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Constraints faced by the farmers of Jobner panchayat samiti in utilization of ICT tools

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Abstract

The ICT revolution has emerged from the fusion of computer and communication technologies. In today's information-driven era, ICT serves as a crucial bridge for transferring knowledge between research institutions and the agricultural sector. However, rural communities in India still face challenges in accessing vital information in formats that are understandable and actionable, hindering timely and effective decision-making in farming. In recent years, several innovative approaches have been introduced. Despite this, Indian farmers continue to grapple with various challenges in their efforts to boost crop yields. While the scope of information use in agriculture is broad and diverse, there remains a significant disconnect between research developments and actual on-ground practices. The study indicated that most farmers, whether located nearby or at a distance from research hubs, experienced moderate challenges in using ICT tools for agricultural activities. Among the constraints reported, physical discomfort—such as eye strain—was seen as a major issue by the farmers.

Keywords: Information and communication technology, cultivation or farming, agriculture sector and their constraints

Introduction

Information and Communication Technology (ICT) refers broadly to a range of tools and resources used for transmitting, processing, and sharing information. This includes devices and applications such as radios, televisions, mobile phones, computers, network systems, satellite technologies, and services like video conferencing and online education. In essence, ICT serves as an electronic channel for creating, storing, modifying, transmitting, and receiving data across different locations. It enables quicker, more convenient communication that is easier to access and interpret. By connecting agricultural researchers, extension workers, and farmers, ICT helps close the information gap, ultimately contributing to improved agricultural productivity and quality.

ICT is defined by World Bank as “any device, tool, or application that permits the exchange or collection of data through interaction or transmission”. It “includes anything ranging from radio to satellite imagery to mobile phones or electronic money transfers”.

The Role of ICT in Agriculture and Rural Development

Information and Communication Technology (ICT) plays a vital role in addressing the growing global demand for food by facilitating the timely collection and dissemination of accurate information related to weather forecasts, agricultural inputs, market conditions, and pricing trends. It also contributes to research and development, enhances

knowledge transfer to farmers, and strengthens connections between producers and consumers, among various other applications. ICT services serve as a crucial bridge, providing farmers with the essential access to knowledge, resources, and technologies necessary to boost productivity and improve their overall livelihoods.

Farmers' Information Needs

According to a national survey conducted by the National Sample Survey (NSS), only 40% of farming households were found to access information regarding modern agricultural practices and inputs. The study identified that the most common sources of information were interactions with other experienced farmers and input dealers. These were followed by media channels such as radio and television, with extension workers and newspapers being less commonly used.

Table 1: Common Sources of Agricultural Information among Farmers

| Source | Percentage of Households |
|---------------------------|--------------------------|
| Other experienced farmers | 16.7% |
| Input dealers | 13.1% |
| Radio | 13.0% |
| Television | 9.3% |
| Newspaper | 7.0% |
| Extension workers | 5.7% |

Source: Mittal & Tripathi, 2009

ICT Tools and Their Impact

ICT tools encompass a wide range of devices and technologies such as computers, mobile phones, communication towers, video conferencing systems, software, and traditional media like radio and television. These tools have played a transformative role in development and socio-economic growth, particularly in regions and sectors where they are effectively integrated, including agriculture. Today, nearly 40% of the world’s population has internet access, and even among the poorest 20% of the global population, seven in ten households own a mobile phone. The widespread adoption of ICT has led to reduced costs in communication and transactions, the creation of employment opportunities, enhanced service delivery, resource savings, and the generation of new revenue streams (FAO - ICT in Agriculture Report).

ICT and Poverty Alleviation

ICT-driven initiatives that support the livelihoods of rural communities can significantly impact agricultural output, market access, and post-harvest processes. These improvements collectively contribute to poverty alleviation and rural development. Through multiple avenues—including better access to information, stronger market linkages, and improved productivity—ICT serves as a powerful tool for driving socio-economic progress in rural areas.

Materials and Methods

The research was carried out in the Jobner Panchayat Samiti, located in the Jaipur district of Rajasthan. Among the 22 Panchayat Samitis in the district, Jobner was deliberately chosen for the study. From this area, four gram panchayats were selected at random. Within each selected gram panchayat, two villages were randomly chosen,

resulting in a total of eight villages for the study. In each village, 15 farmers were randomly selected, making up a sample size of 120 respondents.

The study focused on assessing the extent to which the selected farmers owned and utilized ICT tools in the context of agriculture and rural development. Constraints were defined as the challenges encountered by farmers while accessing and using ICT tools for agricultural purposes at the time of data collection. To evaluate these challenges, a structured schedule was prepared by the researcher. Farmers were asked to rate the severity of each constraint they experienced, and responses were scored on a three-point scale: “Most severe” (3), “Severe” (2), and “Less severe” (1).

Results and Discussion

The data regarding Barriers experienced by farmers while accessing and applying ICT technologies in agriculture is presented under following parts-

Levels of constraints faced by the selected farmers in utilization of ICT tools

Distribution of farmers according their constraints faced in utilization of ICT tools

Levels of constraints faced by the farmers in utilization of ICT tools

With a view to classify the farmers on the basis of levels of constraints faced by the cultivators in utilization of ICT tools, three categories were formulated *i.e.* low, medium and high by using arbitrary method. The results indicated in table that majority of farmers (57.50%) faced medium level of constraints in utilization of ICT tools, followed by high level of constraints by 29.17 per cent farmers and only 13.33 per cent farmers were facing low level of constraints in utilization of ICT tools.

Table 2: Levels of constraints faced by the farmers in utilization of ICT tools n=120

| S. No. | Category | Adjacent farmers (n ₁ =60) | | Distant farmers (n ₂ =60) | | Total (n=120) | |
|--------|------------------------------------|---------------------------------------|--------|--------------------------------------|--------|---------------|--------|
| | | F | % | F | % | F | % |
| 1 | Low (below 23.33 score) | 7 | 11.67 | 9 | 15.00 | 16 | 13.33 |
| 2 | Medium (from 23.33 to 32.66 score) | 32 | 53.33 | 37 | 61.67 | 69 | 57.50 |
| 3 | High (above 32.66 score) | 21 | 35.00 | 14 | 23.33 | 35 | 29.17 |
| | Total | 60 | 100.00 | 60 | 100.00 | 120 | 100.00 |

The data presented in the table reveals that a majority of nearby farmers (53.33%) and those from more distant locations (61.67%) experienced a moderate level of challenges in using ICT tools. Additionally, 35.00% of nearby farmers and 23.33% of distant farmers reported encountering a high level of difficulties, while only 11.67% of adjacent farmers and 15.00% of those farther away reported facing a low level of constraints in the use of ICT tools.

Distribution of farmers according to constraints faced by them in the utilization of ICT tools

There were different constraints identified which was measured into “Most severe”, “Severe” and “Less severe” *etc.* with scoring was done as 3, 2 and 1 respectively. Rank

of constraints were decided on basis of MPS score. The results are presented in table.

The data from table revealed that in adjacent farmers 76.67 per cent of farmers faced most severe and 20.00 per cent of farmers faced severely the constraints of “Physical problem (eye pain *etc.*)” followed by 58.33 per cent of adjacent farmers faced more severely and 30.00 per cent of adjacent farmer faced severely constraint in “Lack of training program to use ICT tools” and 50.00 per cent had most severely, 46.67 per cent had severely faced the constraint of “High cost of ICT tool’s” and 46.67 per cent faced most severely and 50.00 per cent faced severely the constraint of “No financial help from government to purchase or use of ICT tools”.

Table 3: Distribution of farmers according to constraints faced by them in the utilization of ICT tools

| S. No. | Constraints | Adjacent farmers (n ₁ =60) | | | | | | | | Distant farmers (n ₂ =60) | | | | | | | |
|--------|---|---------------------------------------|-------|------------|-------|-----------------|-------|-------|-------|--------------------------------------|-------|------------|-------|-----------------|-------|-------|-------|
| | | Most severe (3) | | Severe (2) | | Less severe (1) | | MPS | Rank | Most severe (3) | | Severe (2) | | Less severe (1) | | MPS | Rank |
| | | F | % | F | % | F | % | | | F | % | F | % | F | % | | |
| 1 | Insufficient power of supply | 3 | 5.00 | 19 | 31.67 | 38 | 63.33 | 47.2 | XVIII | 2 | 3.33 | 16 | 26.67 | 42 | 70.00 | 44.44 | XVIII |
| 2 | Inadequate network connectivity | 8 | 13.33 | 37 | 61.67 | 15 | 25.00 | 62.77 | XII | 7 | 11.67 | 35 | 58.33 | 18 | 30.00 | 60.55 | XII |
| 3 | Lack of confidence in using ICT tools | 9 | 15.00 | 36 | 60.00 | 15 | 25.00 | 63.33 | XI | 8 | 13.33 | 36 | 60.00 | 16 | 26.67 | 62.22 | X |
| 4 | Lack of knowledge | 21 | 35.00 | 32 | 53.33 | 7 | 11.67 | 74.4 | VII | 23 | 38.33 | 28 | 46.67 | 9 | 15.00 | 74.44 | VI |
| 5 | Lack of training program to use ICT tools | 35 | 58.33 | 18 | 30.00 | 7 | 11.67 | 82.22 | II | 31 | 51.67 | 20 | 33.33 | 9 | 15.00 | 78.88 | III |
| 6 | Low literacy of farmers | 24 | 40.00 | 29 | 48.33 | 7 | 11.67 | 76.11 | V | 25 | 41.67 | 26 | 43.33 | 9 | 15.00 | 75.55 | V |
| 7 | Lack of skill in handling ICT tools | 10 | 16.67 | 44 | 73.33 | 6 | 10.00 | 68.88 | IX | 1 | 1.67 | 50 | 83.33 | 9 | 15.00 | 62.22 | X |
| 8 | High cost of ICT tool's | 30 | 50.00 | 28 | 46.67 | 2 | 3.33 | 82.22 | III | 29 | 48.33 | 27 | 45.00 | 4 | 6.67 | 80.55 | II |
| 9 | Negative attitude towards ICT tools | 23 | 38.34 | 29 | 48.33 | 8 | 13.33 | 75.00 | VI | 20 | 33.33 | 29 | 48.33 | 11 | 18.34 | 71.67 | VII |
| 10 | Less availability of ICT tools with farmers | 9 | 15.00 | 27 | 45.00 | 24 | 40.00 | 58.33 | XIII | 7 | 11.67 | 26 | 43.33 | 27 | 45.00 | 55.55 | XIII |
| 11 | Lack of awareness about the benefit of ICT tools | 8 | 13.33 | 50 | 83.33 | 2 | 3.34 | 70.00 | VIII | 8 | 13.33 | 48 | 80.00 | 4 | 6.67 | 68.80 | VIII |
| 12 | No financial help from government to purchase or use of ICT tools | 28 | 46.67 | 30 | 50.00 | 2 | 3.33 | 81.11 | IV | 21 | 35.00 | 35 | 58.33 | 4 | 6.67 | 76.10 | IV |
| 13 | Physical problem (eye pain etc.) | 46 | 76.67 | 12 | 20.00 | 2 | 3.33 | 91.11 | I | 45 | 75.00 | 11 | 18.33 | 4 | 6.67 | 89.40 | I |
| 14 | Lack of information due to language problem | 10 | 16.67 | 43 | 71.66 | 7 | 11.67 | 68.33 | X | 10 | 16.67 | 41 | 68.33 | 9 | 15.00 | 67.20 | IX |

It was further observed that 38.34 per cent adjacent farmers faced most severely and 48.33 per cent faced severely the constraints of "Negative attitude towards ICT tools" and 35.00 per cent adjacent farmer faced most severe and 53.33 per cent faced severe constraints of "Lack of knowledge" followed by 16.67 per cent farmer faced most severely and 71.16 per cent faced severely the constraint regarding "Lack of information due to language problem" and only 15.00 per cent faced most severely and 60.00 per cent have severely constraints of "Lack of confidence in using ICT tools".

On other hand in distant farmers 75.00 per cent of farmers faced most severely and 18.33 per cent of farmers faced severely the constraints in "Physical problem (eye pain etc.)" followed by 51.67 per cent of farmers had more severe and 33.33 per cent of farmer had severe constraints of "Lack of training program to use ICT tools" and 48.33 per cent had most severe, 45.00 per cent had severe constraint regarding "High cost of ICT tool's" and 35.00 per cent had most severe, 58.33 per cent had severe constraint of "no financial help from government to purchase or use of ICT tools".

It was further depicted that 33.33 per cent distant farmers faced most severely and 48.33 per cent had faced severe constraints regarding "Negative attitude towards ICT tools" and 38.33 per cent farmers have most severe and 46.67 per cent faced severe constraint in "Lack of knowledge" followed by 16.67 per cent farmer faced most severe and 68.33 per cent faced severe constraint regarding lack of information due to language issue" and 13.33 per cent had most severe and 60.00 per cent faced severe constraints of "Lack of confidence in using ICT tools".

It can be observed that majority of adjacent and distant farmers faced the physical problems (eye pain etc.). Which might be due to the fact that, electronic gadgets like phone, television releases blue light radiation that is harmful for human eyes.

Conclusion

1. The study revealed that majority of adjacent (53.33%) and distant (61.67%) farmers faced medium level of constraints. Out of total farmers 57.50% farmers had

medium level of constraints.

2. Among the different farmers faced constraints by the in utilization of ICT tools. The constraints "physical problem (eye pain etc.)" was perceived at first rank by both adjacent (91.99 MPS) and distant (89.40 MPS) farmers. Whereas the constraints lack of training program to use ICT tools by the farmers was perceived at second rank by the adjacent (82.22 MPS) and at third rank by the distant farmers (78.88 MPS). The constraints of "High cost of ICT tools" was perceived at third rank by the adjacent (71.00 MPS) and at second rank by distant farmers (85.55 MPS). The problem of "No financial help from Govt. to purchase ICT tools" was perceived at fourth rank by both adjacent (81.11 MPS) and distant farmers (76.10 MPS). Whereas the hurdle of "low literacy of farmers" was perceived at fifth rank by both adjacent (71.11 MPS) and distant farmers (75.55 MPS).

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