50	-	3.12
Meetings & demonstrations	7.00	7.00	14.28	28.57	57.14	-	-	3.37
Agriculture experts	7.00	7.00	14.28	-	71.42	14.28	-	3.14
Kisan Call Centre (KCC)	100.00	100.00	7.00	45	47.00	1.00	-	3.58
Farmers helpline	4.00	4.00	-	-	100.00	-	-	3.00
Varunamitra	1.00	1.00	-	-	100.00	-	-	3.00

Table 6.4: Communication media and devices used to source information – Awareness/ use and quality - Percent

Particulars	Aware (Valid %)	Use (Valid %)	Excellent	Good	Satisfactory	Somewhat poor	Very Poor	Average
Newspapers/magazines	100.00	40.00	-	17.50	60.00	22.50	-	2.95
Radio	100.00	35.00	-	40.00	37.14	17.14	5.74	3.11
TV	100.00	28.00	3.57	25.00	60.71	10.71	-	3.21
Mobile phone	100.00	24.00	-	16.67	58.33	25.00	-	2.91
Mobile Apps	2.00	2.00	-	100.00	-	-	-	3.00
Computer	86.00	3.00	-	100.00	-	-	-	3.00
Internet & websites	6.00	6.00	-	33.33	33.33	33.33	-	3.00
Kisan Knowledge Management System (KKMS)	1.00	1.00	-	100.00	-	-	-	4.00
Farmer Portal	-	-	-	-	-	-	-	-
M-Kisan Portal (Mobile/SMS Service)	-	-	-	-	-	-	-	-

Table 6.5: Type of ICT Devices/ Features used and their usefulness – percent

Particulars	Owned	Used	Used for KCC/Websites/Portals	Excellent	Good	Satisfactory	Somewhat Poor	Very Poor	Average
Mobile	100.00	100.00	100.00	1.00	82.00	14.00	2.00	1.00	3.80
Landline	-	-	-	-	-	-	-	-	-
STD/PCO	-	-	-	-	-	-	-	-	-
Mobile Internet Connection	6.00	6.00	100.00	-	66.67	33.33	-	-	3.33
Broadband/Wi-Fi	-	-	-	-	-	-	-	-	-
Computer	-	-	-	-	-	-	-	-	-

The Table 6.7 below provides an analysis of the call response efficiency and quality of the KCC as reported by the farmers. 88.00 percent of the users indicate that the KCC toll free number is easy to reach and 52.00 percent report that the wait for KCC to pick up is not too long. 78 percent of the users indicate that the voice reception over the phone is clear and over 62 percent report that the call drops are not frequent. Nearly 76 percent indicate that the FTAs greets and speaks courteously and understands and responds in the local language. Over 78 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 65 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 91 percent agree that it is good but a lower percentage indicate that the information provided is good and useful.

Table 6.6: Average No. of Calls per user per year

Particulars	Details
No. of calls made	5971
Average waiting time (minutes per call)	2.02
No. of calls not answered	0.7
No. of calls dropped	0.2
No. of calls in which no proper answers were given	0.1
No. of calls effectively answered	49.8
No. of calls for technical information	38.5
No. of calls for price and market information	10.9
No. of calls for government scheme information	0.5
No. of calls for other information - weather	3.8
No. of calls for other information	0.0
Sample no. of Farmers	100

Regarding technical questions, the Table 6.8 below indicate that over 93.49 percent farmers find the information easily available through the KCC. However, when it comes to it being reliable and useful, the percentage drops to 61.03 percent and it being up to date, the percentage is 62.33 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 was 67.52 percent. Overall about 84.41 percent that they are satisfied with the information.

With respect to information on prices and markets, about 85.09 percent indicate that the information is easily available but in terms of its reliability and helpful the percentage drops to 55.31 percent and about 85 per cent farmers reported that they are satisfied with

information provided by KCC. With respect to questions on government schemes, only 50.00 percent indicate that the information is easily available and none of the farmers indicate that it is useful to improve performance or profits. With respect to other questions such as weather, the satisfaction level is much higher, 95.64 percent indicate that the information is available easily. However, only 36.22 percent indicate that it is reliable and helpful. 78.25 percent indicate that it helps improve profit or performance and 71.00 percent indicate that they are satisfied with the service.

Table 6.6.1: Average No. of Calls per user per year – percentage

Particulars	Details
No. of calls made - percent	100%
Average waiting time (minutes per call)	2.02
No. of calls not answered	1.2
No. of calls dropped	0.3
No. of calls in which no proper answers were given	0.2
No. of calls effectively answered	89.9
No. of calls for technical information	69.5
No. of calls for price and market information	19.7
No. of calls for government scheme information	1.0
No. of calls for other information -weather	6.9
No. of calls for other information (specify)	0.0
Sample no. of farmers	100

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 to make best profits and income followed by achieving best price for output. The important secondary objectives related to this are indicated as obtaining the good quality of the output, high yields, least crop loss, 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 72 percent of the farmers.

Table 6.7: Overall Call Response Efficiency & Quality - Percent

Particulars	Strongly Agree	Agree	Partially Agree/Disagree	Disagree	Strongly Disagree	Average
KCC toll free number is easy to reach	2.00	86.00	12.00	-	-	3.9
The wait for KCC call pick-up is not too long	5.00	47.00	47.00		1.00	3.55
Voice reception over the phone is clear	8.00	70.00	21.00	1.00	-	3.85
Call drops are not frequent	8.00	54.00	33.00	4.00	1.00	3.64
Farmer Tele Advisor (FTA) greets and speaks courteously	11.00	65.00	24.00	-	-	3.87
FTA understands & responds in your language	12.00	66.0	21.00	1.00	-	3.89
FTA understands your question or problem easily	11.00	60.00	29.00	-	-	3.82
FTA answers clearly & in a way understandable to you	4.00	61.00	34.00	1.00	-	3.68
FTA's answer is useful & solves your problem/need	11.00	54.00	34.00	-	1.00	3.74
FTA's response does not take much time	7.00	57.00	34.00	2.00	-	3.69
Calls are often escalated to higher authorities	-	4.00	-	73.00	23.00	1.85
Questions escalated are well answered by the Agriculture Experts or Nodal Officer	1.00	2.00	-	75.00	22.00	1.94
Overall the call handling and efficiency is good	-	82.00	15.00	3.00	-	3.79
Overall the information provided is good and useful	2.00	89.00	8.00	1.00	-	3.92

Table 6.8: Response to Questions on technical aspects - Percent

Particulars	Strongly Agree	Agree	Partially Agree/Disagree	Disagree	Strongly Disagree	Average
Information is easily available through KCC	10.38	83.11	6.49	-	-	4.04
Information is reliable & helpful	5.19	55.84	38.96	-	-	3.66
Information is up-to-date	9.09	53.24	33.76	3.89	-	3.68
Information is provided quickly	7.79	59.74	29.87	2.59	-	3.73
Information/ Advise is easy to understand	18.18	64.93	16.88	-	-	4.01
Information/ Advise is useful & improves your performance/ profits	5.19	62.33	31.18	1.29	-	3.71
You are satisfied with the response & information provided	-	84.41	15.58	-	-	3.84

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 96.77 percent of the farmers. The next in importance are indicated as price & profit related decisions marked as very important to extremely important by sent percent of the farmers. Following this, crop management and soil management decisions indicated as important to extremely important by all farmers.. 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.

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 fertilizer use has the highest importance rating.

Table 6.9: Response to Price and Market Questions - Percent

Particulars	Strongly Agree	Agree	Partially Agree/Disagree	Disagree	Strongly Disagree	Average
Information is easily available through KCC	2.12	82.97	14.89	-	-	3.87
Information is reliable & helpful	8.51	46.80	44.68	-	-	3.64
Information is up-to-date	4.25	61.70	34.04	-	-	3.70
Information is provided quickly	17.02	48.93	34.04	-	-	3.83
Information/ Advise is easy to understand	4.25	65.95	29.78	-	-	3.74
Information/ Advise is useful & improves your performance/ profits	2.12	63.82	34.04	-	-	3.68
You are satisfied with the response & information provided	2.12	82.97	14.89	-	-	3.87

Table 6.10: Response to Government Schemes Questions - Percent

Particulars	Strongly Agree	Agree	Partially Agree/Disagree	Disagree	Strongly Disagree	Average
Information is easily available through KCC	-	50.00	50.00	-	-	3.50
Information is reliable & helpful	-	-	50.00	50.00	-	2.50
Information is up-to-date	-	-	50.00	50.00	-	2.50
Information is provided quickly	-	-	50.00	50.00	-	2.50
Information/ Advise is easy to understand	-	-	50.00	-	50.00	2.00
Information/ Advise is useful & improves your performance/ profits	-	-	50.00	-	50.00	2.00
You are satisfied with the response & information provided	-	-	50.00	-	50.00	2.00

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

Particulars	Strongly Agree	Agree	Partially Agree/Disagree	Disagree	Strongly Disagree	Average
Information is easily available through KCC	2.89	92.75	4.34	-	-	3.99
Information is reliable & helpful	10.14	26.08	63.76	-	-	3.46
Information is up-to-date	7.24	50.72	39.13	2.89	-	3.62
Information is provided quickly	8.69	72.46	18.84	-	-	3.90
Information/ Advise is easy to understand	10.14	68.11	21.73	-	-	3.88
Information/ Advise is useful & improves your performance/ profits	5.79	68.11	26.08	-	-	3.80
You are satisfied with the response & information provided	8.69	62.31	28.98	-	-	3.80

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 2.75 -3.59 range and the highest among these price and market information at 3.59.

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 sources of information are fellow farmer, Input dealers and agriculture department officials. For variety selection government officials were major source of information. Where as in case of fertilizer use and pesticide use, input dealers were major source information. Fellow farmers were major source information in case of price related information. Variety selection has 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 6.12: Major objectives/ decisions you focus on in your farming - Percent

Particulars	Extremely Important	Very Important	Moderately Important	Slightly Important	Not Important	Average
Good Choice of Crops/ Farm activities	1.00	89.00	8.00	1.00	1.00	3.88
High Yields	22.00	60.00	18.00	0.00	0.00	4.04
Good Quality of Output	20.00	65.00	15.00	0.00	0.00	4.05
Efficient Input Use	14.00	59.00	24.00	3.00	0.00	3.84
Least Cost of Production	15.00	59.00	24.00	2.00	0.00	3.87
Marketability of Output	11.00	76.00	12.00	1.00	0.00	3.97
Best Price for Output	30.00	59.00	11.00	0.00	0.00	4.19
Best Profits/ Income	27.00	68.00	5.00	0.00	0.00	4.22
Least Crop Loss	21.00	53.00	26.00	0.00	0.00	3.95
Less Risk	10.00	56.00	31.00	3.00	0.00	3.73
Own Consumption Needs	10.00	63.00	17.00	8.00	2.00	3.71
Personal Safety & Health	9.00	63.00	20.00	7.00	1.00	3.72
Personal Achievement/ Knowledge	15.00	61.00	14.00	4.00	6.00	3.75
Respect/ Image in Community	4.00	66.00	15.00	4.00	11.00	3.48
Long Term Productivity	6.00	60.00	21.00	8.00	5.00	3.54
Better Environment	3.00	65.00	26.00	5.00	1.00	3.64

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 and place of availability, need for information on fertilizers that are effective & known, information on pesticide that is effective and up to date. Regarding market information none of the farmers have mentioned information gaps, this means KCC providing very good market information.

Table 6.13: Importance of KCC on important decisions - Percent

	Extremely Important	Very Important	Moderately Important	Slightly Important	Not Important	Average
Crop selection decisions	-	100	-	-	-	4.00
Variety selection decisions	37.5	62.5	-	-	-	4.38
Input purchase decisions	-	100	-	-	-	4.00
Planting decisions	33.33	33.33	33.33	-	-	4.00
Soil management decisions	50.00	50.00	-	-	-	4.50
Fertilizer/ feed application decisions	20.00	80.00	-	-	-	4.20
Water management decisions	-	100.00	-	-	-	4.00
Weather/ rainfall related decisions	14.81	79.63	5.56	-	-	4.09
Crop management decisions	50.00	50.00	-	-	-	4.50
Agricultural machinery decisions	-	-	-	-	-	-
Insect pest control decisions	45.16	51.61	3.23	-	-	4.62
Disease control decisions	43.18	56.82	-	-	-	4.43
Weed control decisions	-	-	-	-	-	-
Cost reduction/ efficiency increasing decisions	-	-	-	-	-	-
Quality improvement decisions	-	100.00	-	-	-	4.00
Harvesting & post-harvest decisions	-	100.00	-	-	-	4.00
Marketing decisions	22.22	77.78	-	-	-	4.22
Price & profit related decisions	66.67	33.33	-	-	-	4.57
Supply chain & transport decisions	-	-	-	-	-	-
Storage decisions	-	-	-	-	-	-
Risk reduction decisions	-	-	-	-	-	-
Credit decisions	-	-	-	-	-	-
Insurance decisions	-	-	-	-	-	-
Government schemes & assistance decisions	-	-	-	-	-	-
Other decisions	-	100.00	-	-	-	4.00

Table 6.14: Information Needs for Decision Making in Agriculture

Agriculture-Field Crops			
Decisions	Information needed for decision making	Frequency %	Average Importance Rating (Weighted)
Variety selection	Information on good quality and high yielding varieties	70.00	3.75
	Type of the variety with Seed rate	30.00	
Fertilizer use	Information on fertilizers and its application	66.67	4.00
	Fertilizer name	33.33	
Pesticide use	Information on application of pesticide and its measurements	55.56	3.78
	Control measures	44.44	
Prices/ price trend	Up to date information on price and market	75.00	3.91
	Information on Minimum and Maximum price	25.00	
Rainfall information	Extent of Rain and Timing	60.72	3.30

Table 6.15: Information Provided by KCC

Decisions	Information provided by KCC	Frequency %	Average Rating (Weighted)
Variety selection	Suggested variety name	66.67	3.53
	Suggested variety name and dosage	33.33	
Fertilizer use	Suggested fertilizers name and dosages	76.27	2.75
	Suggested type of fertilizers need to be applied	23.73	
Pesticide use	Suggested pesticide name, quantity and usage	45.83	3.54
	Suggested pesticide name and its applications	29.17	
	Suggested name and how to apply	25.00	
Prices/ price trend	Suggested price rate and market information	100.00	3.59
Rainfall information	Provided five days rainfall information	100.00	3.31

Table 6.16: Other Sources of Information

Decisions	Other sources of information	Frequency %	Average Rating (Weighted)
Variety selection	Government Officials	64.29	3.83
	Fellow Farmers	21.23	
	Input dealers	14.29	
Fertilizer use	Input dealers	50.00	3.75
	Fellow Farmers	25.00	
	Government Officials	25.00	
Pesticide use	Input Dealers	68.18	2.86
	Fellow Farmers	32.72	
Prices/ price trend	Fellow Farmers	100.00	2.50
Rainfall information	Television	81.00	2.78
	Varunamitra	19.00	

Table 6.17: Important Gaps/Deficiency

Decisions	Important gaps/deficiency	Frequency %
Variety selection	Place of availability of suggested variety	71.00
	Information on new varieties	29.00
Fertilizer use	KCC should provide effective information	67.23
	Application of fertilizers	32.77
Pesticide use	KCC should provide effective information	47.70
	KCC should provide up to date information	34.10
	KCC should provide information on how to apply	18.12
Prices/ price trend	-	-
Rainfall information	Sometimes information is low accuracy	100.00

Table 6.18: Impact of KCC on important decisions - Percent

Particulars	Huge Impact	Significant Impact	Moderate Impact	Small Impact	No Impact	Average
Crop selection decisions	-	33.33	66.67	-	-	3.33
Variety selection decisions	12.5	62.5	18.75	6.25	-	3.81
Input purchase decisions	-	-	100.00	-	-	3.00
Planting decisions	-	-	100.00	-	-	3.00
Soil management decisions	-	100.00	-	-	-	4.00
Fertilizer/ feed application decisions	10.00	60	30.00	-	-	3.80
Water management decisions	-	100	-	-	-	4.00
Weather/ rainfall related decisions	5.56	57.41	33.33	1.85	1.85	3.63
Crop management decisions	-	75.00	25.00	-	-	3.75
Agricultural machinery decisions	-	-	-	-	-	-
Insect pest control decisions	22.58	48.39	25.81	3.23	-	3.90
Disease control decisions	6.82	77.27	15.91	-	-	3.91
Weed control decisions	-	-	-	-	-	-
Cost reduction/ efficiency increasing decisions	-	-	-	-	-	-
Quality improvement decisions	100.00	-	-	-	-	5.00
Harvesting & post-harvest decisions	-	100.00	-	-	-	4.00
Marketing decisions	5.56	63.89	25	-	5.56	3.64
Price & profit related decisions	-	33.33	66.67	-	-	3.33
Supply chain & transport decisions	-	-	-	-	-	-
Storage decisions	-	-	-	-	-	-
Risk reduction decisions	-	-	-	-	-	-
Credit decisions	-	-	-	-	-	-
Insurance decisions	-	-	-	-	-	-
Government schemes & assistance decisions	-	-	-	-	-	-
Other decisions	100.00	-	-	-	-	5

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 quality

improvement decisions, soil management decisions, harvest and post-harvest management decisions whereas all most all farmers reported there is significant impact on decision making. In case disease control and insect pest control decision more than 70 percent of the farmers reported that there is huge impact on decision making. 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 6.19: Overall Impact of KCC

Particulars	Huge Impact	Significant Impact	Moderate Impact	Small Impact	No Impact
Impact on Production	4.35	31.52	32.61	13.04	18.48
Impact on Income	2.15	19.35	21.51	4.30	52.69

Table 6.20: 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
Coconut	18.75	22.43	22.73	9.09	27.27	22.73	18.18
Red Gram	15.63	18.69	70.00	10.00	10.00	10.00	0.00
Ragi	9.38	11.21	16.67	0.00	33.33	50.00	0.00
Arecanut	8.59	10.28	18.18	9.09	36.36	36.36	0.00
Pomogranite	8.59	10.28	45.45	0.00	18.18	36.36	0.00
Lemon	7.03	8.41	100.00	0.00	0.00	0.00	0.00
Grapes	6.25	7.48	37.50	0.00	62.50	0.00	0.00
Tomato	3.91	4.67	75.00	25.00	0.00	0.00	0.00
Maize	3.13	3.74	75.00	0.00	25.00	0.00	0.00
Green Gram	2.34	2.80	100.00	0.00	0.00	0.00	0.00

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 indicate that there is some positive impact of the KCC information on their

production and incomes. About 33 percent indicate that there is a moderate impact on production, 32 percent farmers mentioned that there is significant impact and four percent of farmers mentioned that huge impact on production. About 47 percent of the farmers mentioned there is positive impact on farm income by taking decisions based on information provided by KCC.

Table 6.21: Overall assessment - Percent

Particulars	Excellent	Good	Satisfactory	Somewhat Poor	Very Poor	Average
Overall assessment of the performance of the Kisan Call Centr	3.00	86.00	10.00	-	-	3.93
Overall assessment for the response and efficiency of Kisan Call Centre	2.00	71.00	26.00	-	-	3.76
Overall assessment of the quality of information provided by Kisan Call Centre	4.00	71.00	22.00	2.00	-	3.78
Overall opinion whether the Kisan Call Centre should be continued	18.00	74.00	6.00	1.00	-	4.10

To obtain more specific information, the question of impact is also examined crop wise. The Table 6.20 below provide an analysis of the response on production crops-wise. The results indicate that KCC information is having a good impact on income derived from crops of Coconut, Red gram, Ragi, Arecanut, pomegranate, lemon, grapes, tomato, maize and Green gram. We can observe that about 18 percent of the farmers have also mentioned there is a huge impact on income derived from coconut production.

The Table 6.21 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 (86.00) and excellent (3.00). In terms of response efficiency, nearly 73 percent of the farmers consider this to be good to excellent and in terms of the quality of the information provided, about 75 percent are happy with it. Overall, a large majority of about 92 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.

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). In Karnataka the study was conducted by ADRTC, ISEC Bangalore. The study covered 25 Farmer Tele Advisors in Kisan call centre Bangalore. The study covers a sample of 120 farmers two districts including 100 KCC users and 20 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.
- In Karnataka total of 288608 calls received in 2016-17, as per the data for the top 10 crops in each state shows that Red gram has the largest share in the calls among crops followed by Chilli and Cotton. Examining the broad reasons for calling, it is found that the highest number of calls recorded is for weather information, followed after a large margin by plant protection, and then, market information and plant protection. 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 satisfaction 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 80 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 84 percent find the hardware to be good for the work requirement, about 16 percent feel that there is scope for improvement. About 56 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 82 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 74 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 30 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 60 percent of FTAs consider the KCC performance to be good to excellent but over 40 percent see scope for improvement. In terms of their own contribution at the KCC, over 68 percent considered to be good to excellent. Regarding the

systems and policies under which the KCC is working, there is considerable dissatisfaction with nearly 56 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 92 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 100 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 74.00 percent of the farmer users and this exceeds even fellow farmers which stand at 67.00 percent. After a large margin follow local markets which stand at 52.62 percent and input dealers at 48.71 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, 52.00 percent of the users rate fellow farmer (who are generally most trusted) as good to excellent source of information, and for KCC also farmers rated same by 52.00 percent as a good to excellent source. This indicates that the Kisan Call Centres rank very high. 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 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: 13 percent indicate small impact and 68 percent indicate moderate to large impact. The impacts vary substantially by crop, and a big impact on production and incomes is reported for Coconut, Red gram, Ragi etc.
- 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 73 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 75 percent consider it to be good. Overall, a large majority of about 92 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 farmers, 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. 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 lower 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.

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