



A Study on the Use Behaviour of ICT Enabled Services among Farmers in Raipur District of Chhattisgarh

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Agricultural information is vital for farmers because it supports decisions related to planting, soil improvement, market prices, weather, pests and diseases. Information and Communication Technology (ICT) provides different channels for communication and dissemination of agricultural information, including telephone, television, radio, mobile applications, websites and social media. The present study examines the use behaviour of ICT-enabled services among farmers, with particular attention to their socio-economic profile, awareness and use of ICT tools, purposes of ICT use, constraints and possible strategies for improving adoption. The study report covered 90 respondents and examined variables such as gender, income, social category, landholding and age. The findings showed that 87.80% of respondents reported awareness of ICT tools, while 63.30% used ICT tools directly and 36.70% indirectly. Phone calls and television were prominent ICT/media tools, while weather information and marketing were important purposes of use. Major constraints reported in the study included illiteracy, network connectivity, lack of financial resources, lack of trust, high cost, inadequate skills, language problems and complexity of ICT tools. The study suggests digital literacy programmes, improved rural connectivity, financial support, localized agricultural content, infrastructure development and capacity building to strengthen effective ICT use among farmers.

Keywords: ICT, Farmers, Agricultural Information, Digital Literacy, Information Dissemination.

Introduction

Agricultural information is an important resource for improving farm decision-making and supporting farmers' livelihoods. Farmers require timely information about planting, soil improvement, weather, markets, pests, diseases, inputs and other agricultural activities. Information and Communication Technology (ICT) has emerged as an important means for communicating and disseminating such information. ICT is a broad term that includes digital and communication technologies such as television, radio, social media, internet, smartphones, ATM, e-books and CD/DVD. These technologies can facilitate rapid dissemination of information and can support two-way communication. In agriculture, ICT-enabled services can help farmers access information required for production and marketing and can support more informed decisions.

The expansion of ICT has created opportunities for agricultural information services, particularly where conventional extension channels may not be sufficient. ICT can provide several services simultaneously and can connect farmers with information sources beyond their immediate locality. Access to market information, weather information and crop-management information can be useful for agricultural decision-making. At the same time, effective ICT use depends on farmers' awareness, skills, access to devices, network connectivity, affordability, trust and the availability of useful content. These issues are especially relevant in rural areas where small and marginal farmers constitute an important part of the farming

population. Therefore, studying how farmers actually use ICT, what information they seek and what barriers they face is important for developing suitable agricultural information services.

Materials and Methods

The study was conducted in Nakti village of Raipur district, Chhattisgarh, India, to assess farmers' use behaviour of ICT-enabled services. A total of 90 farmers were purposively selected based on their willingness to participate and convenience. Data were classified into socio-economic characteristics, ICT awareness, usage patterns, purposes, and constraints. Frequencies, percentages, and a Constraint Index were used for data analysis. **Socio-economic Profile of the Farmers**

The socio-economic profile provides the background necessary for understanding ICT use among the respondents.

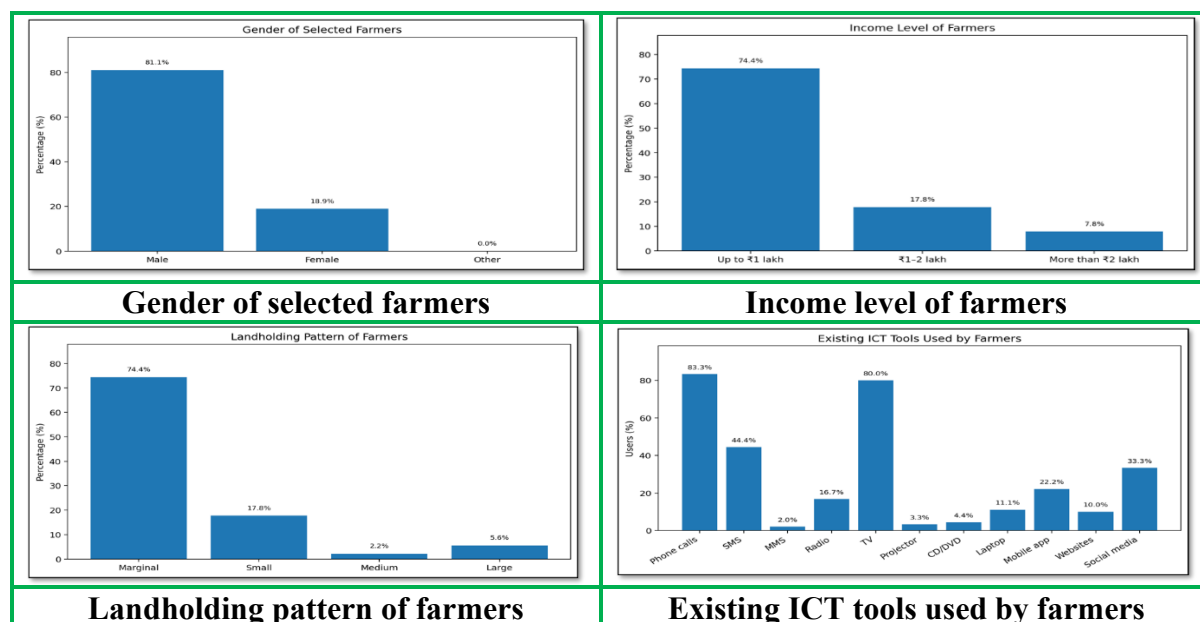
Gender: The study reported 73 male farmers (81.10%) and 17 female farmers (18.90%), with no respondent recorded under the "Other" category. Thus, the respondent group was predominantly male.

Income: A large proportion of respondents reported comparatively lower income. Sixty-seven farmers (74.40%) had income up to ₹1 lakh, 16 farmers (17.80%) had income between ₹1–2 lakh, and 7 farmers (7.80%) reported income above ₹2 lakh.

Social category: The respondents included Scheduled Tribe (ST), Scheduled Caste (SC), Other Backward Classes (OBC) and Unreserved (UR) categories. OBC respondents formed the largest group with 53 farmers (58.89%), followed by SC with 16 (17.78%), UR with 13 (14.44%) and ST with 8 (8.89%).

Landholding: Marginal farmers constituted the largest group. The report recorded 67 marginal farmers (74.44%), 16 small farmers (17.78%), 2 medium farmers (2.22%) and 5 large farmers (5.56%).

Age: The age distribution showed 35 young farmers up to 35 years (38.90%), 36 middle-aged farmers between 35 and 55 years (40.00%) and 19 older farmers aged 55 years and above (21.10%).



Awareness and Use of ICT-enabled Services

Awareness of ICT tools was high among the respondents. Seventy-nine farmers (87.80%) reported awareness, while 7 farmers (7.80%) reported no awareness and 4 farmers (4.40%) selected "Maybe". This indicates that awareness of ICT tools was present among a large majority of the respondents.

In terms of directness of use, 57 farmers (63.30%) reported using ICT tools directly, while 33 farmers (36.70%) used them indirectly. Among indirect users, the report recorded

family members as the most common source of assistance: 28 respondents (84.8%) relied on family members. Friends were reported by 1 respondent (3%), neighbours by 1 respondent (3%), and other methods by 3 respondents (9.1%).

The ICT tools used by the farmers showed a combination of conventional and digital communication methods. Phone calls were used by 75 respondents (83.30%), making them the most frequently reported tool. Television was used by 72 respondents (80.00%). SMS was used by 40 respondents (44.40%) and social media by 30 respondents (33.30%). Mobile applications were reported by 20 respondents (22.20%), radio by 15 (16.70%), laptops by 10 (11.10%), websites by 9 (10.00%), CD/DVD by 4 (4.40%), projector by 3 (3.30%) and MMS by 2 (2%).

Purpose of Using ICT in Agriculture

The report shows that farmers used ICT tools for a range of agricultural purposes. Weather-related information was an important area, with 18 respondents (30.00%) reporting its use. Marketing was also reported by 18 respondents (30.00%). Integrated Pest Management was reported by 15 respondents (25.00%), while Integrated Disease Management was reported by 13 respondents (21.67%).

Crop selection was reported by 12 respondents (20.00%). Seed or plant sapling information was reported by 7 respondents (11.67%). Water management and irrigation information and Integrated Nutrient Management were each reported by 5 respondents (8.33%). Credit access, harvesting and some other activities were reported by smaller proportions.

The report also records use for soil testing (4 respondents; 6.67%), storage (3; 5.00%), food processing (3; 5.00%), packaging (3; 5.00%) and transportation (5; 8.33%). Eleven respondents were recorded under “None” (33.30%) in the table. The study therefore indicates that ICT use was not restricted to a single agricultural activity; rather, it extended across weather, marketing, crop selection, pest and disease management and several post-production activities.

Weather and marketing information are particularly relevant because both production decisions and market decisions depend on timely information. Similarly, information on pests, diseases, nutrient management, seed and water management can support farmers in selecting and managing crops.

Constraints in the Use of ICT

The study identified several constraints that affected the adoption and effective use of ICT tools. Illiteracy among farmers was reported as a major constraint, with 67 respondents selecting it as “Most Often”, 20 as “Often” and 3 as “Never”; its reported index was 0.968.

Network connectivity was also important: 20 respondents selected it as “Most Often”, 67 as “Often” and 3 as “Never”, with an index of 0.74. Lack of financial resources was reported by 60 respondents as “Most Often”, 25 as “Often” and 5 as “Never”, with an index of 0.943.

Lack of trust of farmers was recorded with 62 “Most Often”, 20 “Often” and 8 “Never” responses, giving an index of 0.954. Unavailability of ICT hardware was reported with 45 “Most Often”, 35 “Often” and 10 “Never” responses, with an index of 0.885.

Fear from using ICT was reported with 60 “Most Often”, 25 “Often” and 5 “Never” responses, with an index of 0.932. High cost of ICT tools had 64 “Most Often”, 15 “Often” and 11 “Never” responses, with an index of 0.96. Lack of reliable and useful online content had 60 “Most Often”, 20 “Often” and 10 “Never” responses, with an index of 0.948.

Lack of proper infrastructure and lack of adequate skills to use ICT were each reported with 64 “Most Often”, 15 “Often” and 11 “Never” responses; their reported indices were 0.957 and 0.96 respectively. Language issue was reported with 60 “Most Often”, 20 “Often” and 10 “Never” responses, with an index of 0.951. Complexity in the use of ICT had 64 “Most Often”, 20 “Often” and 6 “Never” responses, with an index of 0.957. Finally, 58 respondents selected the need for more time and practice as “Most Often”, 25 as “Often” and 7 as “Never”, with an index of 0.957.

Strategies to Enhance ICT Use

The study report suggests a set of practical strategies to address the identified barriers. Digital literacy programmes can provide farmers with simple, practical training on the use of phones, applications, websites and other ICT tools. Such training can be designed around agricultural tasks rather than technology alone.

Improvement of rural network infrastructure is important for reliable access to online services. Financial support through subsidies or loans may help farmers acquire smartphones, computers or other required hardware. Awareness activities can also help build confidence in ICT tools.

Affordable access to ICT hardware is another important area. Training and demonstrations can help reduce fear and hesitation and can give farmers opportunities to practice. Group discounts or partnerships may be explored to reduce ICT-related costs.

Localized agricultural content can improve usefulness, particularly when information is available in language and formats that farmers can understand easily. Infrastructure development and capacity building can further support sustained ICT use. The report also emphasizes future research in different State Agricultural Universities and the need to study ICT techniques relevant to the period in which research is conducted.

Conclusion

ICT-enabled services provide an important channel for agricultural information dissemination. The study of farmers reported high awareness of ICT tools, with 87.80% of respondents indicating awareness. Direct use was reported by 63.30% of respondents, while 36.70% used ICT indirectly. Phone calls and television were prominent tools, while mobile applications, websites and social media showed comparatively lower reported use.

Farmers used ICT for several agricultural purposes, particularly weather-related information and marketing, along with pest management, disease management and crop selection. At the same time, adoption was affected by several constraints, including illiteracy, network connectivity, financial limitations, lack of trust, high cost, inadequate skills, language issues and complexity of ICT tools.

The findings indicate that increasing ICT availability alone may not be sufficient. Effective use also requires digital literacy, affordable access, reliable connectivity, useful and localized agricultural content, training and supportive infrastructure. Strengthening these areas can help farmers make more effective use of ICT services for agricultural information and decision-making. Future studies may be undertaken in different agricultural universities and locations and may include newer ICT techniques and changing digital practices. Such studies can provide updated understanding of farmers' information needs and the factors influencing effective ICT use.