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Constraints faced in the usage of IoT devices and Social media apps among the farming community of Theni district

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Abstract

Agriculture in India is increasingly influenced by emerging technologies such as the Internet of Things (IoT) and social media, which offer opportunities for enhanced productivity, information sharing, and sustainable resource management. This study explores the barriers limiting the adoption and effective use of IoT devices and social media applications among farmers in Theni District. Using purposive sampling, data were collected from 125 farmers across four blocks of Theni district through personal interviews and analysed using Garrett's ranking technique. The findings revealed that farmers exhibit moderate awareness and adoption levels of IoT and social media, with social media use being more prevalent. The major constraints identified were lack of awareness about IoT and social media, language barriers, low educational levels, and the need for technical labour. High costs and poor network coverage further hindered effective utilization. The study emphasizes the importance of digital literacy programs, awareness campaigns, localized content, and affordable technology to promote greater adoption of IoT and social media tools in agriculture.

Keywords: IoT, Social media, Farming community, Theni district, Constraints, Garrett's ranking

Introduction

Agriculture, the backbone of the Indian economy, is undergoing a profound transformation driven by the integration of digital technologies. Among these, the Internet of Things (IoT) and social media have emerged as powerful tools with the potential to revolutionize traditional farming practices. IoT enables farmers to monitor and manage agricultural operations through smart devices and sensors, while social media facilitates the rapid exchange of information, knowledge, and best practices among farming communities.

The Internet of Things (IoT) refers to the interconnection of smart devices that collect and transmit data, analyze data in real-time to support decision-making. In agriculture, this includes soil moisture sensors, automated drip irrigation systems, remote weather monitoring stations, GPS-enabled tractors, mobile-based farm management applications, automated irrigation systems, and drones to optimize farm productivity, reduce resource wastage, and enhance overall efficiency. At the same time, social media platforms such as WhatsApp, YouTube, and Facebook have become essential tools for knowledge dissemination and peer-to-peer learning among farmers. WhatsApp groups are used to share pest alerts, market prices, and government schemes, while YouTube channels provide video tutorials on modern farming techniques, organic farming, and IoT usage. According to the Internet and Mobile Association of India

(IAMA), over 40% of rural internet users in India engage with agricultural content through social media platforms.

As global demand for food continues to rise, the need for sustainable and technology-driven agricultural practices has become critical. In countries like India, where agriculture is a primary source of livelihood, IoT has the potential to bridge the digital divide and modernize traditional farming methods. The adoption of IoT in agriculture is gradually increasing, with various government initiatives, private sector innovations, and mobile-based advisory services playing a significant role.

Thus, the study identifies the challenges faced by farmers in using IoT devices and social media in farming. By understanding how these digital tools are being utilized, the research seeks to offer insights that can inform policies and programs aimed at promoting sustainable and technology-driven agriculture in rural India.

Methodology

The study was undertaken in Theni district of Tamil Nadu. Purposive sampling method was employed to select the blocks. Among the eight blocks, Bodinayakanur, Cumbum, Periyakulam and Uthamapalayam blocks were purposively selected. Villages were selected by random sampling method and 125 respondents were purposively selected for the study. Pre-tested and well-structured interview schedule was used for data collection. The data was collected by

personal interview during the months of May - July 2025. The collected data was analyzed using the statistical techniques Garrett's ranking.

Results and discussion

The study revealed that farmers in Theni district predominantly exhibit medium levels of awareness, knowledge, and usage of both IoT and social media. Social

media adoption is higher and more widespread, with platforms like WhatsApp and YouTube serving as primary sources of agricultural information, however, IoT adoption, remains relatively low, limited by high costs, lack of technical know-how, and inadequate digital literacy. The constraints faced by the farmers were ranked by themselves and Garrett ranking was applied and findings were given below.

Table 1: Constraints faced by the respondents

Constraints	Rank1	Rank2	Rank3	Rank4	Rank5	Rank6	Rank7	Rank8
Fear of misinformation	13	19	13	9	25	19	12	15
Lack of education	16	13	20	13	9	16	15	23
High cost	20	11	15	15	19	15	20	10
Need of technical labour	18	21	10	16	12	21	12	15
Lack of awareness about IoT and social media	16	24	23	9	14	14	15	10
Language barrier	18	17	18	12	16	17	15	12
Poor network coverage	15	15	14	15	12	19	13	22
Agriculture services aren't widely available on social media	16	12	14	9	26	24	16	8

Table 2: Percent positions and Garret values

Rank	Percent position	Percent value	Garret value
1	$100*(1-0.05)/8$	11.88	74
2	$100*(2-0.05)/8$	24.38	64
3	$100*(3-0.05)/8$	36.88	57
4	$100*(4-0.05)/8$	49.38	51
5	$100*(5-0.05)/8$	61.88	45
6	$100*(6-0.05)/8$	74.38	38
7	$100*(7-0.05)/8$	86.88	29
8	$100*(8-0.05)/8$	99.38	6

Table 3: The calculation to find average score and rank for constraints faced by respondents in Theni district

Constraints	Total score	Mean score = Total score/20	Rank
Fear of misinformation	5663	45.304	6
Lack of education	5869	46.952	3
High cost	5405	43.24	7
need of technical labour	5838	46.704	4
Lack of awareness about IoT and social media	6147	49.176	1
Language barrier	5931	47.448	2
Poor network coverage	5404	43.232	8
Agriculture services aren't widely available on social media	5803	46.424	5

The table 3 shows that the lack of awareness about IoT and social media emerged as the most significant constraint, with the highest mean score of 49.176 and ranked first. This indicates that many farmers are either unaware of these technologies or do not fully understand their potential applications in agriculture. The language barrier was the second-highest constraint (mean score 47.448), suggesting that the predominance of English or non-local languages in digital content limits accessibility for farmers. Lack of education ranked third (mean score 46.952), reflecting the need for improved literacy and technical understanding to effectively adopt digital solutions. The need for technical labour (rank 4, mean score 46.704) highlights the dependency on skilled personnel for installation, maintenance, and troubleshooting of IoT systems. Similarly, agriculture services not being widely available on social media (rank 5, mean score 46.424) points to the limited presence of localized agricultural support services in digital spaces. Fear of misinformation (rank 6, mean score 45.304) indicates a level of distrust among farmers toward online

agricultural information, likely due to past experiences or lack of verification mechanisms. High cost of technology adoption (rank 7, mean score 43.24) remains a significant financial barrier, especially for small and marginal farmers. Poor network coverage was ranked the lowest (rank 8, mean score 43.232), but still poses a bigger challenge in remote rural areas.

Suggestions

- Creating Awareness campaigns in local languages, farmer training programs, affordable technology models, and reliable information platforms.
- Promoting success stories of farmers using IoT and social media effectively.
- Establishing village-level service centers with trained technicians for IoT installation and troubleshooting.
- Promoting farmer-to-farmer networks on WhatsApp, Telegram, and Facebook for sharing practical advice.
- Creating verified agricultural information channels

endorsed by government or research institutions.

- Providing subsidies, credit support, and low-interest loans for purchasing IoT devices.

Conclusion

For effective integration of digital technologies in agriculture, targeted interventions such as digital literacy training, awareness campaigns, subsidies for IoT devices, and improved rural connectivity are essential. Strengthening farmer-to-farmer networks via social media and expanding access to advisory services will further enhance adoption and contribute to sustainable agricultural development.

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