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Extent and Patterns of Information and Communication Technology (ICT) Utilization among Rural Women

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Abstract

Information and Communication Technologies (ICT) include a broad range of tools, devices, and services involved in creating, managing, and exchanging information. While ICT use has grown rapidly worldwide, adoption remains limited in rural areas, especially among women. A study in Jhansi district, Uttar Pradesh, explored how rural women engage with ICT—assessing both the level and purposes of use—to determine whether it reinforces traditional roles or fosters innovation. Results revealed significant engagement: 17.77% of respondents reported high usage, 12.22% medium, and another 12.22% low. Mobile phones were the most common device (used by 74.4%), primarily for communication (92.22%). They also supported health-related activities, such as seeking treatment advice (48.89%) and contacting healthcare providers (46.67%), though agricultural applications remained limited (13.33% for precautions, 8.89% for pesticides). Television served as a major source of awareness, delivering news (76.67%) and entertainment (83.33%), along with some agricultural (18.89%) and immunization (20%) content. The internet was largely used for entertainment (82.22%), moderately for health information (30%), and infrequently for checking market prices (13.33%). While ICT holds considerable promise for empowering rural women, current usage leans heavily toward leisure rather than development-focused areas like agriculture, health, and environmental knowledge, highlighting the need for more targeted and constructive application.

Keywords: Information and Communication Technologies (ICT), rural women, ICT utilization, digital empowerment, agricultural information, health information

1. Introduction

The term "Information and Communication Technologies," or "ICT," refers to a broad category of tools, programs, and services used to create, process, modify, and distribute information^[1]. India's digital economy and information and communication technology industry are essential to the nation's economic expansion. These industries account for more than 13 per cent of India's GDP. India's success in using information and communication technology to promote economic competitiveness and societal development is reflected in its performance in the Portulans Institute's Network Readiness Index, according to the International Trade Administration 2024. Among the 131 countries surveyed, India's rating rose from 67 in 2021 to 61 in 2022, with a score of 51.19 out of 100. This progress highlights the nation's efforts to strengthen its preparedness to participate in the global digital economy, fueled by investments in innovation ecosystems, digital skills development, ICT infrastructure, and regulatory reforms. The Indian

government has taken the initiative to launch initiatives that are focused on women. These programs seek to support women's overall growth in the nation in addition to meeting immediate needs. The use of information and communication technology (ICT) in women's empowerment has received a lot of attention around the world, and the UN's recognition of its significance as a component of the Sustainable Development Goals shows that true empowerment entails giving women the resources, abilities, and tools necessary to fully engage in social, political, and economic activities^[2]. Women play key roles in food processing, consumer-facing activities, and agribusiness worldwide. Women contribute to the production, processing, and marketing of food and comprise 60–80 per cent of the agricultural workforce. Utilising information and communication technology can help provide women with important resources, knowledge, and tools to overcome obstacles and contribute more effectively to agricultural activities. Women are farmers themselves and make significant contributions to agricultural

activities, but they also face significant challenges, such as the depletion of natural resources. Increased productivity and sustainable resource management in the agricultural industry may result from ICT [3]. ICT has the potential to significantly improve both individual and community health care. The World Health Organisation claims that technology is the foundation of disease prevention, diagnosis, and treatment services because it can enhance the public's access to public health information, promote public discourse on significant public health threats, and enable telemedicine-based remote consultation, diagnosis, and treatment [4].

Even though ICT has greatly advanced and expanded globally, rural communities, particularly women, are still more reluctant to use it. Therefore, the purpose and extent of using ICT tools will help identify their usage patterns, whether they are traditional or innovative, and change them in a way that can positively impact their future. However, these characteristics were the focus of the current study, "An assessment of information and communication technology among the rural women of Jhansi district of Uttar Pradesh." Policymakers, rural women, and the Uttar Pradesh government will find the study useful in raising awareness of the potential of ICT for rural community and national empowerment.

2. Objective

To study the utilization pattern and extent of utilization of ICT among rural women.

3. Methodology

3.1 Research design

The study used a descriptive and ex post facto research design to evaluate the extent and pattern of rural women's use of information and communication technology (ICT). Because the factors under consideration had already happened and were examined without any modification by the researcher, the ex-post facto design was deemed appropriate.

3.2 Study area

The study was conducted in the Bundelkhand region of Uttar Pradesh, one of the four agro-regional zones of the state. The region was purposively selected considering its relatively low literacy level and the presence of institutions supporting agricultural and technological information dissemination, including the Indian Grassland and Fodder Research Institute (IGFRI), Central Agroforestry Research Institute (CAFRI), Rani Lakshmibai Central Agricultural University, Krishi Vigyan Kendra (KVK), and Jan Suvidha Kendras.

3.3 Sampling procedure

The respondents were chosen using a multi-stage sampling approach. Out of the seven districts in the Bundelkhand region, Jhansi district was purposefully chosen for the first stage. In the second phase, two of the eight development blocks in the Jhansi district—Baragaon and Moth—were chosen at random using the lottery system. Six villages—Karari, Ambabai, Bachauli Bujurg, Poonch, Bawai, and Khuja—were chosen at random from each block in the third stage. Fifteen ICT-using rural women were purposefully chosen from each chosen village for the fourth round. Consequently, the study's sample consisted of ninety rural women.

3.4 Data collection and Measurement of ICT utilization

A pre-tested structured interview schedule with closed-ended questions was used to gather primary data. Personal interviews were carried out to guarantee accurate responses because the respondents were rural women with different educational backgrounds. Secondary data was gathered from government sources, research journals, and reports and publications of national and international organisations, such as FAO.

Three widely available ICT tools were taken into consideration in this study: television, smartphones, and the Internet. Three functional dimensions were used to evaluate utilisation: general reasons, agricultural purposes, and health purposes.

Respondents reported how frequently they used each ICT tool for various tasks in order to gauge the utilisation pattern. Respondents were divided into low, medium, and high utilisation categories based on class interval distribution after the utilisation schedule scores were added up to determine the degree of utilisation.

3.6 Statistical analysis

Descriptive statistical methods were used to code, tabulate, and analyse the gathered data. The utilisation pattern was described, and respondents were categorised by ICT utilisation frequency, with percentages, means, and standard deviations reported. These statistical metrics were deemed suitable for achieving the goal of evaluating rural women's use of ICT.

4. Results and Discussion

Table 1: Utilization Pattern of ICT for general purposes

S. N.	Particulars	Television		Mobile		Internet	
		F	%	F	%	F	%
1.	To know current issues.	46	51.11	34	37.78	31	34.44
2.	For general knowledge	11	12.12	26	28.89	22	24.44
3.	For messaging.	0	0	65	72.22	54	60.00
4.	For news.	69	76.67	37	41.11	29	32.22
5.	For communication	0	0	83	92.22	42	46.67
6.	For entertainment	75	83.33	65	72.22	74	82.22
7.	Sanitation and environment issues	11	12.22	7	7.78	6	6.67

Table 1 highlights television's significant function as a source of information and leisure by demonstrating that it is mostly used for news (76.67%) and entertainment (83.33%). Mobile phones are primarily used for texting (72.22%) and communication (92.22%), demonstrating their crucial role in fostering interpersonal connections. The internet is mostly used for communications (60.00%) and entertainment (82.22%), with less use for news and current affairs. There is little usage of ICT tools for development or awareness-raising when it comes to environmental and sanitation issues. The results are consistent with those of Singh *et al.* (2018) [5], who found that mobile phones were mostly used for making calls, whereas television was primarily used for news and entertainment. In a similar way, Jha and Kashyap (2022) [6] noted that although television was mostly utilised for news and entertainment, mobile phones were predominantly used for communication, entertainment, and messaging. Lwoga and Chigona (2018) [7], who found that rural women used the

internet for news, health, education, employment, social, and entertainment-related information, also provide broad support for the findings regarding internet use. Rural women used ICT more for communication, enjoyment, and urgent

information requirements than for developmental awareness, as evidenced by the relatively low usage of ICT for environmental and sanitation information.

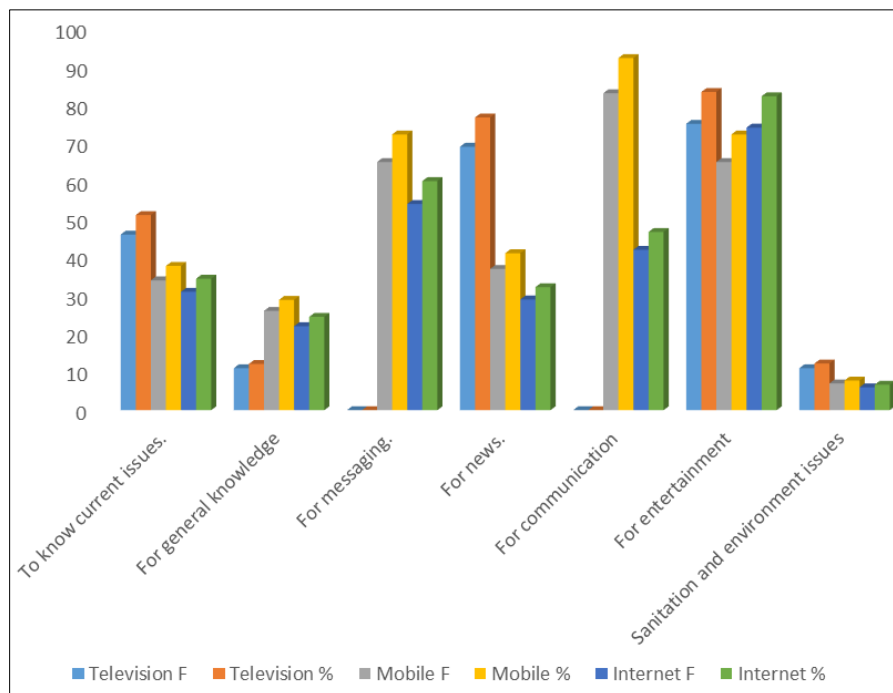


Fig 1: Utilization Pattern for general purposes

Table 2: Utilization Pattern of ICT for Agricultural Purposes

S. N	Particulars	Television		Mobile		Internet	
		F	%	F	%	F	%
1.	To get the latest information on agriculture.	17	18.89	17	18.89	15	16.67
2.	To know about high-yielding varieties in various crops.	9	10.00	8	8.89	7	7.78
3.	To learn about the uses of insecticides and pesticides.	5	5.56	8	8.89	3	3.33
4.	To get information on precautionary measures in the field.	4	4.44	12	13.33	2	2.22
5.	To know the price of products.	0	0	8	8.89	12	13.33

Table 2 shows that, with 18.89 per cent of respondents utilising each media, television and mobile phones were the most popular ways to get the most recent agricultural information, followed by the internet (16.67%). This suggests that timely agricultural information dissemination still heavily relies on mobile-based communication and traditional mainstream media. Television is the most popular media for learning about high-yielding crop types (10.00%), followed by mobile phones (8.89%) and the internet (7.78%). This implies that information on crop types may be better communicated using visual and audio-based content. Mobile phones were used more often (8.89%) than television (5.56%) and the internet (3.33%) to learn about the use of pesticides and insecticides. This illustrates how mobile-based advice services are becoming increasingly important for farm management techniques. Mobile phones are the most popular ICT tool (13.33%) for learning about safety precautions in the field, whereas television (4.44%) and the internet (2.22%) are used less frequently. This demonstrates how mobile phones can be used to obtain situation-specific safety information

quickly. On the other hand, mobile phones (8.89%) and the internet (13.33%) are the primary sources of information about product costs; television was not utilised for this purpose. This suggests that digital platforms better serve real-time market information. Overall, the table clarifies that while television remains important for general agricultural awareness, mobile phones and the internet are increasingly preferred for specific, timely, and market-related information, emphasizing the growing role of digital ICT tools in agricultural information dissemination.

The results are consistent with those of Syiem and Raj (2015)^[8], who documented the usage of television, cell phones, and the internet for agricultural information, such as market prices, expert advice, input availability, and fertiliser management. According to Nyarko and Kozari (2021)^[9], the relatively low use of ICT for agricultural purposes may be explained by the fact that these technologies are more frequently used for communication and entertainment than for specialised agricultural information.

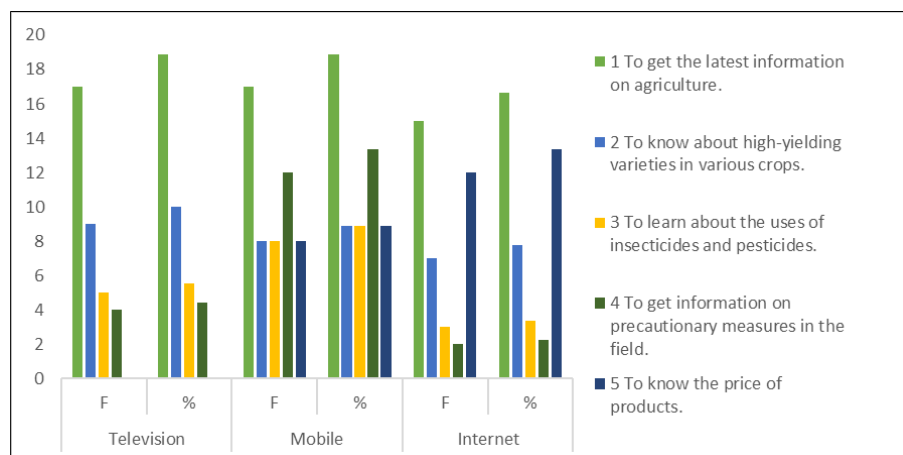


Fig 2: Utilization Pattern for Agricultural Purposes

Table 3: Utilization Pattern of ICT for health purposes

S. N.	Particulars	Television		Mobile		Internet	
		F	%	F	%	F	%
1.	To get information regarding immunization.	18	20	29	32.22	19	21.11
2.	To get advice on a health condition/ treatment.	7	7.78	44	48.89	27	30.00
3.	To contact a health worker.	0	0	25	27.78	2	2.22
4.	To contact the doctor.	0	0	42	46.67	2	2.22
5.	To make a complaint to a healthcare provider.	0	0	6	6.67	1	1.11

According to Table 3 mobile phones are the most popular information and communication technology (ICT) tool for accessing health services and information, especially for calling doctors (46.67%) and seeking advice on medical issues or treatments (48.89%). Television was not used for direct communication with medical professionals or physicians; instead, it was mostly used to obtain information on vaccinations (20%). A substantial amount of health information was accessed over the internet, particularly for

treatment recommendations (30.00%) and vaccinations (21.11%). These results underscored the importance of mobile-based communication in healthcare information access by demonstrating a strong preference for it for urgent and interactive health-related demands.

The findings are consistent with Eniola *et al.* ^[10] (2011), who reported that rural women obtained health information through ICTs.

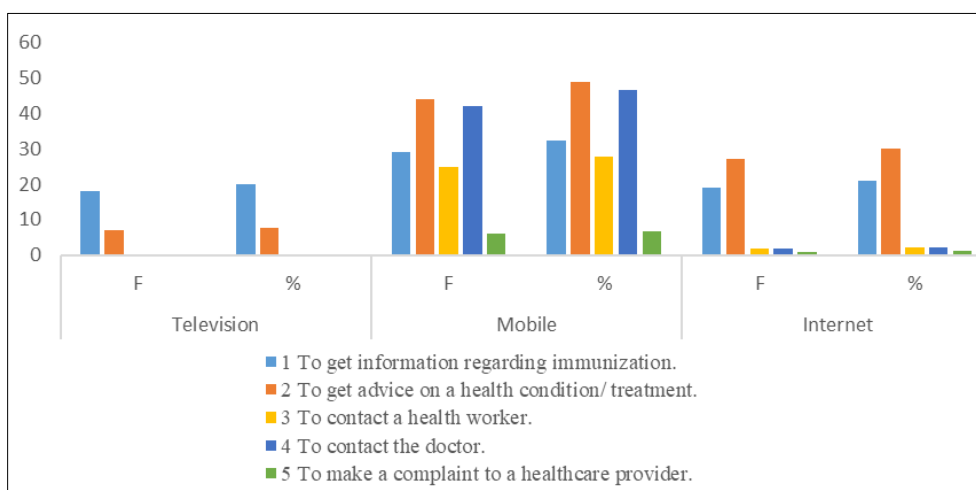


Fig 3: Utilization Pattern for health purposes

Table 4: Extent of utilization of ICT

S. N.	Particulars	Respondents response in per cent				
		Never	Whenever needed	Monthly	Weekly	Daily
1.	Television	0	27.8	16.7	34.4	21.1
2.	Mobile	0	18.9	0	6.67	74.4
3.	Internet	0	21.1	12.2	14.4	52.2

Everyone is exposed to these technologies, as Table 4 demonstrates that all respondents use ICT tools. With 74.40 per cent of people using them daily, mobile phones are the most popular. Because of this, mobile phones are the primary means of communication and information exchange. Although it is not as common as mobile phone use, internet access is similarly high, with 52.20 per cent of people accessing it every day. The percentage of people who watch

television is moderate: 34.40 per cent watch it once a week, 21.10 per cent every day, and 27.80 per cent when needed. In general, there is a noticeable shift toward the use of cell phones and the internet, with television remaining significant but less prominent.

Similarly, Sarker (2020) ^[11] found that 19 out of 21 rural women used smartphones every day, with several using them multiple times a day.

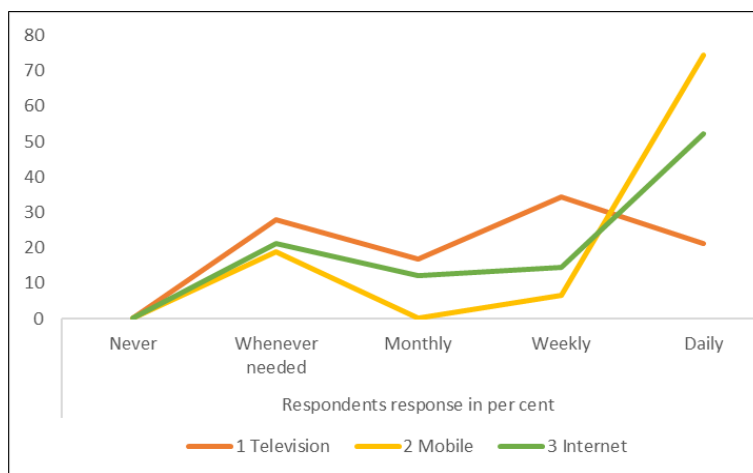


Fig 4: Extent of utilization of ICT

Table 5: Overall extent of utilization of ICT

S. N.	Particular	Frequency	Per cent
1.	Low extent (7 to 9.33)	11	12.22
2.	Medium extent (9.34 to 12.66)	16	17.77
3.	High extent (12.67 to 16)	63	70.00
	Total	90	100

With scores ranging from 12.67 to 16, Table 5 showed that a significant majority of respondents, 63 out of 90 (70.00%), fall into the high extent of ICT utilisation category. This suggests that the majority of participants utilise ICT tools extensively. With scores ranging from 9.34 to 12.66, 16 respondents (17.77%) exhibit a medium level of ICT utilisation, indicating moderate engagement with ICT resources. With scores between 7 and 9.33, just 11 respondents (12.22%) fit into the low extent of ICT utilisation category, suggesting that only a tiny percentage of participants use ICT extensively. According to the findings, ICT use is generally high among respondents, indicating that ICT tools have been successfully adopted and integrated within the research group.

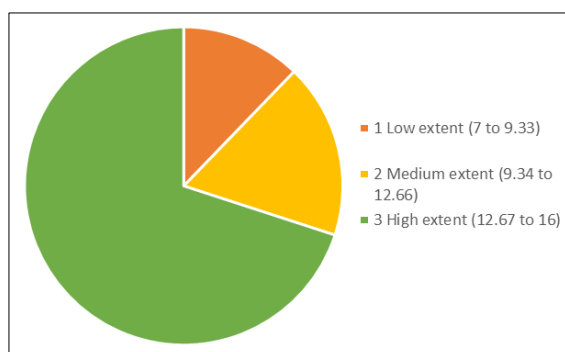


Fig 5: Overall extent of utilization

5. Conclusion

With 70% showing high extent (scores 12.67–16), 17.77% medium extent (9.34–12.66), and just 12.22% low extent (7–9.33), this study offers strong evidence of effective information and communication technology (ICT) utilization. The majority of people use mobile phones on a daily basis (74.4%), and they excel in communication (92.22%), health services (e.g., treatment advice 48.89%, doctor contacts 46.67%), and targeted agriculture (e.g., precautions 13.33%, pesticides 8.89%). While the internet helps with amusement (82.22%), pricing (13.33%), and mild health information (30% treatment), television supports general awareness such as news (76.67%), entertainment (83.33%), agriculture updates (18.89%), and vaccination (20%).

Despite substantial exposure, trends show that entertainment and messaging outweigh developmental demands; for example, sanitation and environmental needs are low (6.67–12.22%), with mobile devices and the internet gaining for timely information despite TV's traditional importance. These results support the potential for ICT to empower rural women (60–80% of the workforce is employed in agriculture), which is in line with India's digital progress (Network Readiness rank 61/131) and the SDGs. However, they also emphasise the need to shift from leisure to agriculture, health, and sustainability.

6. Recommendation

- Basic computer and internet skills should be taught in basic digital literacy initiatives to enhance ICT in rural areas.
- NGOs, educational institutions, higher education institutions, and other organisations can provide regular training, particularly for women.
- Creating ICT clubs and promoting group learning

increases participation.

- More people should be aware of how ICT can be used for weather, agriculture, health, and government services.
- Local, culturally relevant information and coaching can help people become more confident while using ICT. ICT resources should cater to rural women's needs and be available in their native tongues.
- Create mobile applications with a focus on women to appeal to medium and low users.
- produce localized TV shows on sanitation/environment and crop varieties weekly airing.
- Provide subsidised internet data/digital literacy via SHGs to shift entertainment time towards relevant information.
- Government policies should support ICT growth in rural areas, including subsidies. Regular feedback and monitoring will help ensure women's ICT needs are met and lead to lasting empowerment, and Uttar Pradesh policymakers for skill-building and utilization monitoring.

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