

AERC STUDY No. 42

**DECISION-ORIENTED INFORMATION SYSTEM FOR FARMERS: A  
STUDY OF KISAN CALL CENTRES (KCC), KISAN KNOWLEDGE  
MANAGEMENT SYSTEM (KKMS), FARMERS PORTAL AND M-  
KISAN PORTAL IN PUNJAB**

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### **List of abbreviations used in the text**

Information and communication technologies	:	ICTs
National Agricultural Research System	:	NARS
Kisan Call Centres	:	KCC
Kisan Knowledge Management System	:	KKMS
Farmer Tele Advisors	:	FTAs
Uninterrupted Power Supply	:	UPS
Accelerated Mobile Page	:	AMP
Disaster Recovery	:	DR
Personal Computers	:	PCs
Krishi Vigyan Kendras	:	KVKs
Common Service Centers	:	CSCs

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## CHAPTER-I

### INTRODUCTION

#### 1.1 Background

No one was ever self-sufficient in isolation. Interaction is the key to development. As they say 'stagnant waters start stinking with time'. Same is true to human mind. Exchange of ideas through any mode refreshes our cognitive skills and improves our power of judgment.

Agriculture has become an out and out dynamic sector, with ever-changing technologies & practices. For successful management of the farms, farmers need to keep themselves abreast of the changes going on the farm i.e. in terms of new methods and technology as well as around the farm i.e. external factors like prices, markets, weather etc. Even in traditional agriculture, with static technology, interaction was the key to decision making. Exchange of ideas based on logical assessment acts as a choice indicator for the available alternatives, be it cropping pattern, inputs use, marketing of output or decisions like buying insurance or availing subsidies. Farmers' livelihood depends substantially on the decisions they make, which in turn is guided by the information available to them.

India has witnessed a transformation in the information delivery system in the last two decades or so with the invasion of information and communication technologies (ICTs) in all walks of life. In traditional set up, Indian farmers have been following indigenous production methods & would rely upon limited sources of information regarding agriculture like fellow farmers, friends, relatives, input dealers and later on radio television and some print material. But since mid 80's as the economy got liberalized, along with government agencies, cooperatives, NGOs and even private players have become involved in disseminating agricultural information. It has become a major source of acquiring and exchanging of knowledge and has made inroads into the technically under-privileged rural and agriculture sector. The farmers find it fast and handy in resolving their problems (Bardhan *et al.*2014). However, ICT penetration is low in rural areas due to several constraints including short supply of tools and lack of farmers skill (Ghasura *et. al* 2011).

The public extension system had played an important role in accelerating agricultural growth during the green revolution period by transferring technology and farm management related information, generated by the National Agricultural Research System (NARS), to the farmers (Adhiguru *et.al*, 2009). But, the market driven trend of Indian Agriculture after the opening up of economy due to WTO, information needs have taken a centre stage and farmers were tapping different knowledge based sources to improve their pre production, production and post-production activities. The present information needs are demand driven

rather than supply driven as in traditional approach. So, the need is to improve the accessibility of farmers to information and its relevance in the agricultural development (Sharma, 2002). Also, the extension systems which were supposed to play a leading role in informing and advising the farmers are under severe stress due to lack of funds, personnel and the design and thus are unable to perform up to the extent needed.

The need of latest information about different aspects becomes more intense, in state like Punjab, which was at the fore front in adoption of new technology and experienced a transformation of agriculture in wake of 'Green Revolution'. After going through tides of high growth, the state agriculture is witnessing troughs since mid 90's, as the yield levels are stagnating, cost of production is rising and with low rise in minimum support price (MSP) of main cereal crops i.e. wheat and paddy, profit margins are shrinking. Mono-culture has invaded in cropping pattern with more than 80 per cent of cultivated area going in for wheat and paddy. With decreasing income levels and no available employment opportunities, distress is evident in peasantry of the state in the form of increasing indebtedness, farmers suicides and de-peasantisation etc. Different way outs are suggested by policy planners, eminent economists etc. to tackle the present scenario. The most crucial aspect of all these suggestions is access to information, it may be related to some technological breakthrough, new package of practices, new market, modified policy, some new marketing function, risk covering factor etc. Any aspect of knowledge leading to sustainability of state agriculture, conserving the dwindling resources, lowering the cost of production and improving the income from agriculture must be shared with farming community of the State. The usage of ICT is a welcome step in this direction. Government of India initiatives of Kisan Call Centres (KCC), Kisan Knowledge Management System (KKMS), Farmers Portal and M-Kisan Portal etc. are aimed at filling the information gaps. They have been gradually evolved into action since 2004, with a view to use the extensive telecommunication infrastructure in the country to deliver extension services to the farmers. The purpose of setting up these call centres was to answer the questions raised by farmers instantly in the local language, free of cost through a toll free number and on a continuous basis. Government has set up 25 KCCs in states of India with 144 agents in answering farmers' queries in 22 local dialects on all 7 days of a week, between 6 a.m. to 10 p.m.

The available information from Ministry of Agriculture and Farmers Welfare has shown that Chandigarh based KCC is functioning for Punjab State has registered second highest number of calls per lakh of rural population after Delhi i.e. 1662 in 2014-15. Total numbers of registered calls at KCC were 287731. This indicates the popularity of KCC

service in Punjab. Majority of the cultivated area in the state has been under wheat and paddy crops, having more or less stable yields with no wider variation. The experience of agricultural experts has been that farmers seek advice pertaining to some risky crops like cotton, which has experienced frequent insect pest attacks in recent years, besides maize and sugarcane are other kharif crops which are also infested by pests. On the basis of this observation, the present methodology was devised to cover the south western districts, also called cotton belt of the state, facing problems of severe white fly attack on cotton. It was felt that Kisan Call Centre (KCC) being an instant, cost effective response method would be getting more queries from this region, that too related to pest/ disease control measures during kharif season. This insight led to the selection of three districts, though on random basis, but reeling more under agricultural distress conditions, based on indebtedness and farmer suicide reports of the state .In light of these developments it becomes pertinent to analyse decision-oriented information systems for Farmers. It involves Kisan Call Centre (KCC), Kisan Knowledge Management System (KKMS), Farmers Portal and M-Kisan Portal. The present study has been devised to have in-depth knowledge about these aspects.

## **1.2 Need for a strong information system**

Information is vital for growth of all the sectors of economy and agriculture cannot be an exception to it. It is rather having more importance in agriculture, it being a primary activity. Risk and uncertainty is more prevalent here, as it is a biological enterprise. So, no fool proof method is available for protection against vagaries of nature as well as other constraints typical to crop production like lack of uniformity of produce leading to difficulty in standardization and grading, inelastic demand, no control over supply of output, perish ability and bulkiness of produce etc. That is why, gluts and acute shortages are witnessed frequently, because of mismatch between demand and supply of production. With adoption of new technology, production of many agricultural goods has increased, but this has not translated into higher incomes to majority farmers. This is due to rising cost of production and shrinking profit margins. In traditional agriculture, fewer options were available to the farmers in every aspect like cultivation, harvesting, farm practices, marketing etc. So, even limited access to information was not that much a hindrance at static level of technology. But in this era of commercial agriculture information has become the most important pillar of survival. Decision making, right from the selection of crop, choice of practices, resource-use, method of harvesting, post harvest handling, method or venue of sale, mode of transportation, processing etc. till the sale of product to final consumer all are dependent on availability of information.

Thus a strong information system is needed to cater to the diverse needs of farming community especially in current scenario threatening the survival of peasantry. In Punjab, about 32 per cent of farmers having operational holding less than five acres have become economically unviable due to stagnating yields, but rising inputs cost. The small peasantry is reeling under the burden of heavy indebtedness. Thus, a strong information system can go a long way in judicious use of scarce resources and improving the farm efficiency, better marketing and value addition as well. Informed decisions can have a strong impact in terms of better management of Punjab agriculture.

### **1.3 Approach for designing a good information system**

The design of a good information system for agricultural sector can rest upon the same conceptual framework as for other organizations, as the prime objective of each production activity is maximizing of profits/minimizing of losses. In old approach, information was to a limited extent and generated as a by-product of the operations and passed along in random through public extension services as a routine matter. The decision making was ad hoc due to lack of requisite information. But in modern approach, stress has shifted to systematized decision making in wake of increased availability of options which leads to increased risk and uncertainty. The strategy here, is devised based on stipulated objectives. It involves identification of important decisions and the information needed for these decisions. This becomes the basis of a strong information system that is suitable for imparting knowledge related to significant aspects of agriculture. This approach will have a direct impact on performance of each activity/operation due to well chalked out delivery system.

### **1.4 Objectives of the study**

The study has been devised to bring out the decision-oriented information systems for farmers. It aims to analyze the structure, design, implementation and performance of government systems of Kisan Call Centres (KCC), Kisan Knowledge Management System (KKMS), Farmers Portal and M-Kisan Portal. It will highlight the effectiveness of these systems in providing information and guidance to the farmers to help them in their important decisions and solution to problems in farming to the extent possible, leading to better performance of their farms and the agricultural sector as a whole. The specific objectives of the study aims to examine were:

- 1) To know the organized set up, infrastructure, information and communication technology (ICT) and systems used, methods and information flows, types and abilities of the manpower involved.

- 2) To record the use of systems-the profile and patterns of the users, the extent of use of the system, and the responses given.
- 3) To analyze the performance of the systems from the point of view of users, its impact on decision making and gap between information delivered and sought.
- 4) To highlight the suggestions of users to make the system more effective in serving the agricultural sector.

### **1.5 Review of literature about same related studies**

Information and communication technologies play a crucial role in disseminating information to farmers enabling them to decide various issues like cropping pattern, use of high yielding seeds, fertilizer application, pest management, marketing etc.(Das, 2014). In recent years, the spread of ICTs has raised the expectation that these technologies would deliver fast, reliable and accurate information in a user-friendly manner (Shalendra et al, 2011). In fact, it is argued that only old ICTs like radio, television, newspapers etc. could play an important role in awareness generation about new agricultural technologies in the farming community across the world (Ali, 2011). But the meaning of ICT has expanded with invasion of digital devices and their wide spread usage. The ICT now includes any communication device or application (mobile phones, laptop, computer, SMS, internet etc.) that is put to the service of farmers in both production and marketing aspects (Swaminathan et. al, 2014). So, the role of it has been analyzed by many researchers in the field of agriculture.

In a study of mobile based agriculture consulting service, Avaaj Otalo (AO) for cotton farmers in Gujarat, Cole and Fernando (2012) found that AO resulted in farmers purchasing and applying more effective pesticides, however, some farmers continued to rely on local information from fellow farmers. The study found substantial information inefficiencies and great demand for agricultural information. In a Himachal Pradesh study on the role of Kisan Call Centre (KCC), examining the coverage and effectiveness of KCC in solving the problems of farmers growing the crops like apple and tomato in high hills and mid hills, it was reported that KCC user farmers grew their crops more scientifically and were found to have higher yields than those not availing the facility of KCC (Sharma et al 2011). Kant and Pandey (2015), in a study of KCC calls in Madhya Pradesh found that farmers face huge pest problems with kharif crops in the month of September and least in January. Kaushal (2015) reported that Kisan Call Centre (KCC) system was facing some problems due to lack of coordination between the government departments and KCC. Due to this, the latest market

and other required information was sometimes not available from KCC resulting in lack of trust among the farmers. Chouhan et. al (2011) conducted a study on calls received per month at the KCC of the Indian Society of Agribusiness Professionals Bhopal. The study revealed that most calls were for agriculture, followed by horticulture and the livestock. The calls for agriculture were on plant protection, production techniques, high yield variety seeds, marketing, and weather forecast. The study found that farmers sometimes had problems following recommendations due to complex scientific language used and the non-availability of recommended inputs in the local market. The study suggested that information should be provided appropriate to local farming system and on inputs available in the market.

Tomato growers of Tamil Nadu were found to have developed agricultural clusters with the help of ICT tools to bring horizontal integration of vegetable growers and also vertical integration of all the members of supply chain, leading to better prospects of farm profitability (Swaminathan et al, 2014).

ICT has potential to provide a greater quantum of information, covering a wide range of subjects in the shortest possible time (Adhiguru et al, 2009). Thus, both public and private extension systems have been innovating approaches for the transfer of technology and information to farmers so as to empower them to face the challenges of market liberalization and globalization. It was found that only 40 per cent of farm households have been accessing various information sources at All India level, those too mainly private and informal sources. Their access to public funded sources like extension workers and KVKs was found be less and for information on animal healthcare, they were found to be dependent on fellow farmers than extension workers.

Fast growth of mobile telephony in India and its role in reducing information search costs and information asymmetries is visible in services like KCC and similar initiatives by same private players. The growth in increasing tele-density in rural India puts a challenge for using this medium for delivering contents, services and value added information to the rural population, which is necessary for inclusive growth (Jairath and Yadav, 2012)

## CHAPTER-II

### METHODOLOGY

The study has been designed as per the structure and implementation of the Kisan Call Centre (KCC) system in Punjab. The collection of information pertaining to decision-oriented information system for farmers was undertaken through survey method involving both census as well as sample survey forms.

At first step, information was sought from Kisan Call Centre (KCC) at the state level located at Chandigarh through a specially designed questionnaire. It pertained to profile of KCC, hardware and software being used in the centre, available infrastructure, internet connectivity, use of information and knowledge sources as well as their ratings, call escalation system, efficiency of call answering system, overall assessment of call handling, efficiency of Farmers Tele Advisors (FTAs) working at the centre etc. The information covered the period up to 31.12.2016.

The second set of questionnaire was related to information of Farmers Tele Advisors (FTAs) dealing with farmers queries at the first level. At KCC Chandigarh, there were total 60 FTAs, out of which 26 were catering to Punjab state. So, based on census survey, all the 26 FTAs were covered through personal interview method. It covered profile of FTAs, their assessment about hardware and software being used, internet connectivity, sources of information and knowledge and their up-gradation regarding different aspects, opinion about different websites, self assessment of call answering efficiency, rating of available infrastructure, training programmes undertaken by FTAs, other modes of communication being used to serve farmers etc. This information also pertained to the same reference period.

The third step was to collect the KCC user data i.e. the farmers' level data. Due to lack of specific information about KCC users, random sampling technique was followed. Three districts namely Mansa, Moga and Sangrur were randomly selected from the state. Then a sample of 100 KCC users was selected at random from a cluster of villages in each selected district depending upon their availability. As per the design of study, a control group of 20 non-KCC users were also questioned from the same cluster of villages in the selected districts. The farmer level information pertained to the period 2016-17.

The distribution of total sampled farmers, taken for the study has been shown in Table 2.1. There were 33 KCC users and 9 non-users from Mansa district, 35 users and 6 non-users from Moga district, 32 users and 5 non-users from Sangrur district of the state. In all, the sample comprised of 100 KCC user and 20 non-users, thus 120 farmers were randomly selected from three districts of the state.

**Table 2.1: Distribution of sampled KCC-users and Non-users in Punjab**

<b>Districts</b>	<b>Users</b>	<b>Non-users</b>	<b>Total</b>
Mansa	33	9	42
Moga	35	6	41
Sangrur	32	5	37
Total	100	20	120

The queries to farmers were related to their personal profile, cropping pattern, other farm activities, their sources of information related to agriculture, the use of ICT devices, the call data to KCC, specific queries, usefulness of responses by KCC, use of other websites/portals, their focus on important decisions in farming, information needs related to decision making in agriculture, impact of KCC response on important decision making as well as specific operations etc. Thus, it covered their decision making and information needs and the extent to which these were addressed through the response given by KCC. The views were also sought on positive and negative aspects of KCC and their suggestions to improve the working of it.

The data generated at three stages were tabulated and information collected was analyzed with the help of statistical techniques like weighted averages, percentages and frequencies to derive the meaningful conclusions.

## CHAPTER-III

### INFRASTRUCTURE AND PERFORMANCE ASSESSMENT OF KISAN CALL CENTRE (KCC)

#### 3.1 Profile of KCC

State level Kisan Call Centre, located in Chandigarh was established on 1<sup>st</sup> May, 2012 and has been catering to three states namely Punjab, Haryana and Himachal Pradesh. The centre is administered by IFFCO Kisan Sanchar Limited. The office space of centre is approximately 5000 sq. mts. There are total 60 Farmer Tele Advisors (FTAs) at the centre, but Punjab state is being catered by 26 FTAs. It is working under three shifts 6 AM to 2 PM, 2 PM to 10 PM, 10 AM to 6 PM. First two shifts are handled by 10 FTAs each, but in the third shift operations were handled by supervisor or one FTA on duty on all 7 days a week. The calls made after 10 PM get recorded and were answered by Ist shift FTAs the next morning. The centre has state wide accessibility by dialling a single toll free number 1551 and 1800-180-1551. The numbers can be reached through landline and mobile phones of any service provider. The response is instantly given in local language i.e. Punjabi.

The profile of Kisan Call Centre, Chandigarh has been given in Table 3.1. As stated earlier, it has been serving three states namely Punjab, Haryana and Himachal Pradesh with a total of 60 FTAs. Out of these Punjab state was being served by 26, Haryana by 27 and Himachal Pradesh by 7 FTAs, respectively. The languages used for responding to queries were Punjabi and Hindi.

**Table 3.1: Profile of Kisan Call Centre**

<b>States Covered</b>	Punjab, Haryana, Himachal Pradesh
<b>Languages Used</b>	Punjabi, Hindi
<b>Number of FTA's serving</b>	
Punjab	26
Haryana	27
Himachal Pradesh	7
Total	60

The centre was sanctioned in the year 2004 under Caretel Infotech Limited. But despite the repeated efforts no history of this centre prior to 2012 could be traced. At present location it has been working under IFFCO Kisan Sanchar Limited (Table 3.2). As per the opinion of centre supervisor, the present centre was working smoothly with better facilities in terms of hardware, software, connectivity, farmer data base and ability to respond to farmers queries (Table 3.3).

**Table 3.2: History of Development of Kisan Call Centre**

Location	Chandigarh	
Year of Start/ relocation	2004	2012
Number of FTA's/ KCC Agents	NA	26

NA: Not available

**Table 3.3: Comparison of present and past KCC as per the perception of centre In-charge**

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

### 3.2 Availability of Hardware/Software/ Internet Connectivity at KCC, Punjab

The Punjab KCC was being served by HP local servers and one HP external server. It had online Uninterrupted Power Supply (UPS) system of 10 KB. There were two BSNL Primary Rate Interface (PRI) Lines for the centre and 1 Disaster Recovery (DR) site. It has 11 Local Area Network i.e. LAN/Data Cabling Accelerated Mobile Page (AMP) Dlink. One Multiprotocol Label Switching (MPLS) based LAN is provided by Airtel service provider and 11 Wireless Local Area Network (WLAN) are of BSNL service provider.

The hardware profile being used at the centre has been presented in Table 3.4. There were 11 Personal Computers (PCs) all-in-one desk top with core I3, I5 and all were in working order with excellent condition as per the centre in charge. Eleven headphones had been sanctioned to the centre, but one was not functioning properly. These were Zebra headphones compatible for soft phones, being rated as good.

**Table 3.4: Hardware Inventory at KCC, Punjab (As on 31-12-2016)**

Item head	Specifications	No.	Rating
PC's	All-in-one Desk Top with core I 3, core I 5	11	5
Headphones	Zebra head phone compatible for soft phone	11	4
Printers and scanners	HP compatible	1	5

**Rating: Excellent=5, Good=4, Satisfactory=3, Somewhat poor=2, Very Poor=1**

The profile of software being used in the centre has been given in Table 3.5. The operating system was window based. The call handling software being used was (client desktop and soft phone). Both were rated excellent as per the centre staff.

**Table 3.5: Profile of Software used at KCC, Punjab (As on 31-12-2016)**

Call Handling Softwares	Available	Rating
Agent Openscape Contact Centre	Operating system window based	5
Openscape Desktop	Client desk top, Client manager	5
Real Time Viewer	-	-

**Rating: Excellent=5, Good=4, Satisfactory=3, Somewhat poor=2, Very Poor=1**

Overall ratings of hardware being used have been given in Table 3.6. The staff agreed that it could handle the call load and mouse of PCs worked well. The strong agreement was found that no frequent breakdowns have been witnessed, there was good interface of Keyboard and Mouse and hardware fulfils the requirements of the system.

**Table 3.6: Overall Ratings of Hardware as per the perception of centre in charge, KCC, Punjab**

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

In a similar way, overall ratings of software have been shown in Table 3.7. The strongly agreed opinions were that calls could be handled easily, heavy call traffic could be

handled and there was adequate database for answering the questions. It was agreed that calls do not get dropped or mishandled by the software as well as that the software was able to meet the requirements. But the opinion was divided about the frequently crashing of software. Staff partially agreed to it.

**Table 3.7: Overall Ratings Software as per the perception of centre in charge, KCC, Punjab**

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

Queries regarding internet connectivity of the centre have been presented in Table 3.8. It was agreed upon that internet working was good and did not slow down during heavy call loads, it was fast enough to respond to the calls, fast enough to retrieve and record information, does not breakdown frequently and was adequate for work.

**Table 3.8: Internet Connectivity as per the perception of centre in charge, KCC, Punjab**

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

### 3.3 Infrastructure/Office Equipments

The basic infrastructure and other office equipments have a bearing on working of the centre. Well ventilated, hygienic environment with necessary facilities adds to the efficiency of staff, but on the other hand lack of these becomes a hindrance in the smooth functioning. So, the basic infrastructure at the centre has been shown in Table 3.9. It included two installed air conditioners, four CCTV Cameras for supervision, one water cooler for drinking water supply and one washroom. No other facility like provision of lunch /dinner was available at centre.

**Table 3.9: Infrastructure/ Office Equipments as on 31-12-2016**

Facilities	Number
AC's Installed	2
CCTV Cameras	4
Water Cooler	1
Washroom Facility	1
Canteen	-

The infrastructure ratings at the centre have been given in Table 3.10. It was strongly agreed upon that sufficient activity area was available at the centre, the area was adequately ventilated, sufficient video surveillance was being provided and there had been no disturbance from other departments. It was agreed upon that sufficient private space was there and there has been no disturbance while other FTAs were attending the calls and overall the working environment was good.

**Table 3.10: Infrastructure rating as per the perception of centre in charge, KCC, Punjab**

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

### 3.4 Efficiency assessment of Farmer Tele Advisors

Farmer Tele Advisors (FTAs) are the key resource persons to respond to the farmers queries. An assessment of their efficiency was undertaken with the centre in charge and has been shown in Table 3.11. It was strongly agreed that FTAs were quick in responding to the calls of farmers and were able to manage the calls efficiently. It was also their strong opinion that FTAs were able to quickly access the database/information to respond to the calls if they lack the answer, they have good attendance record and were punctual, so overall good discipline, they were innovative and keen to take initiative to improve their performance, so in all they were efficient.

It was agreed upon that FTAs at the centre have sufficient knowledge and were capable of answering the queries on their own or take help from their colleagues, also escalate the queries to higher levels, if they do not have satisfactory response but by and large they were well trained and were able to respond satisfactorily. But these FTAs were not motivated at all as per the observation of the centre staff. It can be due to many issues pertaining to the job satisfaction of these like low salary, less number of holidays, lack of job security etc.

**Table 3.11: Assessment of FTA Efficiency as per the perception of centre in charge, KCC, Punjab**

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

### 3.5 Sources of information used by FTAs for responses

FTAs are trained agricultural graduates having specialization in different fields of the trade. They were found to using various sources of information and knowledge to answer the questions of farmers. The frequency use of these sources has been depicted in Table 3.12. The main source of information was self-knowledge or acquired knowledge which was frequently used apart from prepared excel sheets and material, internet search to various database as well as sources/material from related Government departments. Booklets, books and papers published by Extension department as well as the knowledge gained through trainings were most frequently used sources of information. Occasionally, they were seeking help from colleagues and supervisor of the centre as well as university experts/Nodal Officer. Information from other farmers was rarely used by the staff to answer the queries.

**Table 3.12: Assessment of information & knowledge sources and databases usage as per the perception of centre in charge, KCC, Punjab**

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

The quality rating of these sources of information and knowledge has been shown in Table 3.13. As per the judgment of centre in charge, self-knowledge, knowledge of colleagues and supervisor and prepared excel sheets and materials were good. However, printed extension material, knowledge acquired in trainings or from university experts/Nodal officer was rated as excellent. Information sought from other Government departments and internet search were treated as satisfactory, while information collected from other farmers was considered to be of some what poor quality.

**Table 3.13: Quality rating of information & knowledge sources and databases as per the perception of centre in charge, KCC, Punjab**

Particulars	Excellent	Good	Satisfactory	Somewhat Poor	Very Poor
Self-Knowledge	-	✓	-	-	-
Colleagues & Supervisor	-	✓	-	-	-
Prepared Excel sheets & material	-	✓	-	-	-
Internet search	-	✓	-	-	-
Extension Booklets, books, papers	✓	-	-	-	-
Government department sources/material	-	-	✓	-	-
Knowledge acquired in Training	✓	-	-	-	-
University experts/Nodal officer knowledge	✓	-	-	-	-
Information from other farmers	-	-	-	✓	-

### 3.6 Overall assessment of information provided by KCC

As per the mandate of KCC scheme, the objective is to provide up-to-date, free of cost, quick information to the farmers. So, overall assessment of the provided information has been presented in Table 3.14. It was strongly agreed that adequate and up-to-date responses were provided pertaining to technical questions as well as price and market related questions and above all the farmers seem satisfied with the provided information. However, it was agreed upon that knowledge, information and database available with the centre was adequate, questions related to government schemes were provided with adequate and up-to-date answers as well as weather related or general questions.

### 3.7 Use of websites as source of information at KCC

Internet search has become the prime source of information and knowledge in the digital world. It has been flooded with different websites providing plethora of facts and figures. Usage of some specific government operated websites by the centre staff has been given in Table 3.15. The centre was found to be using Farmer's portal for seeking relevant information about 40 per cent of the time. However, Kisan Knowledge Management System (KKMS), Agmarknet, Website of Punjab Agricultural University and Accu Weather.com were used 100 per cent of the times to answer the related questions. Available data in KKMS could help to identify and respond to the problems with solutions, while M-Kisan Portal was

a mobile based service for the farmers. It was a tool of two-way communication in which advisory services were provided as per the needs in a broadcast mode.

**Table 3.14: Overall Assessment of Information Provided by KCC as per the perception of centre in charge**

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

**Table 3.15: Websites used for information source (usage in percentage of time)**

Websites	
Farmer's Portal	40
Kisan Knowledge Management System	100
AgMarket	100
Agricultural University Portal	100
AccuWeather.com	100

As has been seen KKMS was an important website to seek knowledge and used frequently, assessment of this portal has been discussed in Table 3.16. The respondent only partially agreed that response of KKMS was fast enough, it means it was not found very quick, but agreed that most of the time it responded and did not crash during its use. So, overall it was found to be working well, easy to use with well organized information and very useful.

**Table 3.16: Assessment of KKMS Portal as per the perception of centre in charge, KCC, Punjab**

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

In a similar way, Table 3.17 has been giving the assessment of Farmer's Portal website. It was considered as one stop shop for farmers meeting their all information needs. It was agreed that website responded quickly and did not crash while in use. It was strongly agreed that working of website was good, easy to use with organized and regularly updated information.

**Table 3.17: Assessment of Farmer Portal Website as per the perception of centre in charge, KCC, Punjab**

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

As per TRAI data (May 2014), though there were about 38 crore mobile telephone connections in rural area, internet penetration in the countryside is still extremely low-in single digit percentage. This makes the connectivity through landline or mobile a more effective tool to reach the 8.93 crore farm families. In a Himachal Pradesh based study by Sharma, *et al* (2011), it was found that farmers who used services of Kisan Call Centre (KCC) grew their crops more scientifically, were having higher yields than those not availing the facilities of KCC. Similar results were reported from countries like Kenya, Uganda & India in a study by Aker and Mbiti (2010) and from Ghana and Bangladesh by McGuire *et al.* (2015). Bera (2014) reported that number of calls to KCC increase at the time of some

calamity. It was also indicated that a large numbers of household were still not very accustomed to this usage of technology and may thus lag behind. So, it is emerging as an effective usage of technology depending on its operational efficiency.

### 3.8 Assessment of call handling at KCC

Overall assessment of call handling has been given in Table 3.18. It was reported that about 50-60 calls per day per FTAs were being received at the centre. It was also strongly agreed that all calls were handled efficiently, moreover call handling system was good and there has been good communication between farmers and FTAs. It was an agreed opinion that overall the farmers were satisfied with the call handling system.

**Table 3.18: Overall Assessment of call handling as per the perception of centre in charge, KCC, Punjab**

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

### 3.9 Call escalation System at KCC

The original design of call handling system launched in 2004 was split into three levels. Level 1 is handled by FTAs, if he fails to respond satisfactorily, the call is escalated to level 2, taken as a conference call involving an expert in an institution in the state, if the farmer is still not satisfied, then call is escalated to level 3, the highest level called the Nodal centre. The process was restructured in April 2011, and now it involves the State Agricultural Department, State Agricultural Universities and Krishi Vigyan Kendras (KVKs) at level 2. It has led to the formation of common service centers (CSCs). Call escalation system frequency of the centre under study has been presented in Table 3.19. It was reported that queries not answered by FTAs were very frequently responded by their colleagues and those not by colleagues were frequently answered by the supervisors. Rarely the calls at the centre were

escalated to level 2, but never to level 3. It was agreed that generally, the FTAs were able to answer and handle the questions at their own.

**Table 3.19: Call Escalation System Frequency as per the perception of centre in charge, KCC, Punjab**

Particulars	Very Frequently	Frequently	Occasionally	Rarely	Never
<b>1. Frequency of Level 1 calls</b>					
Queries not solved by FTAs are answered by colleagues	✓	-	-	-	-
Queries not solved by colleagues are answered by Supervisors	-	✓	-	-	-
Queries not solved by supervisors are escalated to level 2	-	-	-	✓	-
<b>2. Frequency of Level 2 calls</b>					
Frequency of calls escalated to level 2	-	-	-	✓	-
Queries not solved in level 2 are escalated to level 3	-	-	-	-	✓
<b>3. Frequency of Level 3 calls</b>					
Frequency of calls escalated to Level 3	-	-	-	-	✓
Queries are solved at level 3	-	-	-	-	✓

So, call answering system efficiency and its effectiveness in the state was assessed in Table 3.20. It was found that queries were not easily escalated to level 2, which means it was tried to give a satisfactory response at level 1 itself. But it was agreed that when escalated to level 2, the experts speedily attend the questions satisfactorily. But in this centre, the calls have never been escalated to level 3 for responses.

**Table 3.20: Assessing the call answering system efficiency & effectiveness as per the perception of centre in charge, KCC, Punjab**

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

KCC is a digitalized programme based on coordinated approach involving hardware, software, besides other infrastructure. So, an overall assessment of this has been shown in Table 3.21. It was agreed that the performance of hardware, software and internet connectivity was good and helpful at the centre. However, infrastructure and service support was not rated good and was partially agreed upon. It indicated a scope for improvement in this aspect.

**Table 3.21: Overall Assessment of Hardware, Software & Infrastructure as per the perception of centre in charge, KCC, Punjab**

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

### 3.10 Assessment of training programme of FTAs

Training is an essential part of skill formation and updating the recent advances in any field. All the FTAs at the centre have been attending various trainings organized by Punjab Agricultural University, Ludhiana. Usefulness of these training programmes has been discussed in Table 3.22. It was found that the acquired training were of no use to understand call handling procedure or operation of hardware or software installed as these workshops were related to agricultural aspects. So, it was strongly agreed that these trainings helped in acquiring and updating knowledge as well as understanding the questions of farmers. However, these were lacking information about Government schemes. It was strongly felt that these trainings were useful and FTAs should regularly undergo these.

**Table 3.22: Overall assessment of usefulness of training programmes as per the perception of centre in charge, KCC, Punjab**

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

### 3.11 Assessment of provided information through KCC

KCC is system of imparting information and knowledge through use of ICT tools, so an overall assessment of it has been presented in Table 3.23. It was strongly agreed that information was easy to understand, but farmers might find it a bit difficult to understand and process easily. It was agreed that farmers seem to be satisfied with provided information, but there was only partial agreement that information was available on time. Information pertaining to technical, price and market related queries were found to be adequate and up-to-date, but not on weather or Government related schemes. However, it was agreed that knowledge, information and available database at the centre were adequate.

**Table 3.23: Overall Assessment of the information & knowledge available as per the perception of centre in charge, KCC, Punjab**

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

### 3.12 Overall Assessment about KCC

After analyzing various aspects about working of KCC, Chandigarh, an overall assessment was undertaken and has been presented in Table 3.24. The centre in charge (respondent) rated the performance of KCC as good and his own contribution at work as excellent. The system and policies of KCC were considered as satisfactory and usefulness of KCC was rated as good. The view was strongly agreed that the KCC should be continued in future.

**Table 3.24: Overall Assessment about KCC, as per the perception of centre in charge, Punjab**

Particulars	Excellent	Good	Satisfactory	Somewhat Poor	Very Poor
Performance of KCC	-	✓	-	-	-
Own performance at KCC	✓	-	-	-	-
System and Policies of KCC	-	-	✓	-	-
Usefulness of KCC	-	✓	-	-	-
<b>Opinion on KCC should it be continued</b>	<b>Strongly Agree</b>	<b>Agree</b>	<b>Partially Agree/Disagree</b>	<b>Disagree</b>	<b>Strongly Disagree</b>
	✓	-	-	-	-

## CHAPTER-IV

### ANALYSIS OF FARMER TELE ADVISORS (FTAs), KCC, PUNJAB

Kisan Call Centres were launched by the Department of Agriculture & Cooperation, Ministry of Agriculture and Farmers Welfare, Government of India in 2004. The purpose was to utilize the extensive telecommunication infrastructure in the country to deliver extension services to the farming community KCC is a knowledge imparting service to instantly respond to questions raised by farmers in the local language on a continuous basis. Farmer Tele Advisor commonly called FTA is the main respondent to answer the farmer's queries. These are at level 01 of the three-tier response system. FTA is an agricultural graduate or expert who would be able to respond to investigation and problems of farmers.

At Chandigarh Centre, Punjab State is being catered to by 26 FTAs working in three shifts. A census survey was undertaken of these as a part of this study.

#### 4.1 Profile of Farmer Tele Advisors

Gender profile of FTAs has been given in Table 4.1. It was found that out of 26 total FTAs, 23 were male members and only 3 were females working for Punjab state.

**Table 4.1: Gender Profile of FTAs at KCC, Punjab**

Gender	Number	Percent
Male	23	88.46
Female	3	11.54
Total	26	100.00

Education profile of these showed that twenty four were graduates having acquired the degree of B.Sc. Agriculture, while two were post graduates i.e. M.Sc. Agriculture. (Table 4.2)

**Table 4.2: Education profile of FTAs at KCC, Punjab**

Degree	Number	Percent
B. Sc. Agriculture	24	92.31
M.Sc. Agriculture	2	07.69
Total	26	100.00

These graduates and post- graduates specialize in different subjects during their study. An analysis of subject specialization of FTAs showed that ten were having Horticulture as their major subject, while six graduates have studied various subjects of agriculture, six Agronomy and one each for Plant Breeding, Entomology, Plant Protection and Economics respectively. (Table 4.3) Regarding their past work experience, only two out of total 26 were having previous work experience, while 24 were fresh from studies (Table 4.4).

**Table 4.3: Subject specialization of FTAs at KCC, Punjab**

Subjects	Number	Percent
Horticulture	10	38.46
Agronomy	6	23.07
Agriculture	6	23.07
Plant Breeding	1	03.85
Entomology	1	03.85
Plant Protection & Agronomy	1	03.85
Economics	1	03.85
Total	26	100.00

**Table 4.4: Past work experience of FTAs at KCC, Punjab**

Particulars	Number	Percent
Yes	2	7.69
No	24	92.31
Total	26	100.00

#### 4.2 Hardware, software and internet used by FTAs

The Rating of hardware being used by FTAs at the centre was sought and presented in Table 4.5. Average weighted score that hardware was latest/ up-to-date come to be 3.42, 3.35 for reliability, 3.62 for handling call load, 3.88 for good display, 3.12 for convenient to use and 3.23 for good interface of keyboard and mouse, respectively. The rating was low for headsets being used (2.81) and for overall that it was good for work requirements it was 3.04. This indicated that FTAs were partially satisfied with the quality of available hardware.

**Table 4.5: Rating of Hardware used as per the perceptions of FTAs KCC, Punjab (N=26)**

Particulars	Strongly Agree	Agree	Partially Agree/Disagree	Disagree	Strongly Disagree	Weighted Average
Weightage	5	4	3	2	1	
The hardware is latest/up-to-date	4 (15.38)	10 (38.46)	6 (23.08)	5 (19.23)	1 (3.85)	3.42
It is reliable	-	12 (46.15)	12 (46.15)	1 (3.85)	1 (3.85)	3.35
It is convenient to use for responding to farmer calls	2 (7.69)	6 (23.08)	12 (46.15)	5 (19.23)	1 (3.85)	3.12
It can handle the call load	2 (7.69)	13 (50.00)	10 (38.46)	1 (3.85)	-	3.62
.It does not breakdown frequently	2 (7.69)	5 (19.23)	15 (57.69)	3 (11.54)	1 (3.85)	3.15
The computer display is good	10 (38.46)	7 (26.92)	5 (19.23)	4 (15.38)	-	3.88
The interface of keyboard & mouse is good	5 (19.23)	6 (23.08)	7 (26.92)	6 (23.08)	2 (7.69)	3.23
Headsets are comfortable and work well	1 (3.85)	6 (23.08)	8 (30.77)	9 (34.62)	2 (7.69)	2.81
The hardware is good for the work requirements	1 (3.85)	9 (34.62)	10 (38.46)	2 (7.69)	4 (15.38)	3.04

Note: Figures in parentheses are percentages to total

On similar lines, rating of available software has been given in Table 4.6. The View that software was up-to-date showed an average rating of 3.08, 3.27 for it being user friendly, 3.42 for good screen interface, 3.46 for easy handling of calls, 3.31 for no call dropout/mishandling, 3.42 for taking heavy call traffic, 3.65 for not frequent crashing, 3.54 for easy recording for call details and 3.27 for blocking irrelevant calls. Minimum average rating was given to voice quality and clarity. Overall rating for software to meet the requirements was 3.04, which again hints at partial satisfaction of FTAs.

**Table 4.6: Rating of Software used as per the perceptions of FTAs KCC, Punjab (N=26)**

Particulars	Strongly Agree	Agree	Partially Agree/ Disagree	Disagree	Strongly Disagree	Weighted Average
<b>Weightage</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	
The software is up-to-date	1 (3.85)	8 (30.77)	11 (42.31)	4 (15.38)	2 (7.69)	3.08
It is user friendly	-	11 (42.31)	11 (42.31)	4 (15.38)	-	3.27
The screen interface it shows is good & useful	3 (11.54)	10 (38.46)	9 (34.62)	3 (11.54)	1 (3.85)	3.42
Calls can be handled easily	1 (3.85)	13 (50.00)	9 (34.62)	3 (11.54)	-	3.46
The voice quality is good & clear	-	6 (23.08)	14 (53.85)	5 (19.23)	1 (3.85)	2.96
Calls do not get dropped, lost or mishandled by the software	2 (7.69)	9 (34.62)	11 (42.31)	3 (11.54)	1 (3.85)	3.31
The software can handle heavy call traffic	2 (7.69)	11 (42.31)	9 (34.62)	4 (15.38)	-	3.42
Software does not frequently crash	6 (23.08)	9 (34.62)	7 (26.92)	4 (15.38)	-	3.65
Caller details can be easily recorded and registered	6 (23.08)	8 (30.77)	7 (26.92)	4 (15.38)	1 (3.85)	3.54
Question details can be easily & quickly recorded	3 (11.54)	8 (30.77)	11 (42.31)	4 (15.38)	-	3.38
Repeated Irrelevant calls can be blocked by the software	3 (11.54)	10 (38.46)	4 (15.38)	9 (34.62)	-	3.27
The software meets the requirements	-	11 (42.31)	12 (46.15)	1 (3.85)	2 (7.69)	3.23

Note: Figures in parentheses are percentages to total

The response service to farmerø questions leads to a lot of dependence of FTAs on internet search i.e. various relevant portals and websites. So, internet connectivity of the centre was also analyzed in Table 4.7. All the FTAs agreed that slow internet speed will hinder the call handling and majority agreed that connectivity was important for call handling. Average rating about connectivity being fast at the centre was 3.46, 3.31 for retrieving and recording information and 3.35 for adequacy as per the requirement, indicating

scope for improvement. Lowest average rating 2.85 was for not frequent breakdowns in connectivity, showed that problem was there.

**Table 4.7: Internet Connectivity at KCC, Punjab as per the perceptions of FTAs**

(N=26)

Particulars	Strongly Agree	Agree	Partially Agree/ Disagree	Disagree	Strongly Disagree	Weighted Average
<b>Weightage</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	
Internet connectivity is very important for call handling process	22 (84.62)	2 (7.69)	1 (3.85)	1 (3.85)	-	4.73
A slow internet speed hinders the performance of call handling	26 (100.00)	-	-	-	-	5.00
Internet connectivity is fast enough for responding to calls	3 (11.54)	11 (42.31)	7 (26.92)	5 (19.23)	-	3.46
Internet connectivity is fast enough for retrieving & recording information	-	10 (38.46)	14 (53.85)	2 (7.69)	-	3.31
Internet connectivity does not frequently breakdown	-	7 (26.92)	10 (38.46)	7 (26.92)	2 (7.69)	2.85
Internet connectivity is adequate for the work	-	14 (53.85)	8 (30.77)	3 (11.54)	1 (3.85)	3.35

Note: Figures in parentheses are percentages to total

### 4.3 Sources of knowledge used by FTAs

FTAs depend on different sources of knowledge apart from their self knowledge to answer the farmers' queries. Frequent use of these sources has been given in Table 4.8. It was found that majority FTAs depend on self knowledge and extension published materials (3.96 each) for providing information. At second rank, it was internet search followed by knowledge gained in trainings (3.54), prepared excel sheets (3.46) and sources and material

from other government departments (3.12). Use of sources like other farmers, university experts/nodal officer or field surveys was given lower ranks by FTAs.

**Table 4.8: Frequency Usage of Knowledge Sources for Answering the Queries by FTAs, KCC, Punjab**

(N=26)

Particulars	Very Frequently	Frequently	Occasionally	Rarely	Never	Weighted Average
Weightage	5	4	3	2	1	
Self-Knowledge	7 (26.92)	13 (50.00)	6 (23.08)	-		4.04
Colleagues & Supervisor	-	12 (46.15)	9 (34.62)	5 (19.23)	-	3.27
Prepared Excel sheets & material	1 (3.85)	12 (46.15)	11 (42.31)	2 (7.69)	-	3.46
Internet search	4 (15.38)	12 (46.15)	7 (26.92)	3 (11.54)	-	3.65
Extension Booklets, books, papers	7 (26.92)	11 (42.31)	8 (30.77)	-	-	3.96
Government department sources/material	1 (3.85)	7 (26.92)	13 (50.00)	4 (15.38)	1 (3.85)	3.12
-						
Knowledge acquired in Training	-	14 (53.85)	12 (46.15)	-	-	3.54
University experts/Nodal officer knowledge	-	-	2 (7.69)	22 (84.62)	2 (7.69)	2.00
Information from other farmers	-	3 (11.54)	8 (30.77)	13 (50.00)	2 (7.69)	2.46
Field Inquiry	-	2 (7.69)	4 (15.38)	10 (38.46)	10 (38.46)	1.92

Note: Figures in parentheses are percentages to total

Quality rating of these information and knowledge sources being used by FTAs has been indicated in Table 4.9. As is clear, self knowledge was given highest rating i.e. excellent by majority followed by good. This was followed by knowledge acquired in trainings, guidance of university experts when sought, internet search, extension publications, help from colleagues/supervisor and prepared excel sheets. Information from other farmers and field inquiries were not rated high on the scale.

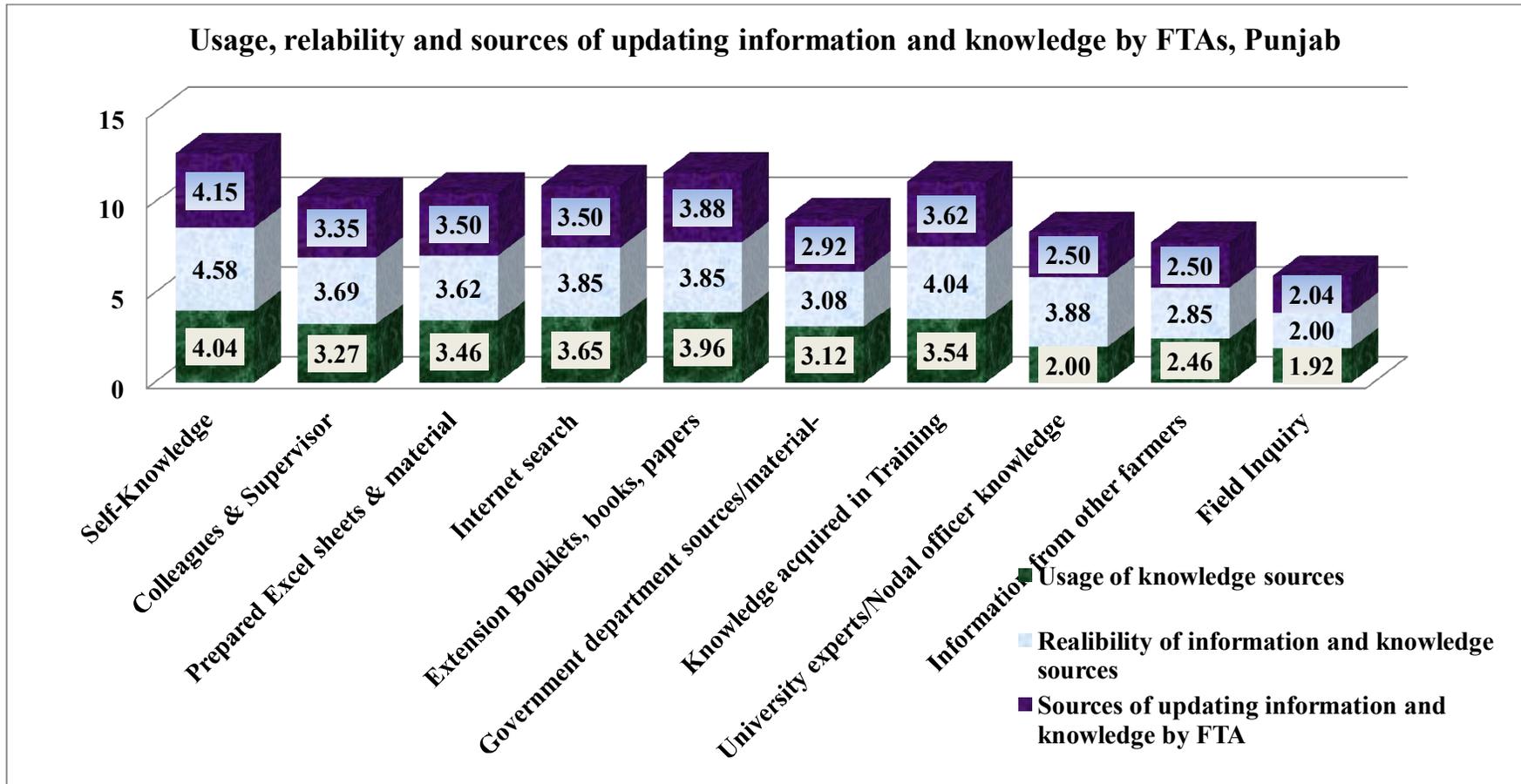


Figure-I

**Table 4.9: Ratings of information & knowledge sources as per the perceptions of FTAs KCC, Punjab**

(N=26)

Particulars	Excellent	Good	Satisfactory	Somewhat Poor	Very Poor	Weighted Average
Weightage	5	4	3	2	1	
Self-Knowledge	15 (57.69)	11 (42.31)	-	-	-	4.58
Colleagues & Supervisor	-	18 (69.23)	8 (30.77)	-	-	3.69
Prepared Excel sheets & material	4 (15.38)	9 (34.62)	12 (46.15)	1 (3.85)	-	3.62
Internet search	2 (7.69)	19 (73.08)	4 (15.38)	1 (3.85)	-	3.85
Extension Booklets, books, papers	5 (19.23)	12 (46.15)	9 (34.62)	-	-	3.85
Government department sources/material	-	10 (38.46)	9 (34.62)	6 (23.07)	1 (3.85)	3.08
Knowledge acquired in Training	7 (26.92)	13 (50.00)	6 (23.08)	-	-	4.04
University experts/Nodal officer knowledge	5 (19.23)	13 (50.00)	8 (30.77)	-	-	3.88
Information from other farmers	1 (3.85)	3 (11.54)	14 (53.85)	7 (26.92)	1 (3.85)	2.85
Field Inquiry	-	3 (11.54)	2 (7.69)	13 (50.00)	8 (30.77)	2.00

Note: Figures in parentheses are percentages to total

In ever changing scenario, FTAs also need to keep pace with new set of knowledge/information to guide the farming community in a better way. They were enquired about frequency of updating their sources of information. The results of Table 4.10 showed that most frequent updated source was self-knowledge, because from all other sources it adds to own storage. This was followed by updating of extension publications, trainings attended, prepared excel sheets and internet search. Rating was low for material of Government departments, knowledge of university experts, other farmers and field enquiries i.e. these were not updated frequently as per the FTAs.

Farmers' queries pertain to different aspects of agriculture and allied activities. These can be technical, market related, about Government schemes, price or weather related etc. All these aspects were discussed with FTAs.

**Table 4.10: Frequency of updating the information sources by FTAs, KCC, Punjab**

(N=26)

Particulars	Very Frequently	Frequently	Occasionally	Rarely	Never	Weighted Average
<b>Weightage</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	
Self-Knowledge	10 (30.46)	10 (30.46)	6 (23.08)	-	-	4.15
Colleagues & Supervisor	-	13 (50.00)	9 (34.62)	4 (15.38)	-	3.35
Prepared Excel sheets & material	-	14 (53.85)	11 (42.31)	1 (3.85)	-	3.50
Internet search	2 (7.69)	11 (42.31)	11 (42.31)	2 (7.69)	-	3.50
Extension Booklets, books, papers	2 (7.69)	20 (76.92)	3 (11.54)	1 (3.85)	-	3.88
Government department sources/material	-	7 (26.92)	11 (42.31)	7 (26.92)	1 (3.85)	2.92
Knowledge acquired in Training	4 (15.38)	8 (30.77)	14 (53.85)	-	-	3.62
University experts/Nodal officer knowledge	-	4 (15.38)	7 (26.93)	13 (50.00)	2 (7.69)	2.50
Information from other farmers	-	-	14 (53.85)	11 (42.31)	1 (3.85)	2.50
Field Inquiry	1 (3.85)	1 (3.85)	5 (19.23)	10 (38.46)	9 (34.62)	2.04

Note: Figures in parentheses are percentages to total

#### 4.4 Assessment about information provided on various aspects

Overall assessment about providing technical information has been given in Table 4.11. With an average rating of 3.96, it was shown that information was easily available followed by that it was reliable, farmers could easily understand and process the available information, farmers were satisfied with the provided information and information was up-to-date. On the whole, availability of sufficient and quality information was agreed upon by 14 FTAs and 10 partially agreed to it.

**Table 4.11: Overall Assessment of the Technical Information as per the perceptions of FTAs KCC, Punjab**

(N=26)

Particulars	Strongly Agree	Agree	Partially Agree/ Disagree	Disagree	Strongly Disagree	Weighted Average
<b>Weightage</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	
Information is easily available	5 (19.23)	15 (57.69)	6 (23.08)	-	-	3.96
Important and critical information required is easily available	3 (11.54)	14 (53.85)	6 (23.08)	3 (11.54)	-	3.65
The information is reliable	9 (34.62)	5 (19.23)	8 (30.77)	4 (15.38)	-	3.73
The information is up-to-date	5 (19.23)	6 (23.08)	10 (38.46)	4 (15.38)	1 (3.85)	3.38
Farmers can understand the information and process it easily	7 (26.92)	9 (34.62)	9 (34.62)	1 (3.85)	-	3.85
Farmers seem to be satisfied with the information provided	3 (11.54)	10 (38.46)	13 (50.00)	-	-	3.62
Overall there is sufficient & quality information available to answer farmer's questions	5 (19.23)	9 (34.62)	10 (38.46)	2 (7.69)	-	3.65

Note: Figures in parentheses are percentages to total

In Table 4.12, overall assessment of the information sources used for providing Government schemes related queries has been shown. Government brings in policy changes and new schemes for upliftment of agricultural sector from time to time. These schemes may pertain to availability of credit, changes in market charges, subsidies related to irrigation, dairy, farm machinery etc.

Majority FTAs agreed that information was available with average score of 3.69. However, there was partial agreement by majority of these that information was reliable, or up-to-date or easily comprehensible to farmers, or sufficient and quality information was being provided on this aspect. This highlighted a wider scope for improvement on providing information related to Government schemes.

**Table 4.12: Overall Assessment of Government schemes related information as per the perceptions of FTAs KCC, Punjab**

(N=26)

Particulars	Strongly Agree	Agree	Partially Agree/ Disagree	Disagree	Strongly Disagree	Weighted Average
Weightage	5	4	3	2	1	
Information is easily available	1 (3.85)	18 (69.23)	6 (23.08)	-	1 (3.85)	3.69
Important and critical information required is easily available	3 (11.54)	12 (46.45)	7 (26.92)	3 (11.54)	1 (3.85)	3.50
The information is reliable	3 (11.54)	6 (23.08)	13 (50.00)	2 (7.69)	2 (7.69)	3.23
The information is up-to-date	2 (7.69)	10 (38.46)	10 (38.46)	3 (11.54)	1 (3.85)	3.35
Farmers can understand the information and process it easily	8 (30.77)	2 (7.69)	13 (50.00)	2 (11.54)	1 (3.85)	3.54
Farmers seem to be satisfied with the information provided	-	16 (61.54)	8 (30.77)	1 (3.85)	1 (3.85)	3.50
Overall there is sufficient & quality information available to answer farmer's questions	-	10 (38.46)	13 (50.00)	3 (11.54)	-	3.27

Note: Figures in parentheses are percentages to total

Overall assessment of the information sources used for providing price and market related information has been provided in Table 4.13. Price and market related information helps in taking typical farm management decisions right from what to grow, from where to buy inputs to marketing decisions about buying and selling, where, when and how etc. Majority FTAs agreed that information was important and critical and was easily available. 11 FTAs agreed and two strongly agreed that this information was up-to-date, but average rating for reliability of information was 3.58 and for understanding of it on the part of farmers was 3.85. Majority of FTAs strongly agreed or agreed to the statement that farmers were satisfied with the information. However, average rating for sufficient and quality information pertaining to this aspect was 3.73.

**Table 4.13: Overall Assessment of the Price and Market related information as per the perceptions of FTAs KCC, Punjab**

(N=26)

Particulars	Strongly Agree	Agree	Partially Agree/ Disagree	Disagree	Strongly Disagree	Weighted Average
<b>Weightage</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	
Information is easily available	3 (11.54)	17 (65.38)	5 (19.23)	-	1 (3.85)	3.81
Important and critical information required is easily available	-	14 (53.85)	10 (38.40)	2 (7.69)	-	3.46
The information is reliable	4 (15.38)	9 (34.62)	12 (46.15)	-	1 (3.85)	3.58
-The information is up-to-date	2 (7.69)	11 (42.31)	9 (34.62)	4 (15.38)	-	3.42
Farmers can understand the information and process it easily	8 (30.77)	7 (26.92)	10 (38.46)	1 (3.85)	-	3.85
Farmers seem to be satisfied with the information provided	7 (26.92)	13 (50.00)	6 (23.08)	-	-	4.04
Overall there is sufficient & quality information available to answer farmer's questions	4 (15.38)	13 (50.00)	2 (7.69)	2 (7.69)	-	3.73

Note: Figures in parentheses are percentages to total

#### 4.5 Assessment of internet search undertaken by FTAs

As has been already discussed, FTAs depend a lot on internet search to answer the farmers' queries. This involves exploring various websites, portals etc. Kisan Knowledge Management System (KKMS) is Government operated web portal system & application software to record details of the registered farmer, his queries and answers provided to him. FTAs can access KKMS over the internet to find the answers. Available data in KKMS can help to identify and respond to the problems with solutions. The assessment about usage of this website has been shown in Table 4.14. KKMS was easy to use has been highlighted with an average rating of 4.62 and majority FTAs strongly agreed to it. They were also of the opinion that organization of information on system screens was clear. Eight FTAs strongly agreed and twelve agreed that changes could be easily undertaken when information was recorded. Majority also opined that it responds and does not crash while in use. The average score of KKMS being fast enough was 3.77, while for regular updating of information, it was

3.54. Overall 4 FTAs strongly agreed and eleven agreed that KKMS worked well, but ten FTAs partially agreed to it and average rating for the statement was 3.69.

**Table 4.14: Assessment of Kisan Knowledge Management System (KKMS) Website as per the perceptions of FTAs KCC, Punjab**

(N=26)

Particulars	Strongly Agree	Agree	Partially Agree/ Disagree	Disagree	Strongly Disagree	Weighted Average
<b>Weightage</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	
KKMS website is easy to use	18 (69.23)	6 (23.08)	2 (7.69)	-	-	4.62
The organization of information on the system screens is clear	10 (38.46)	14 (53.85)	2 (7.69)	-	-	4.31
KKMS website response is fast enough	4 (15.38)	15 (57.69)	4 (15.38)	3 (11.54)	-	3.77
Information on the website is regularly updated	5 (19.23)	13 (50.00)	3 (11.54)	1 (3.85)	4 (16.38)	3.54
KKMS website does not fail to respond or crash during use	9 (34.62)	9 (34.62)	1 (3.85)	6 (23.08)	1 (3.85)	3.73
FTA can make changes in the information after the information is recorded	8 (30.77)	12 (46.15)	2 (7.69)	3 (11.54)	1 (3.85)	3.88
Retrieving information from KKMS is easy	6 (23.08)	11 (42.31)	6 (23.08)	2 (7.69)	1 (3.85)	3.73
Overall the KKMS website works well	4 (15.38)	11 (42.31)	10 (38.46)	1 (3.85)	-	3.69

Note: Figures in parentheses are percentages to total

Similar assessment was done for Farmerø Portal Website and shown in Table 4.15. It is a centralized knowledge base created purely from the farmerø perspective to meet all their informational needs. Average rating about usage of website was 3.68 and for its easy to use was 3.73. Seventeen FTAs agreed and three strongly agreed that organization of information system on screen was clear. Majority FTAs were of the view that response from website was fast enough and it was very useful. However, about regular updating of information the

average score was 3.58 only. But five FTAs strongly agreed and twelve agreed that website responds and does not crash in use, six only partially agreed to it. On an average 3.62 rated that website was working well.

**Table 4.15: Assessment of Farmers Portal Website as per the perceptions of FTAs KCC, Punjab**

(N=26)

Particulars	Strongly Agree	Agree	Partially Agree/ Disagree	Disagree	Strongly Disagree	Weighted Average
<b>Weightage</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	
The website is frequently used	2 (7.69)	14 (53.85)	8 (30.77)	1 (3.85)	1 (3.85)	3.58
The website is easy to use	3 (11.54)	14 (53.85)	8 (30.77)	1 (3.85)	-	3.73
The organization of information on the system screens is clear	3 (11.54)	17 (65.38)	2 (7.69)	4 (15.38)	-	3.73
The website response is fast enough	6 (23.08)	11 (42.31)	5 (19.23)	2 (7.69)	2 (7.69)	3.65
The website is very useful	6 (23.08)	14 (53.82)	5 (19.23)	-	1 (3.85)	3.92
Information on the website is regularly updated	5 (19.23)	8 (30.77)	11 (42.31)	1 (3.85)	1 (3.85)	3.58
The website does not fail to respond or crash during use	5 (19.23)	12 (46.15)	6 (23.08)	2 (7.69)	1 (3.85)	3.69
Overall the website works well	3 (11.54)	15 (57.69)	4 (15.38)	3 (11.54)	1 (3.85)	3.62

Note: Figures in parentheses are percentages to total

M-Kisan Portal is another mode of delivery of services to the farmers started in 2013. It is an SMS portal between scientists, experts and officers to farmers. It enables all Central and State Government organizations in agriculture and allied sectors to give information and advisories to the farmers. Usage of this portal by FTAs has been assessed and depicted in Table 4.16. Average rating for its usage was 3.68, with 3 FTAs strongly agreeing and thirteen agreeing to it. The score for easy to use was 3.80, 3.84 for clear organization of information and 3.76 for good response. Majority FTAs found that registration of SMS was

easy, but six only partially agreed to it. 3.72 rated that list of available services was useful on the portal; however score for fast response was only 3.36 and updating of information only 3.44. Four FTAs responded strongly and fourteen agreed that website works well but five only partially agreed to it.

**Table 4.16: Assessment of M-Kisan Website as per the perceptions of FTAs KCC, Punjab**

(N=25)

Particulars	Strongly Agree	Agree	Partially Agree/Disagree	Disagree	Strongly Disagree	Weighted Average
Weightage	5	4	3	2	1	
The website is frequently used	3 (12.00)	13 (52.00)	8 (32.00)	-	1 (4.00)	3.68
The website is easy to use	6 (24.00)	10 (40.00)	7 (28.00)	2 (8.00)	-	3.80
The organization of information on the system screens is clear	8 (32.00)	8 (32.00)	7 (28.00)	1 (4.00)	1 (4.00)	3.84
Registration of SMS is easy	2 (8.00)	15 (60.00)	6 (24.00)	2 (8.00)	-	3.68
List of services available are useful	7 (28.00)	5 (20.00)	12 (48.00)	1 (4.00)	-	3.72
The website response is fast enough	3 (12.00)	7 (28.00)	12 (48.00)	2 (8.00)	1 (4.00)	3.36
Information on the website is regularly updated	3 (12.00)	9 (36.00)	10 (40.00)	2 (8.00)	1 (4.00)	3.44
The website does not fail to respond or crash during use	6 (24.00)	10 (40.00)	7 (28.00)	1 (4.00)	1 (4.00)	3.76
Overall the website works well	4 (16.00)	14 (56.00)	5 (20.00)	1 (4.00)	1 (4.00)	3.76

**Note: Figures in parentheses are percentages to total One FTA was not using this portal.**

#### 4.6 Call Efficiency as per the perceptions of FTAs

Kisan Call Centres are based on providing extension services through communication between FTAs and farmers with the help of mobile or landline connection. So assessment of call efficiency was necessary in the system. This has been shown in Table 4.17. Majority

FTAs with an average score of 3.92 were satisfied with voice reception over the phone and found it clear. The average score for call drops was 3.54. Seventeen FTAs agreed that queries of farmers were easy to understand but seven partially agreed to it. The score for farmers understanding the dialect was 3.50 and eleven FTAs partially agreed to it, indicating that some difficulty could be there. It was also found that farmers face difficulty in understanding scientific/technical terms with average score of 3.08 only. FTAs do get irrelevant calls and face abusive language was indicated by low score for the queries. Overall good call efficiency was rated as 3.50, leaving scope for improvement.

**Table 4.17: Assessing Call Efficiency as per the perceptions of FTAs KCC, Punjab (N=26)**

Particulars	Strongly Agree	Agree	Partially Agree/Disagree	Disagree	Strongly Disagree	Weighted Average
<b>Weightage</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	
Voice reception over the phone is clear	6 (23.08)	13 (50.00)	6 (23.08)	1 (3.85)	-	3.92
Call drops are very less	3 (11.54)	11 (42.31)	10 (38.46)	1 (3.85)	1 (3.85)	3.54
It is easy to understand the queries from farmers	-	17 (65.38)	7 (26.92)	2 (7.69)	-	3.58
Farmers do not face difficulty in understanding your dialect	2 (7.69)	11 (42.31)	11 (42.31)	2 (7.69)	-	3.50
Farmers does not face difficulty in understanding scientific/technical words	1 (3.85)	6 (23.08)	13 (50.30)	6 (23.08)	-	3.08
FTA generally do not get irrelevant calls	4 (15.38)	3 (11.54)	10 (38.46)	6 (23.08)	3 (11.54)	2.96
FTA generally do not face abusive language	1 (3.85)	7 (26.92)	11 (42.31)	4 (15.38)	3 (11.54)	2.96
Overall, call efficiency is good	2 (7.69)	11 (42.31)	11 (42.32)	2 (7.69)	-	3.50

Note: Figures in parentheses are percentages to total

Further, the analysis of call answering efficiency and effectiveness was undertaken and shown in Table 4.18. Majority FTAs, with average rating of 4.04 were of the opinion

that they were able to answer and handle the questions on their own. The unsolved questions were taken by colleagues was strongly agreed by four FTAs, agreed by ten FTAs and ten only partially agreed to it. Further, if not solved by colleagues, were answered by supervisor showed a score of 3.54. The average score for call escalation to level 2 was found to be 3.31 indicating low rate of escalation. However, escalated calls were well answered by the experts did not show a high score. The response to speedily attending the calls at level 2 was also not encouraging with a score of 3.15 only. The call escalation to level 3 was not reported by any of FTAs. The average score for overall call answering efficiency system was just 3.08 with only twelve FTAs agreeing to the statement and five partially agreeing to it.

**Table 4.18: Assessing the call answering efficiency & effectiveness as per the perceptions of FTAs KCC, Punjab**

(N=26)

Particulars	Strongly Agree	Agree	Partially Agree/ Disagree	Disagree	Strongly Disagree	Weighted Average
<b>Weightage</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	
Generally, FTA able to answer and handle the questions	8 (30.77)	14 (53.85)	1 (3.85)	3 (11.54)	-	4.04
Queries not solved by FTA are well answered by colleagues	4 (15.38)	10 (38.46)	10 (38.46)	2 (7.69)	-	3.62
Queries not solved by colleagues are well answered by Supervisors	6 (23.08)	7 (26.92)	8 (30.77)	5 (19.23)	-	3.54
Queries not solved by supervisors are easily escalated to level 2	5 (19.23)	7 (26.92)	9 (34.62)	1 (3.85)	4 (15.38)	3.31
Queries escalated to level 2 are well attended by State Agriculture Experts	-	11 (42.31)	11 (42.31)	4 (15.38)	-	3.27
Level 2 experts speedily attend to the queries	3 (11.54)	9 (34.62)	6 (23.08)	5 (19.23)	3 (11.54)	3.15
Queries not solved in level 2 are escalated to level 3	-	-	-	14 (53.85)	12 (46.15)	1.54
Queries escalated to level 3 are well attended by Nodal officer	-	-	-	14 (53.85)	12 (46.15)	1.54
Nodal officers respond to farmers by call/SMS/post/email	-	-	13 (50.00)	8 (30.77)	5 (19.23)	2.31
Overall the call answering system is adequate		12 (46.15)	5 (19.23)	8 (30.77)	1 (3.85)	3.08

Note: Figures in parentheses are percentages to total

In the same process, overall assessment of call handling by FTAs was done and presented in Table 4.19. An average score of 3.92 was given to the fact that a large number

of calls were received every day at the KCC, indicating heavy call traffic. Majority FTAs were of the opinion that all calls could be handled at the KCC itself. 3.65 rated that call handling systems/procedures at the centre were good. A high score of 4.38 was given that farmer and FTA communicate easily and understand each other. Majority FTAs observed that overall farmers were satisfied with call handling and with speed of their response to the questions.

**Table 4.19: Overall Assessment of Call Handling as per the perceptions of FTAs KCC, Punjab**

(N=26)

Particulars	Strongly Agree	Agree	Partially Agree/ Disagree	Disagree	Strongly Disagree	Weighted Average
<b>Weightage</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	
A large number of calls are received every day at the KCC	5 (19.23)	14 (53.85)	7 (26.92)	-	-	3.92
All calls can be handled efficiently at the KCC	7 (26.92)	17 (65.38)	2 (7.69)	-	-	4.19
Call handling systems/procedures are good	3 (11.54)	12 (46.15)	10 (38.46)	1 (3.85)	-	3.65
The farmer & FTA can understand each other & communicate easily	10 (38.46)	16 (61.54)	-	-	-	4.38
Overall the farmers seem satisfied with the handling & speed of response	7 (26.92)	17 (65.38)	2 (7.69)	-	-	4.19

Note: Figures in parentheses are percentages to total

#### 4.7 Infrastructure Rating as per the perceptions of FTAs

The hardware, software and other equipments as well as facilities provided may have positive or negative impact on the efficiency of FTAs. These may add or hinder the productivity of FTAs depending on their condition, speed, access etc. So, infrastructure rating was taken from FTAs and the results have been shown in Table 4.20. A high rating of 4.08 was given to adequacy of office space by FTAs. The score for sufficiency of activity area for calling was 3.92, 3.69 for well separated activity area and 3.81 for no disturbance in call answering. This indicated sufficient private space for FTAs. The opinion was divided

about sufficient lighting in the office space with an average score of 3.46, for adequate ventilation it was 3.62, sufficient monitoring through video surveillance 3.69, 3.77 for low noise effect from other departments and 3.46 for adequate supporting facilities and utilities. The low score for power cuts hinted at the frequent problem. Three FTAs strongly agreed and eleven agreed that overall working environment was good, but eleven only partially agreed to it.

**Table 4.20: Infrastructure rating as per the perceptions of FTAs KCC, Punjab (N=26)**

Particulars	Strongly Agree	Agree	Partially Agree/ Disagree	Disagree	Strongly Disagree	Weighted Average
<b>Weightage</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	
The office space is adequate	8 (30.77)	13 (50.00)	4 (15.38)	1 (3.85)	-	4.08
The activity area for calling is sufficient	7 (26.92)	13 (50.00)	4 (15.38)	1 (3.85)	1	3.92
The activity area is well separated	5 (19.23)	12 (46.15)	7 (26.92)	-	2	3.69
FTA does not get disturbed while answering of calls	6 (23.08)	11 (42.31)	7 (26.92)	2 (7.69)	-	3.81
Lighting is sufficient	8 (30.77)	4 (15.38)	8 (30.77)	4 (15.38)	2	3.46
There is adequate ventilation	4 (15.38)	12 (46.15)	6 (23.08)	4 (15.38)	-	3.62
Video surveillance is sufficient for monitoring	5 (19.23)	10 (38.46)	10 (30.46)	-	1	3.69
Power cuts are not frequent	-	10 (38.46)	9 (34.62)	4 (15.38)	3	3.00
Other departments noise does not hinder your answering efficiency	3 (11.54)	16 (61.54)	6 (23.08)	-	1	3.77
Supporting facilities & utilities are adequate	1 (3.85)	13 (50.00)	9 (34.62)	3 (11.54)	-	3.46
Overall there is good working environment	3 (11.54)	11 (42.31)	11 (42.31)	1 (3.85)	-	3.62

Note: Figures in parentheses are percentages to total

Overall assessment of hardware, software and infrastructure as undertaken by FTAs has been given in Table 4.21. Average score was 3.58 for the good performance of hardware

and that it was helpful. For software it was low at 3.35, highlighting the scope of improvement. Good internet connectivity also got a score of 3.58 and good infrastructure and service support showed an average rating of 3.65. These ratings pointed towards need for reforming the available systems to increase the efficiency of centre.

**Table 4.21: Overall Assessment of Hardware, Software & Infrastructure as per the perceptions of FTAs KCC, Punjab**

(N=26)

Particulars	Strongly Agree	Agree	Partially Agree/ Disagree	Disagree	Strongly Disagree	Weighted Average
<b>Weightage</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	
The performance of the hardware used is good & it is helpful	-	15 (57.69)	11 (42.31)	-	-	3.58
The performance of the software used is good & it is helpful	1 (3.85)	11 (42.31)	10 (38.46)	4 (15.38)	-	3.35
The performance of the internet connectivity is good	2 (7.69)	14 (53.85)	7 (26.92)	3 (11.54)	-	3.58
The infrastructure & service support is good	3 (11.54)	12 (46.15)	10 (38.46)	1 (3.85)	-	3.65

Note: Figures in parentheses are percentages to total

#### 4.8 Self Assessment of FTAs

After analyzing various aspects of the KCC under study by FTAs, they were asked to self assess their performance. The results have been shown in Table 4.22. An average score of 4.54 was given by FTAs to their quick response to calls. Majority were of the opinion that they were able to manage the calls efficiently, but nine FTAs partially agreed to it. Again a high score of 4.23 was given to their sufficiency of knowledge and capability to answer the questions. Majority thrust upon the fact that they were able to answer the questions by themselves, but three FTAs partially agreed to it. An average score of 4.23 was allocated to their ability to quickly accessing the database/information through internet. 4.12 was the average score regarding taking help of colleagues to answer the questions and 3.85 for escalating calls to higher levels. Twenty FTAs strongly agreed or agreed that they were capable of answering the questions satisfactorily. Majority were of the opinion that they were disciplined regarding attendance and punctuality. The score given to motivation was 4.08, however centre in-charge had earlier found them less motivated. Regarding their initiative to improve and innovate towards better performance majority of FTAs showed a

good response. The average rating about their training was 4.0 as seven FTAs partially agreed to it. About overall satisfaction with their performance, the average rating was 4.0. Here, four FTAs partially agreed and two disagreed with the statement.

**Table 4.22: Self- Assessment of the FTAs, KCC, Punjab**

(N=26)

Particulars	Strongly Agree	Agree	Partially Agree/ Disagree	Disagree	Strongly Disagree	Weighted Average
<b>Weightage</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	
Quick in responding to calls	14 (53.85)	12 (46.15)	-	-	-	4.54
Able to manage the calls efficiently.	11 (42.31)	6 (23.08)	9 (34.62)	-	-	4.08
Have sufficient knowledge & capability to answer questions	9 (34.62)	14 (53.85)	3 (11.54)	-	-	4.23
Generally able to answer the questions by yourself	15 (57.69)	8 (30.77)	3 (11.54)	-	-	4.46
Able to quickly access the database/information to answer questions	10 (38.46)	14 (53.85)	-	2 (7.69)	-	4.23
Can take the help of colleagues to answer questions	8 (30.77)	13 (50.00)	5 (19.23)	-	-	4.12
Can escalate calls to higher levels to answer questions	5 (19.23)	12 (46.15)	9 (34.62)	-	-	3.85
Able to satisfactorily find answers for the farmer's questions	9 (34.62)	11 (42.31)	6 (23.08)	-	-	4.12
Show good discipline, attendance & punctuality	8 (30.77)	11 (42.31)	6 (23.08)	1 (3.85)	-	4.00
Well motivated	11 (42.31)	10 (30.46)	1 (3.85)	4 (11.58)	-	4.08
Good initiative to improve, innovate and perform better	9 (34.62)	14 (53.85)	3 (11.54)	-	-	4.23
Well trained	7 (26.92)	12 (46.15)	7 (26.92)	-	-	4.00
Overall satisfied with the performance	8 (30.77)	12 (46.15)	4 (15.38)	2 (7.69)	-	4.00

Note: Figures in parentheses are percentages to total

#### 4.9 Assessment of trainings undertaken by FTAs

It has been seen that majority FTAs were fresh graduates, having no past work experience. So, these were imparted trainings mainly carried out at Punjab Agricultural University, Ludhiana during rabi and kharif workshops. These trainings were aimed at

updating their knowledge to keep them aware of latest in the field of agriculture. So, FTAs were asked to assess the usefulness of training programmes and their responses have been given in Table 4.23.

**Table 4.23: Overall assessment of usefulness of training programmes as per the perceptions of FTAs KCC, Punjab**

(N=26)						
Particulars	Strongly Agree	Agree	Partially Agree/ Disagree	Disagree	Strongly Disagree	Weighted Average
Weightage	5	4	3	2	1	
It helps in understanding call handling procedure of the KCC	10 (38.46)	11 (42.31)	3 (11.54)	2 (7.69)	-	4.12
It helps in operating of the hardware	6 (23.08)	7 (26.92)	5 (19.23)	6 (23.08)	2 (7.69)	3.35
It helps in operating of the software	7 (26.92)	7 (26.92)	4 (15.38)	5 (19.23)	3 (11.54)	3.38
It helps in understanding questions of farmer	4 (15.38)	12 (46.15)	9 (34.62)	1 (3.85)	-	3.73
It helps in how to handle the questions of farmer	8 (30.77)	8 (30.77)	10 (38.46)	-	-	3.92
It helps in getting the necessary knowledge	7 (26.92)	13 (50.00)	5 (19.23)	1 (3.85)	-	4.00
It helps in updating knowledge	5 (19.23)	15 (57.69)	5 (19.23)	-	1 (3.85)	3.88
It helps in getting knowledge of Government schemes	1 (3.85)	15 (57.69)	4 (15.38)	5 (19.23)	1 (3.85)	3.38
More & better training is required	6 (23.08)	14 (53.85)	5 (19.23)	1 (3.85)	-	3.96
Training should be regularly given	4 (11.38)	19 (73.08)	1 (3.85)	1 (3.85)	1 (3.85)	3.92
Overall the available training is useful & sufficient	3 (11.54)	13 (50.00)	9 (34.62)	-	1 (3.85)	3.65

Note: Figures in parentheses are percentages to total

The acquired knowledge at trainings attended at PAU, Ludhiana were of help to better understand the query of farmer, guide them to handle the question, gives required knowledge to answer it and sometimes helps in getting knowledge of Government schemes. Majority

were of the opinion that they need more and better training on regular basis. The average rating of available training was 3.65, leaving scope for its usefulness as well as sufficiency.

#### **4.10 Assessment of provided information as per the perceptions of FTAs**

The job profile of FTAs is to provide up-to-date, regular information to the farmers. So, their assessment of provided information to the farmers was undertaken and shown in Table 4.24. The average score of available knowledge, information and data-base was 3.50, showing moderate level of satisfaction on part of FTAs. It was 3.46 for adequate and up-to-date answers being provided for technical questions, 3.38 for price and market related queries, 4.23 on weather and general questions, but only 3.19 for government schemes related questions. Majority felt that overall the farmers seem satisfied with the responses given by them. The analysis pointed towards gaps in information regarding government schemes and price or market related queries.

#### **4.11 Overall assessment of KCC as per the perceptions of FTAs**

After undertaking assessment of FTAs about various aspects of their working, infrastructure etc., their overall assessment of Kisan Call Centre has been shown in Table 4.25. The average rating about performance of KCC was 3.77, with 20 FTAs rated it as good and remaining six as satisfactory. Regarding their own performance/contribution at KCC, the score was 4.0. Their assessment about systems and policies guiding the working of KCC scored 3.31, indicating gaps and some problem areas, as discussed above. The usefulness of KCC to the farmers and the state's agriculture was scored at 3.77 on an average. Here, five FTAs rated it excellent, ten as good and eleven just satisfactory. When enquired about continuation of Kisan Call Centre in future, the average score was 4.15. Seven FTAs strongly agreed to the statement, sixteen agreed to it and three partially agreed that scheme should be continued.

**Table 4.24: Overall assessment of information provided as per the perceptions of FTAs KCC, Punjab**

(N=26)

Particulars	Strongly Agree	Agree	Partially Agree/ Disagree	Disagree	Strongly Disagree	Weighted Average
<b>Weightage</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	
The knowledge, information and data-base available with you is adequate	4 (15.38)	8 (30.77)	11 (42.31)	3 (11.54)	-	3.50
Adequate & up-to-date answers are provided on technical questions	2 (7.69)	10 (38.46)	12 (46.15)	2 (7.69)	-	3.46
Adequate & up-to-date answers are provided on Government schemes related questions	4 (15.38)	8 (30.77)	4 (15.38)	9 (34.62)	1 (3.85)	3.19
Adequate & up-to-date answers are provided on price & market related questions	2 (7.69)	12 (46.15)	8 (30.77)	2 (7.69)	2 (7.69)	3.38
Adequate & up-to-date answers are provided on weather & general questions	10 (38.46)	12 (46.15)	4 (15.38)	-	-	4.23
Overall the farmers seem satisfied with the information provided	5 (19.23)	17 (65.38)	3 (11.54)	1 (3.85)	-	4.00

Note: Figures in parentheses are percentages to total

**Table 4.25: Overall assessment of Kisan Call Centre as per the perceptions of FTAs KCC, Punjab**

<b>(N=26)</b>						
<b>Particulars</b>	<b>Excellent</b>	<b>Good</b>	<b>Satisfactory</b>	<b>Somewhat Poor</b>	<b>Very Poor</b>	<b>Weighted Average</b>
<b>Weightage</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	
Overall assessment of the performance of the Kisan Call Centre	-	20 (76.92)	6 (23.08)	-	-	3.77
Overall assessment of your own performance/contribution at the Kisan Call Centre	4 (15.38)	18 (69.23)	4 (15.38)	-	-	4.00
Overall assessment of the systems & policies under which the Kisan Call Centre is working	2 (7.69)	7 (26.92)	14 (53.85)	3 (11.54)	-	3.31
Overall assessment about the usefulness of the Kisan Call Centre to the farmers & the state's agriculture	5 (19.23)	10 (38.46)	11 (42.31)	-	-	3.77
	<b>Strongly Agree</b>	<b>Agree</b>	<b>Partially Agree/Disagree</b>	<b>Disagree</b>	<b>Strongly Disagree</b>	<b>Weighted Average</b>
<b>Weightage</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	
Overall opinion whether the Kisan Call Centre Scheme should be continued	7 (26.92)	16 (61.54)	3 (11.54)	-	-	4.15

Note: Figures in parentheses are percentages to total

## **CHAPTER-V**

### **RESULTS OF FARMERS' SAMPLE SURVEY**

Transformation of agriculture happened in Punjab in wake of Green Revolution since mid 1960s. This has led not only to increasing production and productivity of cereals crops, but has increased the availability of options to the farmers specifically in terms of resource-use. Agriculture has become input-intensive, more so capital intensive, due to increased use of purchased resources. But with rising inputs cost and shrinking profit margins during last two decades, stress is being laid on judicious use of resources, be it land, labour, capital or farmers own organisational capability. So, information pertaining to all aspects required to make correct decisions on various critical matters has become vital. With rapid development and scientific progress, the knowledge base of agriculture has expanded tremendously, making decision making all the more complex and difficult. Systems to provide best information and knowledge are thus, extremely crucial not only for the farmers, but also for the agricultural sector and economy as a whole. The use of ICT is a new way out for the farming community. Kisan Call Centre (KCC) initiative launched by Government of India is a step in this direction.

For the purpose of present study, a sample of 100 KCC user farmers was randomly selected from three districts of the state. These were personally interviewed to get their feedback about the experience of dealing with KCC. Along with this, a control group of twenty non-KCC users was selected for the study to compare their access to information. The analysis of KCC user and non- user farmers has been discussed as under.

#### **5.1 Comparative profile of KCC users and non-users**

Education is considered as a tool to make logical assessment of a situation and then taking right decision, besides making a person more aware about latest trends in his field. Though, it is not a necessary condition, but a strong parameter of knowledge. Education profile of sampled farmers has been shown in Table 5.1. It was found that only 2 per cent of sampled KCC users were illiterate, twelve had acquired education up to primary, 71 per cent have passed higher secondary, 12 per cent graduates and only 3 per cent of sampled farmers were postgraduates. It showed that literacy status of KCC users was good with 85 per cent of them being secondary educated or above.

On the other hand, twenty per cent of non users were illiterate, 40 per cent of these have attained education up to primary, 35 per cent up to higher secondary and 5 per cent have attended college. None of the non-user was found to be postgraduate. Thus, education profile of the KCC users was found to be better than non-KCC user farmers.

**Table 5.1: Education profile of sampled farmers, (KCC users/non-users)****(Per cent)**

Education/Percent (%)	Users	Non-users
Post- Graduation	3	-
College	12	5
Higher Secondary	71	35
Primary	12	40
Illiterate	2	20
Total	100	100

Caste is a dominant factor in rural economy of the state and affects decisions related to many aspects. But in the survey undertaken 100 per cent of user as well as non-user sampled farmers were from general category belonging to Jat sikh community (Table 5.2).

**Table 5.2: Caste profile of farmer (KCC users/non-users) sample****(Per cent)**

Caste	Users	Non-users
General	100	100
OBC	-	-
ST	-	-
SC	-	-
Total	100	100

Age can be a vital determinant in use of ICT tools. Age profile of sampled users showed, it was not a hindering factor while availing the services of KCC. The spread out was good over all the age groups, except in 60- 69 years, where it was 4 per cent. Overall highest proportion of users was between 40 up to 49 years, followed by 50 up to 59 years, 30 up to 40 years and 18 up to 29 years respectively (Table 5.3). Perusal of Table showed a similar pattern with highest proportion of non-KCC users was in the age group of 30-39 years, followed by 30 per cent in 40-49 years, 15 per cent in 50-59 years and 10 per cent were in the youngest group of 18-29 years. Only 5 per cent of non-users were 70 years and above.

**Table 5.3: Age Profile Sample Farmers (KCC Users/non-users)**

Age Group	Users		Non-users	
	Number	Per cent	Number	Per cent
18-29	18	18	2	10
30-39	20	20	8	40
40-49	30	30	6	30
50-59	28	28	3	15
60-69	4	4	1	5
70 and Above	-	-	-	-
Total	100	100	20	100

Thus, other factors like lack of awareness, access to other sources of information could be the reason for not availing the services of KCC, rather than the bearing of education or age for this control group.

### **5.1.1 Sources of Information**

Knowledge can be sought from variety of sources, but some are used to a large extent and some less, depending on the level of awareness about the source. Table 5.4 showed that sampled KCC user farmers in Punjab were aware about fellow farmers, input dealers, cooperative societies, Agricultural University, Kisan Melas, agricultural experts and KCC (all were KCC users). The awareness about input companies, extension workers and farmers' meetings was somewhat less. However, frequency of use was highest for KCC, followed by fellow farmers with a score of 2.99, input companies (used by 15 %t of the farmers), Kisan Melas visited by 74 per cent and farmers' meets attended by 39 per cent.

The analysis of sampled non-KCC users revealed that though 35 per cent of these were aware about KCC service, but they were not availing it. 100 per cent of these were aware about fellow farmers, input dealers, cooperative societies, local markets, Agricultural University, Kisan Melas and agricultural experts of various government departments, but average frequency usage was highest for fellow farmers i.e.3.45, followed by Kisan Melas at 2.30. 30 per cent of these farmers were seeking advice from input dealers, though the frequency use was low. 70 per cent of sampled non-KCC users were aware about KVKs, but only 20 per cent were availing the services, with 5 per cent on frequent basis. On the other hand, 20 per cent of farmers were availing the facilities provided by Agricultural University, out of these 10 per cent frequently and other 10 per cent occasionally. The frequency usage of Kisan meetings was low at 1.50 and of agricultural experts even lower at 1.30. None of these farmers were availing services of any other call centre operating in the state.

When gone through other sources of information i.e. media and devices the awareness level was 100 per cent about newspapers, radio, television, mobile phones and computer, but low for internet, websites and mobile apps. Only one farmer was aware about agricultural related websites like KKMS, Farmers Portal and M-Kisan Portal and has been rarely using it. The most frequently used device was mobile phone to seek information, followed by television. Print media like newspapers/magazines were used by 30 per cent of the sampled farmers (Table 5.5). Thus, it was clear that, though the sample was of KCC users, but still the importance of traditional sources has not been lost and sources like fellow farmers, farmers' meetings, kisan melas are used as sources of information for farming decisions. Amongst

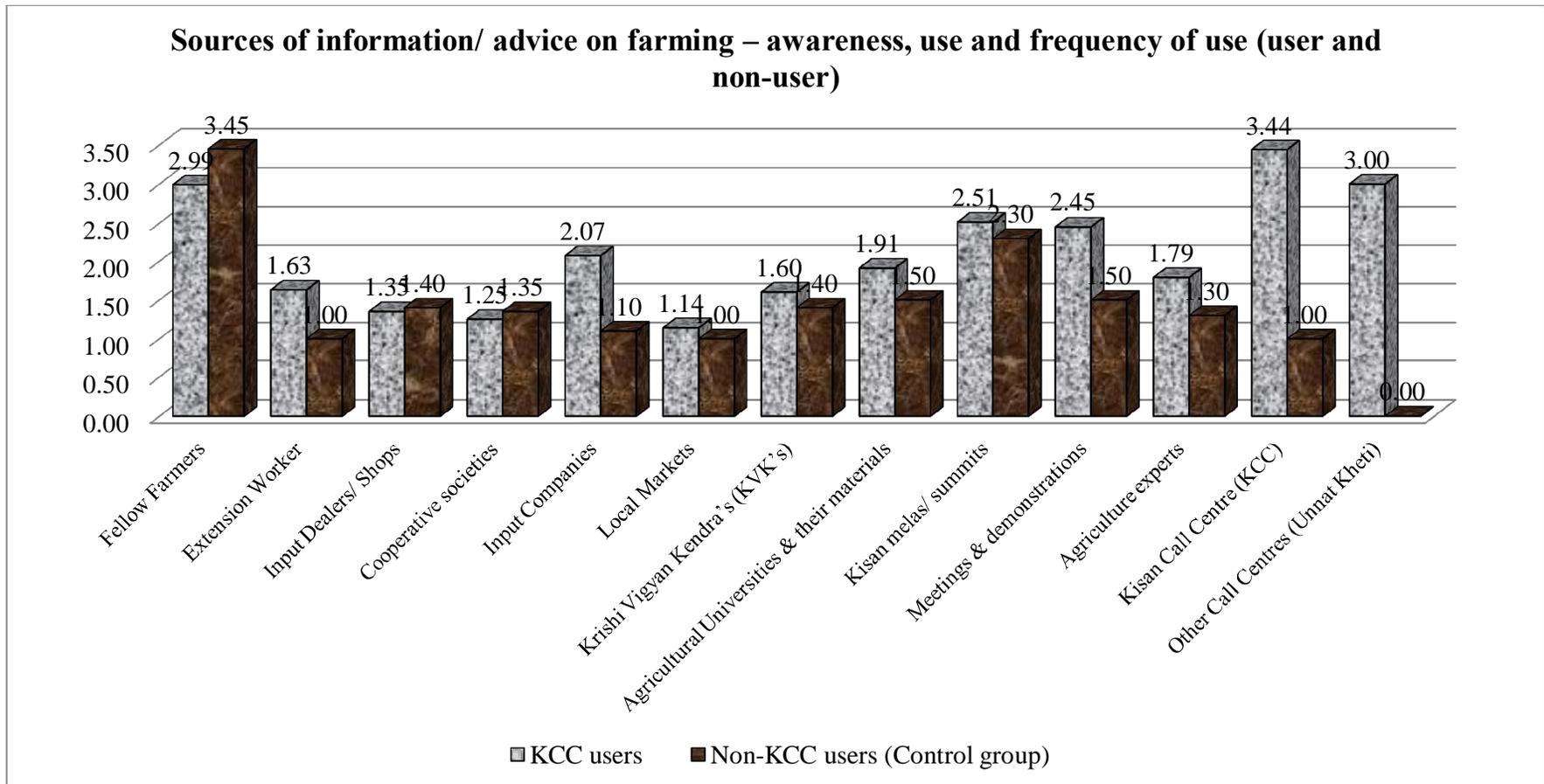
modern devices, mobile phone was most frequently used to get information. The awareness about agriculture related websites/portals was almost lacking among the sampled KCC users.

The communication media and devices used by non-KCC user farmers shown in the same Table revealed that all of these were aware about sources of information like print media i.e. news papers/magazines, radio, television, mobile phones and computers, but frequently usage of mobile phones was highest at 3.75 with all of these using it to seek information about farming, followed by television. 45 per cent of non-KCC users were using newspapers/magazines but frequency of use was low. 50 per cent of the sampled farmers were found to be aware about internet and websites but none of these were using it for farming information. Mobile apps also seem to be a less popular source, as 35 per cent of the sample was aware about it, but was only occasionally used by 5 per cent of these. None of the sampled farmers were aware about agricultural related websites launched by GOI like KKMS, Farmers Portal and M-Kisan Portal.

So, it was found that both the groups were relying on traditional sources of information except for the user group availing services of KCC. Amongst modern gadgets, mobile phone was most frequently used by both the groups to seek information.

**Table 5.4: Sources of information/ advice on farming – awareness, use and frequency of use (user and non-user)– Percent**

Sources	Aware	Used	Very Frequently	Frequently	Occasionally	Rarely	Never	Weighted Average
Weightage	-	-	5	4	3	2	1	-
<b>KCC users</b>								
Fellow Farmers	100	87	-	29	54	4	13	2.99
Extension Worker	67	4	-	1	3	-	96	1.63
Input Dealers/ Shops	100	26	-	2	5	19	74	1.35
Cooperative societies	100	17	-	-	8	9	83	1.25
Input Companies	59	15	-	-	7	8	85	2.07
Local Markets	100	14	-	-	-	14	86	1.14
Krishi Vigyan Kendraø (KVKø)	86	22	-	3	10	9	78	1.60
Agricultural Universities & their materials	100	41	-	14	22	5	59	1.91
Kisan melas/ summits	100	74	-	26	28	20	26	2.51
Meetings & demonstrations	69	39	-	9	12	18	61	2.45
Agriculture experts	100	37	-	16	10	11	63	1.79
Kisan Call Centre (KCC)	100	100	-	49	46	5	-	3.44
Other Call Centres (Unnat Kheti)	1	1	-	-	1	-	99	3.00
<b>Non-KCC users (Control group)</b>								
Fellow Farmers	100	100	-	45	55	-	-	3.45
Extension Worker	40	0	-	-	-	-	100	1.00
Input Dealers/ Shops	100	30	-	-	10	20	70	1.40
Cooperative societies	100	20	-	-	15	5	80	1.35
Input Companies	40	5	-	-	5	-	95	1.10
Local Markets	100	-	-	-	-	-	100	1.00
Krishi Vigyan Kendraø (KVKø)	70	20	-	5	10	5	80	1.40
Agricultural Universities & their materials	100	20	-	10	10	-	80	1.50
Kisan melas/ summits	100	65	-	15	35	15	35	2.30
Meetings & demonstrations	50	25	-	10	5	10	75	1.50
Agriculture experts	100	15	-	5	5	5	85	1.30
Kisan Call Centre (KCC)	35	-	-	-	-	-	100	1.00
Other Call Centres (Unnat Kheti)	-	-	-	-	-	-	-	0.00



**Figure-II**

**Table 5.5: Communication media and devices used to source information Awareness and use frequency (user and non-user) – Percent**

Sources	Aware	Used	Very Frequently	Frequently	Occasionally	Rarely	Never	Weighted Average
Weightage	-	-	5	4	3	2	1	-
<b>KCC users</b>								
Newspapers/magazines	100	30	-	6	15	9	70	1.57
Radio	100	3	-	-	--	3	97	1.03
TV	100	76	-	5	44	27	24	2.30
Mobile phone	100	100	-	88	12	-	-	3.88
Mobile Apps	10	10	-	40	40	20	-	1.22
Computer	100	12	-	2	7	3	88	1.23
Internet & websites	74	27	-	6	20	1	73	2.15
Kisan Knowledge Management System (KKMS)	1	1	-	-	-	1	99	2.00
Farmer Portal	1	1	-	-	-	1	99	2.00
M-Kisan Portal (Mobile/SMS Service)	1	1	-	-	-	1	99	2.00
<b>Non-KCC users (Control group)</b>								
Newspapers/magazines	100	45	-	5	25	15	-	1.25
Radio	100	-	-	-	-	-	-	0.00
TV	100	70	-	-	60	10	30	2.30
Mobile phone	100	100	-	75	25	-	-	3.75
Mobile Apps	35	5	-	-	5	-	95	1.10
Computer	100	10	-	-	10	-	90	1.20
Internet & websites	50	-	-	-	-	-	100	1.00
Kisan Knowledge Management System (KKMS)	-	-	-	-	-	-	-	-
Farmer Portal	-	-	-	-	-	-	-	-
M-Kisan Portal (Mobile/SMS Service)	-	-	-	-	-	-	-	-

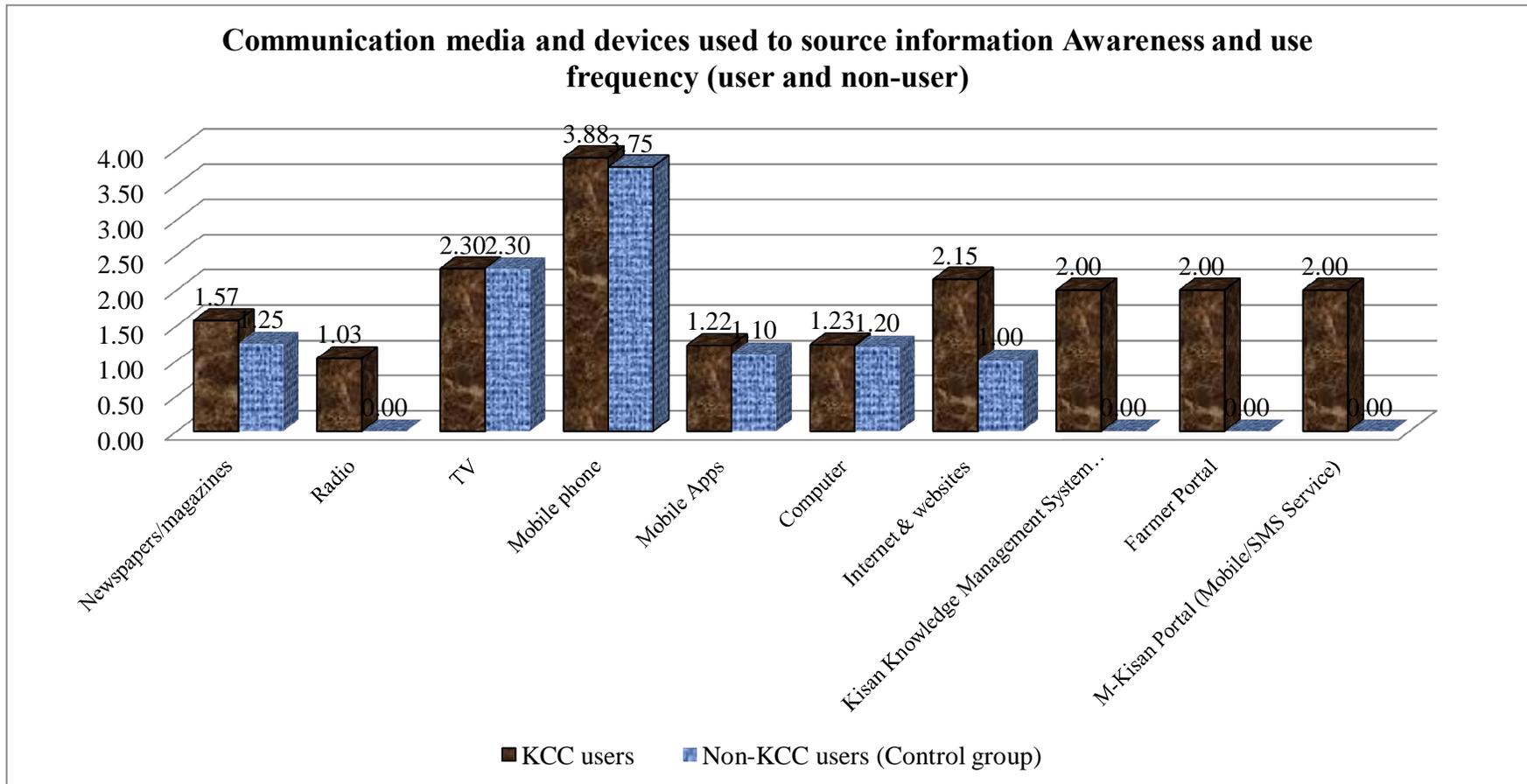


Figure-III

Along with the source of information, the quality of provided information is also very important in decision making. So, sampled farmers' perceptions about the information provided by these sources were sought. The quality of information sought from different sources has been given in Table 5.6. It was found that rating was highest for agricultural experts of various government departments, though it was used by only 37 per cent of the sample. This was followed by kisan melas at 3.58, information provided by KCC at 3.53, extension workers (used by only 4 per cent) at 3.50, Agricultural University (used by 41 per cent) at 3.49 and fellow farmers at 3.45. Kirishi Vigyan Kendras consulted by 22 per cent of the sample scored a rating of 3.45.

It was found that quality rating of non-KCC user sample was highest for information provided by Agricultural University as well as KVKs, though only 20 per cent of the farmers were using these sources. This was followed by guidance provided by agricultural experts at 3.67, at Kisan meals 3.62 and farmers meetings/demonstrations at 3.60. The quality rating for advice given by fellow farmers stood at 3.45, for input dealers it was 3.17 and for cooperative societies and input companies it was 3.0 each.

So far as the communication media and devices were concerned, quality information obtained through computer got an average rating of 3.92, mobile phones followed closely at 3.91, mobile apps got 3.50 newspapers/magazines at 3.43 and television at 3.26. The farmers related websites and portals were rated as satisfactory by the KCC users (Table 5.7).

In case of Communication media and devices used by non-user farmers, mobile phones were given highest quality rating of 3.90 in seeking information, followed by television at 3.64, newspapers/magazines 3.56. Mobile apps were rated as satisfactory used by only one sampled farmer. Same for the computer which was used by two farmers in the sample. None of the farmer in the control group was found to be using agricultural websites.

Thus, farmers were found to be tapping different sources of imparting knowledge and have rated these as per their experience or perceptions. Majority ratings were found to moderate, not swinging to either of the extremes.

Types of ICT devices being used by sampled farmers and the usefulness has been shown in the following Table 5.8. It was found that all the KCC users owned and used mobile phones to seek information through KCC. The usefulness of device got a rating of 3.72. Fifteen sampled farmers owned landline connection, but only 3 used it to access KCC, with a rating 3.33. Mobile Internet connectivity was available to 46 per cent of sampled KCC users, broadband/wi-fi to 8 per cent, but none used to access agricultural related websites/portals.

Computer was owned by 19 per cent of sampled farmers, but was used by only one to explore various sites for agricultural information and related websites/portals .

So far as types of ICT devices and their features used by the non-KCC users was concerned, it was found that all of them owned and used mobile phones, but not for seeking information from KCC/Websites/Portals. Ten per cent were owning and using landline connections. 45 per cent were having internet connections on the mobile phones but were not using these for exploring agricultural websites/portals. Broadband/Wi-fi connection was available to 5 per cent of the farmers and 10 per cent were having computers, but none was found to be using it for farming related advice/information.

Thus it was found that non-KCC users were relying more on traditional sources of information like fellow farmers, Kisan melas, input dealers, Agricultural University and experts, KVKs, television, newspapers/magazines etc. In case of modern devices mobile phones were most popular and frequently used. The use of ICT like mobile apps, websites, portals, KCC was found to be almost negligible mainly due to lack of awareness. The quality ratings of sources used by the sampled farmers were found to be good/satisfactory on an average for Agricultural University/experts/KVKs and fellow farmers. Amongst the devices used, mobile phones got the maximum rating.

**Table 5.6: Source-wise satisfaction level of information/ advice on farming as per the perceptions of KCC users and non-users (Percent)**

Sources	Used (N)	Excellent	Good	Satisfactory	Somewhat poor	Very Poor	Weighted Average
Weightage		5	4	3	2	1	-
<b>KCC users</b>							
Fellow Farmers	87 (100.00)	-	44.83	55.17	-	-	3.45
Extension Worker	4 (100.00)	-	50.00	50.00	-	-	3.50
Input Dealers/ Shops	26 (100.00)	-	7.69	88.46	3.85	-	3.04
Cooperative societies	17 (100.00)	-	11.76	88.24	-	-	3.12
Input Companies	15 (100.00)	-	6.67	93.33	-	-	3.07
Local Markets	14 (100.00)	-	-	100.00	-	-	3.00
Krishi Vigyan Kendraø (KVKø)	22 (100.00)	-	45.45	54.55	-	-	3.45
Agricultural Universities & their materials	41 (100.00)	-	48.78	51.22	-	-	3.49
Kisan melas/ summits	74 (100.00)	-	58.11	41.89	-	-	3.58
Meetings & demonstrations	39 (100.00)	-	35.90	64.10	-	-	3.36
Agriculture experts	37 (100.00)	2.70	64.86	32.43	-	-	3.70
Kisan Call Centre (KCC)	100 (100.00)	7.00	41.00	50.00	2.00	-	3.53
Other Call Centres (Unat Kheti)	1 (100.00)	-	100.00	-	-	-	4.00
<b>Non-KCC users (Control group)</b>							
Fellow Farmers	100 (100.00)	-	45.00	55.00	-	-	3.45
Extension Worker	-	-	-	-	-	-	-
Input Dealers/ Shops	30 (100.00)	-	16.67	83.33	-	-	3.17
Cooperative societies	20 (100.00)	-	-	100.00	-	-	3.00
Input Companies	5 (100.00)	-	-	100.00	-	-	3.00
Local Markets	-	-	-	-	-	-	--
Krishi Vigyan Kendraø (KVKø)	20 (100.00)	-	75.00	25.00	-	-	3.75
Agricultural Universities & their materials	20 (100.00)	-	75.00	25.00	-	-	3.75
Kisan melas/ summits	65 (100.00)	-	69.23	23.08	7.69	-	3.62
Meetings & demonstrations	25 (100.00)	-	60.00	40.00	-	-	3.60
Agriculture experts	15 (100.00)	-	66.67	33.33	-	-	3.67
Kisan Call Centre (KCC)	-	-	-	-	-	-	-
Other Call Centres (Unat Kheti)	-	-	-	-	-	-	-

Note: Figures in parentheses indicate % as 100

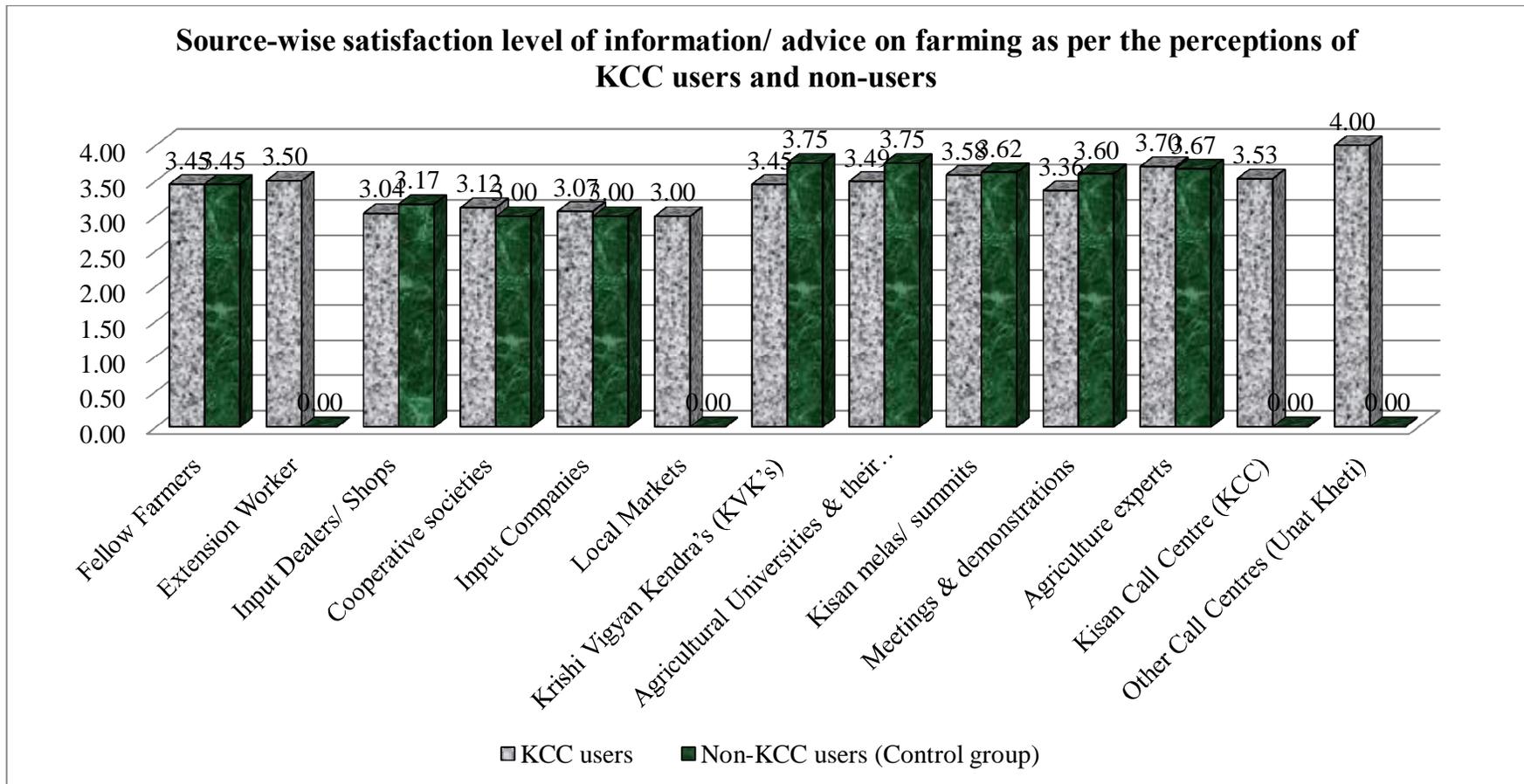


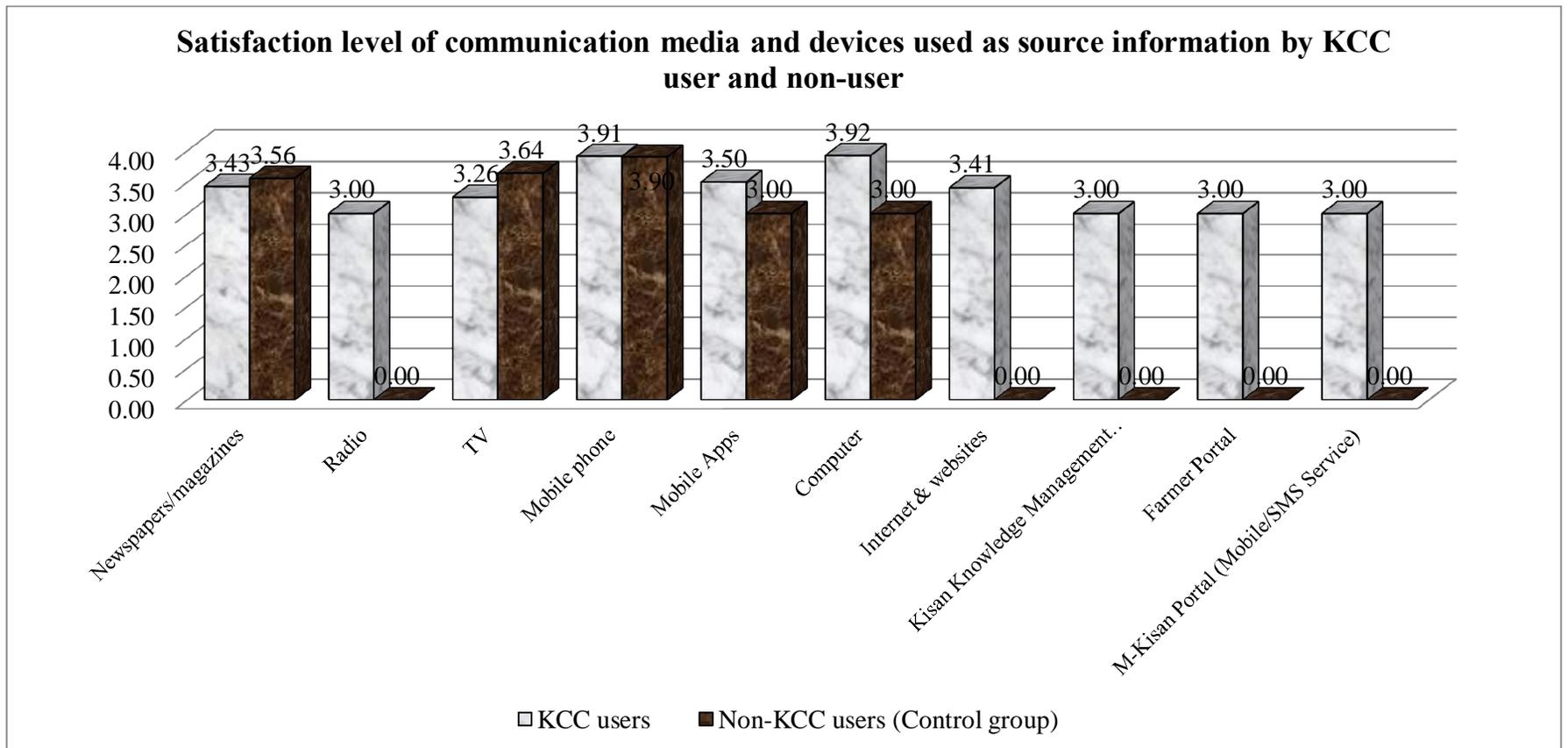
Figure-IV

**Table 5.7: Satisfaction level of communication media and devices used as source information by KCC user and non-user**

**(Percent)**

Sources	Used (N)	Excellent	Good	Satisfactory	Somewhat poor	Very Poor	Weighted Average
Weightage	-	5	4	3	2	1	-
<b>KCC users</b>							
Newspapers/magazines	30 (100.00)	-	43.33	56.67	-	-	3.43
Radio	3 (100.00)	-	-	100.00	-	-	3.00
TV	76 (100.00)	-	26.32	73.68	-	-	3.26
Mobile phone	100 (100.00)	-	91.00	9.00	-	-	3.91
Mobile Apps	10 (100.00)	10.00	40.00	40.00	10.00	-	3.50
Computer	12 (100.00)	16.67	58.33	25.00	-	-	3.92
Internet & websites	27 (100.00)	-	40.74	59.26	-	-	3.41
Kisan Knowledge Management System (KKMS)	1 (100.00)	-	-	100.00	-	-	3.00
Farmer Portal	1 (100.00)	-	-	100.00	-	-	3.00
M-Kisan Portal (Mobile/SMS Service)	1 (100.00)	-	-	100.00	-	-	3.00
<b>Non-KCC users (Control group)</b>							
Newspapers/magazines	9 (100.00)	-	55.56	44.44	-	-	3.56
Radio	-	-	-	-	-	-	-
TV	14 (100.00)	-	64.29	35.71	-	-	3.64
Mobile phone	20 (100.00)	-	90.00	10.00	-	-	3.90
Mobile Apps	1 (100.00)	-	-	100.00	-	-	3.00
Computer	2 (100.00)	-	-	100.00	-	-	3.00
Internet & websites	-	-	-	-	-	-	-
Kisan Knowledge Management System (KKMS)	-	-	-	-	-	-	-
Farmer Portal	-	-	-	-	-	-	-
M-Kisan Portal (Mobile/SMS Service)	-	-	-	-	-	-	-

Note: Figures in parentheses indicate % as 100



**Figure-V**

**Table 5.8: Type of ICT Devices/ Features used and their usefulness as per the perceptions of user and non-user farmers**

Type of ICT Devices	Owned (%)	Used (%)	Used for KCC/ Websites /Portals (N)	Excellent	Good	Satisfactory	Somewhat Poor	Very Poor	Weighted Average
<b>Weightage</b>	-	-	-	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	
<b>KCC users</b>									
Mobile	100	100	100 (100.00)	-	73.00	26.00	1.00	-	3.72
Landline	15	15	3 (100.00)	-	33.33	66.67	-	-	3.33
STD/PCO	-	-	-	-	-	-	-	-	-
Mobile Internet Connection	46	46	-	-	-	-	-	-	-
Broadband/ Wi-Fi	8	8	-	-	-	-	-	-	-
Computer	19	19	-	-	-	-	-	-	-
<b>Non-KCC users (Control group)</b>									
Mobile	100	100	-	-	-	-	-	-	-
Landline	10	10	-	-	-	-	-	-	-
STD/PCO	-	-	-	-	-	-	-	-	-
Mobile Internet Connection	45	45	-	-	-	-	-	-	-
Broadband/ Wi-Fi	5	5	-	-	-	-	-	-	-
Computer	10	10	-	-	-	-	-	-	-

Note: Figures in parentheses indicate % as 100

## **5.2 Analysis of aspects pertaining to KCC Users**

### **5.2.1 Extent of KCC usage**

Phone call is the mode of communication in KCC. Farmers get response to their questions/problems through this medium. So, a call summary of KCC users has been shown in the Table 5.9. In all 718 calls were made by the total sampled farmers in a year, with an average of 7.18 calls per user per year. Average waiting time was worked out to be 1.25 minutes per call. Only four calls made by the sampled farmers went unanswered i.e.0.55 per cent. With 0.30 calls dropped per user, the call drop was about4 per cent. On an average 0.22 calls per user i.e. 3 per cent were not answered properly during the period and 6.62 calls per user (92 per cent) were effectively answered.

Farmers can seek the answers to questions/problems related to any aspect of agriculture or allied activity through this service, but it was found that main interest area of sampled farmers was technical aspects as 95 per cent of the sampled users asked average 5.46 (79%) queries per user were related to these. This was followed by weather information enquired by 50 per cent of the users with average 1.36 questions, 0.26 questions about government schemes asked by only 10 per cent of users and 0.10 questions related to price and market information were asked in all i.e.1.39 per cent put forth by 6 per cent of sampled KCC users.

**Table 5.9: Call summary per user per year**

<b>Particulars</b>	<b>Number</b>
No. of calls made	7.18 (100.0)
Average waiting time (minutes per call)	1.25
No. of calls not answered	0.04 (0.55)
No. of calls dropped	0.30 (4.17)
No. of calls in which no proper answers were given	0.22 (3.07)
No. of calls effectively answered	6.62 (92.20)
<b>Technical information</b>	
a) Number of calls	5.46 (76.04)
b) Number of respondents queried for technical information (%)	95.00
c) Number of respondent did not make queried for technical information (%)	5.00
<b>Price and market information</b>	
a) Number of calls	0.10 (1.39)
b) Number of respondents queried for price and market information (%)	6.00
c) Number of calls respondents did not queried for price and market information (%)	94.00
<b>Government scheme information</b>	
a) Number of calls	0.26 (3.62)
b) Number of respondents queried for government scheme information (%)	10.00
c) Number of respondents did not queried for government scheme information (%)	90.00
<b>Other information - weather</b>	
a) Number of calls	1.36 (18.94)
b) Number of respondents queried for government scheme information (%)	50.00
c) Number of respondents did not queried for government scheme information (%)	50.00
<b>Number of Sampled Farmers</b>	<b>100</b>

Figures in the parentheses are percentages to total number of calls

KCC being a communication service, can be judged through its efficiency in call response and quality of information being provided. This aspect of the service has been analysed in Table 5.10. The toll free number of KCC was easy to reach, got an average score of 3.39. Majority of the sampled were of the opinion that call waiting at KCC was not too long. Clarity in voice reception over phone got a score of 3.02, though 10 per cent disagreed to it. Majority agreed that call drops at the centre were not frequent. Courteous behaviour of FTAs while attending the call, got a high score of 4.18, their understanding and response in local language got 4.1, easy understanding of question on their part 4.0, clarity of their response 3.88 and usefulness of their response in solving the problem scored 3.67. The quickness in responding of FTAs was rated at 3.78. Majority opinion was that calls were not frequently escalated to higher levels, but if done, 18 per cent agreed and 3 per cent partially agreed that these were well answered. 75 per cent of the sampled farmers in the state agreed that overall call handling and efficiency was good at KCC, as well as information provided was good and useful, while 23 per cent only partially agreed to it.

### **5.3 Farmers response to KCC information on various aspects**

#### **5.3.1 Technical aspects**

It has been seen that majority of the questions at KCC were related to technical aspects, with 79 per cent of the total calls. As per the sampled farmers, easy availability of information through KCC got an average score of 3.74, it's reliability and helpfulness 3.73, information being up-to-date 3.71, quick dissemination of information 3.69, easy to understand 3.81, it's usefulness 3.41 and overall satisfaction about technical information scored 3.72 on an average. About 74 per cent of the sampled users have agreed and 24 per cent partially agreed that they were satisfied with response and information provided on technical aspects (Table 5.11).

**Table 5.10: Overall Call Response Efficiency & Quality as per the perceptions of users – Percent**

**(N=100)**

Particulars	Strongly Agree	Agree	Partially Agree/Disagree	Disagree	Strongly Disagree	Weighted Average
Weightage	5	4	3	2	1	
KCC toll free number is easy to reach	-	55.00	34.00	6.00	5.00	3.39
The wait for KCC call pick-up is not too long	2.00	71.00	27.00	-	-	3.75
Voice reception over the phone is clear	-	12.00	78.00	10.00	-	3.02
Call drops are not frequent	6.00	82.00	10.00	2.00	-	3.92
Farmer Tele Advisor (FTA) greets and speaks courteously	23.00	72.00	5.00	-	-	4.18
FTA understands & responds in your language	16.00	78.00	6.00	-	-	4.10
FTA understands your question or problem easily	11.00	78.00	11.00	-	-	4.00
FTA answers clearly & in a way understandable to you	4.00	80.00	16.00	-	-	3.88
FTA's answer is useful & solves your problem/need	-	71.00	25.00	4.00	-	3.67
FTA's response does not take much time	-	79.00	20.00	1.00	-	3.78
Calls are often escalated to higher authorities	-	5.00	17.00	78.00	-	2.27
Questions escalated are well answered by the Agriculture Experts or Nodal Officer*	-	18.00	3.00	1.00	-	3.77
Overall the call handling and efficiency is good	-	75.00	25.00	-	-	3.75
Overall the information provided is good and useful	-	75.00	23.00	2.00	-	3.73

\* N was 22 in this case

**Table 5.11: Response of KCC on technical aspects as per the perceptions of users – Percent**

(N=95)

<b>Particulars</b>	<b>Strongly Agree</b>	<b>Agree</b>	<b>Partially Agree/ Disagree</b>	<b>Disagree</b>	<b>Strongly Disagree</b>	<b>Weighted Average</b>
<b>Weightage</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	
Information is easily available through KCC	-	74.74	24.21	1.05	-	3.74
Information is reliable & helpful	-	75.79	21.05	3.16	-	3.73
Information is up-to-date	-	72.63	25.26	2.11	-	3.71
Information is provided quickly	-	70.53	28.42	1.05	-	3.69
Information/ Advise is easy to understand	-	83.16	14.74	2.11	-	3.81
Information/ Advise is useful & improves your performance/ profits	-	52.63	35.79	11.58	-	3.41
You are satisfied with the response & information provided	-	73.68	24.21	2.11	-	3.72

### **5.3.2 Price and Market related aspects**

In case of price and market related aspects there were 10 questions in all i.e. one per cent only. The information availability, reliability, helpfulness, it being up-to-date and easily understandable got a score of 3.83 by the respondents. The quick provision of information scored 3.67. The usefulness of this information leading to better performance got a low score of 2.83, indicating scope for improvement in this aspect. The overall satisfaction with price information was related 3.67 (Table 5.12).

### **5.3.3 Government schemes and policies**

Many farming decisions are affected by government schemes and policies. So, farmers seek latest information pertaining to it through KCC. The availability of this got a score of 3.40, it's reliability and it being up-to-date also scored 3.40. The information was provided quickly got a rating of 3.20 and it was easy to understand scored 3.50. It's usefulness got a low score of 2.20. The overall satisfaction with response and provided information was rated as 3.30 hinting at some deficiency in this aspect (Table 5.13).

### **5.3.4 Other queries, weather related aspect**

Among other queries, weather related aspect was significant with 136 i.e. 19 per cent of total questions asked by 50 per cent of the sampled farmers. Majority agreed that information was easily available, reliable, helpful, up-to-date, easy to understand and quickly provided. However, response to the usefulness of information scored 3.04 with 14 per cent agreed to it, 76 per cent partially agreed and 10 per cent disagreed about it. Overall, all the respondents were satisfied with the response and information provided by KCC on this aspect (Table 5.14).

So, it was found that queries were more on technical and weather related aspects. Farmers gave good rating to information provided by KCC, but low for usefulness of it, which showed deficiencies in application of the information/ guidance in real farm situations. By and large farmers were less satisfied with response to queries about government schemes and policies. The number of questions was less related to price and market aspects in wake of assured marketing at minimum support price (MSP) of the two principal crops grown in the state i.e. Wheat and paddy.

**Table 5.12: Response of KCC to price and market related aspects as per the perceptions of users – Percent**

(N=6)

Particulars	Strongly Agree	Agree	Partially Agree/Disagree	Disagree	Strongly Disagree	Weighted Average
Weightage	5	4	3	2	1	
Information is easily available through KCC	-	83.33	16.67	-	-	3.83
Information is reliable & helpful	-	83.33	16.67	-	-	3.83
Information is up-to-date	-	83.33	16.67	-	-	3.83
Information is provided quickly	-	66.67	33.33	-	-	3.67
Information/ Advise is easy to understand	-	83.33	16.67	-	-	3.83
Information/ Advise is useful & improves your performance/ profits	-	0.00	83.33	16.67	-	2.83
You are satisfied with the response & information provided	-	66.67	33.33	-	-	3.67

**Table 5.13: Response of KCC to Government schemes related aspects as per the perceptions of users – Percent**

**(N=10)**

<b>Particulars</b>	<b>Strongly Agree</b>	<b>Agree</b>	<b>Partially Agree/Disagree</b>	<b>Disagree</b>	<b>Strongly Disagree</b>	<b>Weighted Average</b>
<b>Weightage</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	
Information is easily available through KCC	-	50.00	40.00	10.00	-	3.40
Information is reliable & helpful	-	50.00	40.00	10.00	-	3.40
Information is up-to-date	-	50.00	40.00	10.00	-	3.40
Information is provided quickly	-	50.00	20.00	30.00	-	3.20
Information/ Advise is easy to understand	-	60.00	30.00	10.00	-	3.50
Information/ Advise is useful & improves your performance/ profits	-	-	20.00	80.00	-	2.20
You are satisfied with the response & information provided	-	50.00	30.00	20.00	-	3.30

**Table 5.14: Response of KCC to other questions (weather, services, events etc.) as per the perceptions of users – Percent**

(N=50)

Particulars	Strongly Agree	Agree	Partially Agree/Disagree	Disagree	Strongly Disagree	Weighted Average
<b>Weightage</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	
Information is easily available through KCC	-	88.00	12.00	-	-	3.88
Information is reliable & helpful	-	98.00	2.00	-	-	3.98
Information is up-to-date	-	100.00	-	-	-	4.00
Information is provided quickly	-	94.00	6.00	-	-	3.94
Information/ Advise is easy to understand	-	100.00	-	-	-	4.00
Information/ Advise is useful & improves your performance/ profits	-	14.00	76.00	10.00	-	3.04
You are satisfied with the response & information provided	-	100.00	-	-	-	4.00

### **5.3.5 Major objectives/ decisions of sampled KCC users**

Farmers try to achieve many objectives with the use of their limited resources. This leads to continuous decision making on their part. Also farmers have different objectives on which they lay more stress according to their individual preferences. So, the major objectives/decisions under focus in farming of the overall sample have been highlighted in the following Table 5.15. It was found that highest score as per level of importance has been given to higher profits/income by the Punjab farmers, closely followed by best price for the output and marketing of output. This brings out the commercial aspect of Punjab agriculture. Higher yield levels and least cost of production also got score of 3.77 and 3.75 as per the level of importance. Own consumption needs were considered important by small farmers. Other decisions related to risk, personal safety, environment, personal achievement and long term productivity received lesser importance from Punjab farmers. This showed that focus of these was on short term objectives, which can be traced to mono-culture in cropping pattern being followed in the state during the last four decades or so.

### **5.3.6 Importance of KCC on important decisions**

The study was mainly related to KCC users from three districts of the state, who were availing services of it regarding various aspects having bearing on decision making. The perceptions of sampled farmers about importance of KCC was sought on major decisions. This has been discussed in Table 5.16. Insect/pest control decision has emerged as the main area with a score of 2.55 as per level of importance of KCC. The majority questions were related to it in the technical aspect of farming. This was followed by weather/ rainfall related queries with a score of 2.25. 28 per cent of the farmers also gave some level of importance, to the information provided by KCC in disease control decisions.

In other farm management decisions being taken by the sampled farmers ,whether on the farm or off the farm pertaining to various aspects did not register much importance of KCC.

**Table 5.15: Major objectives/ decisions of KCC users in farming – Percent**

(N=100)

Particulars	Extremely Important	Very Important	Moderately Important	Slightly Important	Not Important	Weighted Average
Weightage	5	4	3	2	1	
Good Choice of Crops/ Farm activities	1	28	71	-	-	2.08
High Yields	58	15	-	-	27	3.77
Good Quality of Output	17	29	10	-	44	2.75
Efficient Input Use	18	15	9	-	58	2.35
Least Cost of Production	55	15	5	-	25	3.75
Marketability of Output	70	19	11	-	-	4.37
Best Price for Output	89	11	-	-	-	4.89
Best Profits/ Income	91	9	-	-	-	4.91
Least Crop Loss	12	85	1	1	1	1.54
Less Risk	8	86	1	1	4	1.47
Own Consumption Needs	-	53	11	5	31	2.86
Personal Achievement/ Knowledge	-	2	1	-	97	1.08
Respect/ Image in Community	-	9	9	-	82	1.45
Long Term Productivity	-	2	2	-	96	1.10
Better Environment	-	-	4	-	96	1.08

**Table 5.16: Importance of KCC on important decisions as per the perceptions of users – Percent**

(N=100)

<b>Important Decisions</b>	<b>Extremely Important</b>	<b>Very Important</b>	<b>Moderately Important</b>	<b>Slightly Important</b>	<b>Not Important</b>	<b>Weighted Average</b>
<b>Weightage</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	
Crop selection decisions	-	-	1	-	99	1.02
Variety selection decisions	-	1	8	5	86	1.24
Input purchase decisions	-	2	2	-	96	1.10
Planting decisions	-	-	-	-	100	1.00
Soil management decisions	-	-	3	1	96	1.07
Fertilizer/ feed application decisions	-	1	2	1	96	1.08
Water management decisions	-	-	1	-	99	1.02
Weather/ rainfall related decisions	-	34	6	11	49	2.25
Crop management decisions	-	-	-	-	100	1.00
Agricultural machinery decisions	-	-	-	-	100	1.00
Insect pest control decisions	-	36	18	11	35	2.55
Disease control decisions	-	21	5	2	72	1.75
Weed control decisions	-	2	-	2	96	1.08
Cost reduction/ efficiency increasing decisions	-	-	-	-	100	1.00
Quality improvement decisions	-	-	-	-	100	1.00
Harvesting & post-harvest decisions	-	-	-	-	100	1.00
Marketing decisions	-	-	2	1	97	1.05
Price & profit related decisions	-	-	-	-	100	1.00
Supply chain & transport decisions	-	-	-	-	100	1.00
Storage decisions	-	-	-	-	100	1.00
Risk reduction decisions	-	-	-	-	100	1.00
Credit decisions	-	-	-	-	100	1.00
Insurance decisions	-	-	-	-	100	1.00
Government schemes & assistance decisions	-	-	4	5	91	1.13
Animal husbandry	-	3	1	-	96	1.11

### **5.3.7 Impact of KCC on Important Farming Decisions**

Farmers have been seeking advice from KCC and implementing it related to different farm decisions. Its impact was quantified and discussed in the Table 5.17. Insect/pest control decisions and disease control decisions have shown the maximum score of 1.36 and 1.31 respectively, followed by weather/rainfall related decisions at 1.24. Only 1 per cent of the farmers have reported significant impact i.e. >10 per cent in weather related decision and for rest it was small (up to 5%). In case of insect/pest decisions 2 farmers reported moderate impact (>5 up to 10%) and 32 observed only small impact i.e. up to 5 per cent. In weed control decisions also, the impact worked out was small. In rest of the decisions related to farming, no impact of KCC was observed.

### **5.3.8 Overall assessment of KCC undertaken by sampled users in Punjab**

The study was devised to have an overview of KCC. So, the sampled farmers were those availing this facility. On the basis of all of these respondents, the performance of KCC got a score of 3.03 on an average. Response and efficiency of KCC in handling the queries got an average rating of 2.95 and the quality of information provided by KCC got 3.27. Majority response pertaining to these factors was satisfactory. The opinion about continuation of KCC in the state was given a score of 3.27 with only 2 per cent strongly agreeing, 24 per cent agreeing and 73 per cent partially agreeing to the statement (Table 5.18).

**Table 5.17: Impact of KCC on important decisions as per the perceptions of users - Percent**

<b>Important decisions</b>	<b>Huge Impact</b>	<b>Significant Impact</b>	<b>Moderate Impact</b>	<b>Small Impact</b>	<b>No Impact</b>	<b>Weighted Average</b>
<b>Weightage</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	
Variety selection decisions	-	-	-	6	94	1.06
Soil management decisions	-	-	-	1	99	1.01
Fertilizer/ feed application decisions	-	-	-	4	96	1.04
Weather/ rainfall related decisions	-	1	2	19	79	1.27
Crop management decisions	-	-	1	-	99	1.02
Insect pest control decisions	-	-	2	32	66	1.36
Disease control decisions	-	6	1	11	82	1.31
Weed control decisions	-	-	-	3	97	1.03
Cost reduction/ efficiency increasing decisions	-	4	4	3	89	1.23
Harvesting & post-harvest decisions	-	-	3	2	95	1.08
Marketing decisions	-	4	2	5	89	1.21
Price & profit related decisions	-	4	2	5	89	1.21
Storage decisions	-	-	2	2	96	1.06
Risk reduction decisions	-	-	-	4	96	1.04
Government schemes & assistance decisions	-	-	-	5	95	1.05
Animal husbandry	-	-	-	4	96	1.04

**Table 5.18: Overall assessment of KCC as per the perceptions of users – Percent**

**(N=100)**

<b>Particulars</b>	<b>Excellent</b>	<b>Good</b>	<b>Satisfactory</b>	<b>Somewhat Poor</b>	<b>Very Poor</b>	<b>Weighted Average</b>
<b>Weightage</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	
Overall assessment of the performance of the Kisan Call Centre	2	7	83	8	-	3.03
Overall assessment for the response and efficiency of Kisan Call Centre	1	1	90	8	-	2.95
Overall assessment of the quality of information provided by Kisan Call Centre	1	5	87	7	-	3.27
	<b>Strongly Agree</b>	<b>Agree</b>	<b>Partially Agree/Disagree</b>	<b>Disagree</b>	<b>Strongly Disagree</b>	<b>Weighted Average</b>
<b>Weightage</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	
Overall opinion whether the Kisan Call Centre should be continued	2	24	73	1	-	3.27

## CHAPTER VI

### SUMMARY AND CONCLUSION

Transition of agriculture sector from subsistence to commercial has not only made it input intensive, but also information intensive, in wake of ever changing technologies, practices etc. In recent times, access to information has become a key to decision making in every aspect of life. Same is true to agriculture.

Different sources of information have been used by the farmers to run their farming business in a profitable manner. Recent advancement in Information and Communication Technologies (ICT) have also ventured into it. In addition to traditional sources like fellow farmers, friends, input dealers, gadgets like radio, television, print material, modern tools like mobile, computers and internet connectivity are also emerging in a big way, in providing information to farming community on various aspects of decision making. So, the need is to provide the right advice, at the right time more so in a state like Punjab, passing through an agrarian crisis. Here, the profit margins have been dwindling since the last two decades, due to rising input cost, stagnant yields leading to rising indebtedness and even farmers' suicides. Sharing of latest information about agricultural aspects can make the situation sustainable. The usage of ICT is a welcome step in this direction. It involves Government of India initiatives like Kisan Call Centres (KCC), Kisan Knowledge Management System (KKMS), Farmers Portal and M-Kisan Portal aimed at filling the information gaps. Government of India has set up 25 KCCs in different states of India to answer the queries of farmers free cost of cost, instantly on a continuous basis.

Chandigarh based KCC is one of these centres catering to three states i.e. Punjab, Haryana and Himachal Pradesh. So, the present study was devised to bring out the decision oriented information system for farmers in the form of structure, design, implementation and performance of government system of KCC, KKMS, Farmers Portal and M-Kisan Portal. It would highlight the extent of use of the system, responses given, performance of it and its impact of decision making. The specific objectives of the study were:

- 1) To know the organized set up, infrastructure, information and communication technology (ICT) and systems used, methods and information flows, types and abilities of the manpower involved.
- 2) To record the use of systems-the profile and patterns of the users, the extent of use of the system, and the responses given.

- 3) To analyze the performance of the systems from the point of view of users, its impact on decision making and gap between information delivered and sought.
- 4) To highlight the suggestions of users to make the system more effective in serving the agricultural sector.

### **Methodology**

The present study of Punjab state was based on primary data collected through both census and sample survey methods. Information about different aspects of KCC, Chandigarh like infrastructure available, staff, facilities efficiency of call answering system, call handling system etc. was collected through personal interview of the centre In charge. At second step all the Farmers Tele Advisors (FTAs) answering the farmers queries were taken through census survey method and covered their profile, assessment about hardware and software being used, sources of information and knowledge, call answering efficiency, quality ratings of infrastructure available etc. At the third step, farmers level data was collected through random sampling technique. Three districts were randomly selected namely Mansa, Moga and Sangrur. Then a sample of 100 KCC users and 20 non-KCC users were randomly selected from cluster of villages in each selected district. The farmers were asked about their personal profile, sources of information related to agriculture, the use of ICT devices, specific queries from KCC, the responses, focus on important decisions in farming, impact of KCC on decision making etc. The data collected was then analysed with the help of simple statistical techniques.

### **Results and Discussion**

#### **Performance assessment of KCC, Punjab**

The results of Kisan Call Centre (KCC) at Chandigarh showed that since 2012, it has been working under IFFCO Kisan Sanchar Limited. As per the centre staff, the hardware works well and can handle the call load without frequent breakdowns. The software being used was also rated good with adequate data base to answer the queries. Internet connectivity at the centre was found to be good and speed was sufficient even during heavy call loads. Regarding infrastructure availability like sufficient activity area, ventilation, privacy to handle the calls etc. centre staff was found to be satisfied. As per centre in charge FTAs were efficient to handle the calls and respond quickly, were well trained and, disciplined. Self-knowledge, extension material of various departments and training acquired at Agricultural University were frequently used by FTAs to answer the farmers queries and these sources were rated good by the respondent. FTAs were seeking help from various websites/portals while responding to the farmers. So, overall assessment of centre in charge was that farmers

were satisfied with call handling system. The call escalation at the centre was found to be rare, that too only up to level 2, but never to level 3. It was agreed that information related to technical, price and market information aspects was adequate and up-to-date, but not on government related schemes. Overall respondent rated the performance and usefulness of KCC as good, but systems and policies of KCC as satisfactory and was strongly in favour of continuation of the system.

### **Comments of KCC In charge**

1. Needed to give a pay hike to the staff.
2. Shortage of staff especially during kharif season.
3. Staff should be regularly updated about government schemes like prices, subsidies, insurance etc.
4. There were ten help lines at KCC and need was expressed for four more lines to tackle the call load. Due to heavy call traffic 39 per cent of calls could not be handled.
5. Timely information should be provided about trainings of the staff and some practical training should also be incorporated.
6. Headphones must be replaced after three months.
7. Downloading speed of information was reported to be slow.
8. Call escalation response at level 2 was not satisfactory about animal husbandry activity.
9. Meals break should be of 30 minutes.
10. No automatic delivery of text messages.

### **Analysis of Farmer Tele Advisors (FTAs), KCC, Punjab**

Farmer Tele Advisors working at KCC, Chandigarh were mostly agricultural graduates, while two were post graduates. These rated the hardware being used as good except for the headphones. The software being used was also found to be up-to-date, user friendly, adequate to take call load, but low on voice quality. FTAs agreed that internet connectivity at the centre was fast enough to respond to the queries and was adequate to work. Self knowledge was the main source of information to respond by FTAs, followed by extension material and prepared excel sheets. The material used by FTAs related to government departments was reported as outdated. FTAs at the centre agreed that information pertaining to technical, price and market related aspects was easily reliable, up-to-date and adequate, but not related to government schemes. The websites/portals related to agriculture were frequently searched by FTAs to answer the questions. FTAs found KKMS to

answer the questions. FTAs found KKMS easy to use, but not fast enough. Similarly, Farmers Portal was found to be useful by them, but not regularly updated. M-Kisan Portal was working well as per the respondents. Majority FTAs were found to be satisfied with call efficiency system, but were doubtful about farmers' capability to understand scientific terms. Overall, these were satisfied with their performance and found the trainings at Agricultural University as useful. However, these seemed to be partially satisfied with available knowledge, information and data-base to answer the queries. The overall assessment of FTAs about KCC was found to be good and majority agreed that the scheme was useful to the farmers and should be continued.

### **Comments of FTAs**

Farmers Tele Advisors working at KCC gave an overall 'good' rating to its performance. These were of the opinion that they try their best to satisfy the farmers queries. As per FTAs it was a reliable source of information and was helpful to the farmers. So, according to them, this service should be continued and strengthened.

### **Problem faced by FTAs**

These were mainly with the service rules like less salaries, no provision of even sick leave, lesser holidays, contractual job, lesser training for upgrading self knowledge, early timings etc.

### **Suggestions**

1. FTAs suggested a change in the name of service i.e instead of KCC , some technical nomenclature related to agriculture should be there.
2. The designation and salary should be refined to boost their morale.
3. Training facilities should be increased.
4. Infrastructure facilities ó need was expressed for better drinking water facility, canteen, one more air conditioner and room heaters in winters for early morning and late night shifts.
5. Salary hike will attract better talent to the field.
6. Provision of casual leaves and holidays on festivals.

### **Results of Farmers' Sample Survey**

Transformation of agriculture in Punjab state in wake of Green Revolution has increased the availability of options to the farmers. So, planned decisions based on up-to-date information on all aspects have become vital for the farmers. Kisan Call Centre is a step to assist them in decision making. A random sample for 100 KCC users was selected for the study. Majority of these farmers had attained education upto higher secondary and illiterate

percentage was only 2. The highest proportion of KCC users was between the age bracket of 40-50 years. Average number of calls to KCC per farmer were 6-7 in a year. Main interest area of these was about technical aspects with 79 per cent of queries related to it, followed by queries about weather with 19 per cent of total questions. Sampled farmers were tapping various sources and devices of information to seek advice about farming related matters. It was found that though the sample was of KCC users, but still traditional sources like fellow farmers, Kisan melas, farmers meets were of importance to these. Among modern devices, mobile phone was most frequently used to get information. However, awareness about agriculture related websites/portals was almost lacking among the sampled farmers. The quality rating of information provided by agricultural experts, kisan melas, KCC and Agricultural University scored high with the farmers mobile phone was the most frequently used gadget by these to access KCC and was rated as good, but use of other devices was found to be low. 75 per cent of sampled farmers agreed that overall call handling and efficiency was good at KCC and information provided was useful. The response of KCC to technical, weather related, price and market related aspects was rated as good by the sampled farmers, but not for government related schemes and animal husbandry aspects. The major focus of sampled farmers in farming was found to be on commercial aspects like higher profits/income/prices of the output along with it's marketability. Other objectives like environment related/health/safety/sustainability were not the thrust areas of state farmers. So far as impact of KCC on important decisions was concerned, it was maximum on insect pest control followed by disease control and weather/rainfall related decisions. Small impact was also observed in variety selection and fertilizer application decisions. The queries related to majority of other farming decisions were never put forth by the sampled farmers. Overall assessment of KCC users about it's performance was good/satisfactory and same for other aspects like response and efficiency of KCC and quality of information provided by it. But majority users were of the opinion that scheme should be improved and continued, it being an alternative, instant and free of cost source of information. However, the farmers found it a time consuming process and was regular SMS alerts on various aspects of farming.

Farmer Tele advisors complained about low salaries and less number of leaves as well as lack of some other facilities like canteen, room heaters etc. Four more help lines were needed to handle the call traffic as per the centre in charge.

The sample of non-KCC users were found to be relying more on traditional sources like fellow farmers, television, advice of agricultural experts/Agricultural University etc. and were found to be less aware about KCC or other decision making systems like

KKMS/Farmers Portal/M-Kisan Portal etc. Though these were using modern devices like mobile phone, computers, internet but were not exploring for agricultural information on these systems. Lack of awareness and easy access to other sources of information seems to be the reason behind this.

#### **Positive aspects about KCC as per the perception of users**

Sampled farmers seem to be satisfied with performance of KCC to some extent, as they gave a moderate response. The existence of KCC, was an option to enquire about agricultural aspects at their convenience, and free of cost rather than having nothing. So, these were of the opinion that KCC is providing reliable and helpful information to especially on technical and weather related aspects as well as for new crop practices. So, in a way some aspects of decision making have shown positive impact of KCC like insect pest control, disease control, variety selection, fertilizer application and weather. Sampled farmers found FTAs cooperative courteous and knowledgeable in answering their queries. Thus, it was found that sampled KCC users were taking it as an additional source of information, though not highly satisfied with it.

#### **Negative aspects about KCC as per the perception of users**

The problem faced by sampled farmers have shown that some find it a time consuming process. As has been discussed earlier, call traffic at the centre is high, so farmers often find the toll free number busy, though once through call pick-up time was not much. KCC is a telephonic service, but sampled farmers expect regular SMS alerts. This has emerged as a major limitation for the sampled farmers. While undertaking the survey, it also came to fore that awareness about KCC service was low. Many farmers never knew about its existence or toll free number. Few farmers complained that information provided was outdated or different from mentioned in literature. The recommended pesticides by FTAs were not available in the market. Few farmers were of the opinion that FTAs lack practical knowledge and were not updated. Sometimes the recommendations were not very effective. One per cent were of the view that only basic guidance was provided by KCC. It was reported by the sampled farmers that information pertaining to government related schemes and allied activities like vegetable cultivation, animal husbandry was lacking on part of FTAs and they were not able to respond satisfactorily.

#### **Suggestions by the sampled farmers**

1. The main suggestion emerged from analysis was that more awareness should be generated about the KCC service.

2. Regular SMS alerts about different aspects of agriculture should be part of the service, so that farmers can prepare for the situation in advance.
3. FTAs should be more trained with practical knowledge and regularly updated.
4. Technical up gradation of KCC should be undertaken, to reduce the calling time.
5. Up-to-date information should be available regarding government schemes and policies as well as allied activities.

### **Implications of the study**

1. The technical staff at KCC, Chandigarh as well as respondent farmers found the scheme useful as an alternative source of information. So, the scheme should be strengthened and continued.
2. Awareness about the KCC facility was found to be less during the farmers' survey. It needs to be increased through mediums like radio, television, newspapers and during kisan melas/meets etc.
3. Training facilities for FTAs should be increased to equip them in better way about all aspects of agriculture and allied activities especially in animal husbandry aspects.
4. Facilities at the centre and to the FTAs like higher wages, security of job etc. should be provided to improve the efficiency of the scheme.
5. Aspects related to government schemes, marketing of produce etc. should be given more stress in trainings of FTAs and information needs to be regularly up-dated for better response on their part.

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## **Appendix I: Comments on the draft report**

### **(I) Title of the Draft Study Report Examined:**

**“Decision-oriented Information System for Farmers: A Study of Kisan Call Centres (KCC), Kisan Knowledge Management System (KKMS), Farmers Portal and M-Kisan Portal in Punjab”**

**(II) Date of Receipt of the Draft Report: August 4<sup>th</sup>, 2017**

**(III) Date of Dispatch of Comments: August 29<sup>th</sup>, 2017**

### **(IV) General Comments**

The government can play a crucial role in bridging the information gap of the farmers. Kisan Call Centre is a major initiative of the government in this direction. Punjab has played a very crucial role in the green revolution. With the increase in demand for food, the agriculture sector in Punjab will have a significant contribution for fulfilling the demand. With high mobile penetration and growth in ICT sector, farmers are moving towards adopting new technology and ways for sustainable agriculture, for which they require information on latest innovations, and new techniques. The present study attempts to evaluate KCC and other extension services in Punjab.

### **(V) Comments on Methodology and Analysis**

1. What is the rationale behind selecting the sample districts? Please add some points.
2. In the introduction, if some lines can be written about the call patterns in KCC. For E.g. Which topics (Agriculture related) and crops constitute more calls? In which month the call frequency is higher? Which district is higher in calling?

#### **A. Centre:**

1. In section 3.1 it is mentioned that from 10.00 PM to 6.00 AM is a 3<sup>rd</sup> shift and it is handled by 2 FTAø. Is there any other shift after 10.00 PM? Presently, KCC is working in 3 shifts where all FTAø and supervisors handle the calls and operations. In 1<sup>st</sup> shift (morning) that is 6.00 AM to 2.00 PM, all calls are handled by 1<sup>st</sup> shift FTAø. In second shift, that is 10.00 AM to 6.00 PM, the supervisor handles the operations and calls if required. In 3<sup>rd</sup> shift (evening) that is 2.00 PM to 10.00 PM, all calls are handled by 2<sup>nd</sup> shift FTAø. After 10.00 PM if any call comes to KCC, it is recorded (IVRS) and on the next day, the first shift FTAø have to reply back after listening to the recording by calling the caller. In Section 3.1, some clarity is required.
2. Table 3.1 and its explanation can be shifted to section 3.1
3. Section 3.2, can be shifted before Table 3.4
4. In section 3.3, the title says “Infrastructure/Office Equipmentø”, but along with the information of “Infrastructure/Office Equipmentø” other information such as assessment of FTAø efficiency assessment of information and knowledge sources are provided. It can be a new section or the title can be changed.

5. In section 4.1, the title says "Profile of FTA", apart from profile much other information is provided. Other information can be clubbed into a different section or the title for section 4.1 can be changed.

6. In table 3.19, what is the reason behind less or no calls at level 2 or level 3?

**B. FTA:**

1. In table 4.18, what is the reason behind less or no calls at level 2 or level 3?

2. In Table 4.8, 4.9 and 4.10, some variations are seen in each table. If column or bar graph could be added, it would be very easy to compare all the three tables.

**C. Farmer:**

1. For table 5.4, 5.5, 5.6, and 5.7, the graph can be added.

2. The impact of KCC on important farming decisions is one of the important part of the study. If the table no. 5.17 can be condensed to few decisions it would show a clear picture of the impact. A new table can be created which will show only those decisions which had an impact.

**(VI) Comment on other issues**

1. The word "suitable" is typed as "suiTable" in some of the pages. For EG: Page No. 4- 1<sup>st</sup> Paragraph-8<sup>th</sup> Line.

2. Page No. 11- 1<sup>st</sup> Paragraph- 2d line- "Client" instead of "clint" and "opens cape" instead of "opens cape". Same in Table 3.5

3. Page No. 32- 1<sup>st</sup> Paragraph-3<sup>rd</sup> line- "upliftment" instead of "up liftment".

4. Page No. 74, 2<sup>nd</sup> Paragraph- 2<sup>nd</sup> line- "profitable" instead of "profitable"

5. Page No. 76- Bullet point no. 1- Unnecessary word

6. List of abbreviations used in the report can be added at the beginning of the report.

**(VII) Overall view on the acceptability of report:**

The report has good insights about the functioning of KCC in Punjab and it is accepted. If some of the above suggestions can be addressed/included, it could improve the quality of the report considerably.

**Vasant P. Gandhi**  
**(CMA, IIM, Ahmedabad)**

**Appendix II : Action taken report on the comments of draft report entitled “Decision-Oriented Information System for Farmers: A Study of Kisan Call Centres (KCC), Kisan Knowledge Management System (KKMS), Famers Portal and M-Kisan Portal Punjab”.**

All the comments were taken into consideration while finalising the report. The suggestions have been incorporated, wherever necessary, in relevant chapters. The point wise detail of modifications undertaken in the final draft as per the queries has been as under:

**(V) Comments on methodology and analysis**

1. The sample selection of districts was based on the observations of agricultural experts regarding problematic crops as well as regions vis-a-vis crops and areas having no wider variations in yield levels. Explained in chapter I.
2. Discussed in chapter I.

**A. Centre**

1. Pattern of shifts and call handling by FTAs has been clarified.
2. Needful done as suggested.
3. Needful done as suggested.
4. Sub-sections have been incorporated and explained accordingly.
5. Sub-sections have been incorporated and discussed as per the titles.
6. Explained as per the perceptions of the centre staff.

**B. FTAs**

1. Reasons discussed as desired.
2. Column graph has been incorporated

**C. Farmers**

1. Graphs have added as per the suggestion.
2. Table has been concised to highlight the impact.

**(VI) Comment on other issues**

- I to 5 All the grammatical inconsistencies have been rectified as suggested.
6. List has been added.

**(VII) Overall view on the acceptability of report.**

All the suggestions in light of comments have been incorporated in the final draft of the report.

**D.K. Grover**  
**(Director, AERC, Ludhiana)**