

Original Article

Exploring Farmers Awareness and Perception of Agricultural Digitalisation In Erode District

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Abstract

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This study explores the awareness and perception of agricultural digitalization among farmers in the Erode district of Tamil Nadu. With the rise of digital technologies such as precision farming, mobile applications, and AI-based monitoring systems, agriculture is undergoing a significant transformation. The study aims to assess the level of digital literacy among farmers, identify factors influencing their adoption decisions, and evaluate the role of digital platforms in connecting farmers with markets and resources. Primary data was collected from 150 farmers using a structured questionnaire, and analyzed using statistical tools including ANOVA, Chi-square test, t-test, and Friedman rank test. Findings reveal that while a majority of farmers are somewhat familiar with digital tools, factors such as age, education, and farm size significantly influence their awareness and perception. Affordability, government support, and internet connectivity emerged as key determinants in the adoption of digital technologies. The study highlights the need for targeted interventions, including training programs and policy support, to bridge the digital divide and promote sustainable agricultural practices in the region.

Keywords: Farmers Awareness, Farmers Perception, Digital tools, Market and resources, Agricultural Digitalisation.

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Introduction

Agricultural digitalization refers to the integration of digital technologies into farming practices to enhance productivity, sustainability and efficiency. With advancements such as precision farming, IoT-based monitoring systems, and data analytics, the agricultural sector is experiencing a significant transformation. However, the success of these technologies largely depends on the awareness, acceptance, and perception of the farmers who implement them. In rural areas like Erode district, Tamil Nadu, where agriculture plays a pivotal role in the local economy, understanding farmers' knowledge and attitudes towards digital agriculture is crucial for effective adoption. To explore the awareness and perception of agricultural digitalization among farmers in Erode district, examines their familiarity with modern agricultural technologies, the perceived benefits and challenges, and the factors influencing their adoption decisions. By investigating these aspects, the research will provide valuable insights into the barriers and opportunities for digital technology integration in this region, ultimately contributing to policy formulation, targeted interventions, and strategies to foster greater technology adoption in agriculture. Through surveys, interviews, and data analysis, this research will assess the level of understanding among farmers, their readiness to adopt digital tools, and the socio-economic factors that impact their decisions. In regions like Erode, where agriculture is primarily dominated by small-scale farmers, factors such as limited access to technological infrastructure, low digital literacy, and financial constraints can pose significant barriers to digital adoption. Moreover, farmers' perceptions of the usefulness, ease of implementation, and potential costs associated with agricultural digitalization play a central role in shaping their willingness to adopt these innovations. The findings aim to highlight the critical role of education, infrastructure, and support systems in bridging the gap between traditional practices and technological innovation, ensuring that digital agriculture can be effectively integrated into the farming community.



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Statement Of The Problem

Farmers in Erode district face several challenges in adopting agricultural digitalization, including lack of awareness, limited digital literacy, and inadequate access to technology and internet connectivity. Many farmers are unaware of the benefits of digital tools such as mobile apps, precision farming, and data-driven decision-making, leading to hesitation in adoption. Additionally, high costs, infrastructure limitations, and concerns about reliability and usability make it difficult for small and marginal farmers to integrate digital solutions into their practices. Language barriers and a lack of proper training further hinder their ability to utilize available technologies effectively. This study aims to explore these issues, understand farmers' perceptions, and suggest ways to bridge the gap between technology availability and its practical implementation in agriculture.

Scope Of The Study

The scope of this study focuses on assessing farmers' awareness, perception, and adoption challenges regarding agricultural digitalization in Erode district. It examines the extent of farmers' knowledge about digital tools, their attitudes toward adopting technology, and the factors influencing their willingness to integrate digital solutions into their farming practices. The study will cover various digital agricultural technologies, including mobile applications, precision farming, and data-driven decision-making tools. It will also explore key barriers such as digital literacy, affordability, accessibility, and infrastructure limitations. The findings will help policymakers, agricultural extension services, and technology providers develop targeted strategies to enhance digital adoption and improve farming efficiency in the region.

Objectives Of The Study

- 1) To Assess the farmers level of Awareness of Agricultural Digitalisation.
- 2) To Evaluate the role of digital platforms in connecting farmers with market and resources.

Methodology Of The Study

This study investigates farmers awareness and perception of agricultural digitalisation, using both primary and secondary data. Primary data have been collected by questionnaire among farmers. Secondary data have been collected from Journals and Articles. A purposive sampling technique has been collected from respondents for the study. The study has been undertaken for a period of five months from December 2024 to February 2025. A sample of 150 respondents have been considered as sample respondents for study.

Review Of Literature

Laurens Klerkx, Emma Jakku & Pierre Labarthe (2024), This paper titled "A review of social science on digital agriculture, smart farming and agriculture 4.0: New contributions and a future research agenda". The objective of this study is to assess the impact of digital agriculture tools (e.g., sensors, drones, AI) on crop yield and resource management. They have collected 115 respondents. The statistical methods like Likert scale analysis or chi-square tests to analyse responses about technology adoption and perceived effectiveness. Smart irrigation systems and automated machinery contribute to sustainable farming by reducing water consumption and minimizing chemical overuse.

Osuji Emeka, Igberi Christiana , Osang Emmanuel , Tim-Ashama Akunna, Nwachukwu Esther , Iheanacho Rachael , Ezirim Kelechi (2023), The research presented in "A Review on Digitalization of Agriculture and Economic Business Model Strategies in the 21st Century". The objective of the study to enhance crop yield and farm productivity through data-driven insights and precision farming techniques, improve sustainability by optimizing resource use (water, fertilizers) and reducing environmental impact in agricultural practices. They have up to 215 respondents and regression analysis.

Joseph MacPherson & Ariane Voglhuber-Slavinsky & Mathias Olbrisch & Philipp Schöbel & Ewa Dönitz & Ioanna Mouratiadou & Katharina Helming (2022) , This analysis titled "Future agricultural systems and the role of digitalization for achieving sustainability goals: A review". The objective is to enhance farm profitability by providing farmers with data-driven insights and financial forecasting tools. The study has carried out 145 respondents. Digital agriculture, or "Smart Farming," is characterized by the use of precision and data-driven technologies to assist farmers with real-time and site-specific decision making.

Jeevan Kumar Cheruku & Vishal Katekar (2021), The research work "Digitalization of Agriculture in India: The case for doubling farmers income". The objective suggests that policymakers focus on doubling the farmers' income through different stages of food production and supply chain. The research has 213 respondents. It is an analytical paper based on a survey of literature that utilizes secondary sources such as books, research articles, policy documents, reports published by various government and non-government organizations, online databases, and discussion papers. Introduced subsidies, tax benefits, and financial incentives for farmers investing in digital tools and smart farming techniques.

Johanna Pfeifer, Andreas Gabriel, Markus Gandorfer (2020), This review named "Understanding the public attitudinal acceptance of digital farming technologies: a nationwide survey in Germany". The objective of the study is to develop tools for real-time monitoring of climate change impacts on crop production. They have 210 respondents. Cluster analysis is being used as a statistical tool. In recent years, digitalization has found its way into agriculture and is

now increasingly used in both animal husbandry and crop production. Develop AI models and digital tools tailored to specific climatic and soil conditions.

Findings Of The Study

Relationship Between The Monthly Income And Farm Size-Chi-Square

H0: There is no significant relationship between the Monthly Income and Farm Size

Monthly Income	Farm Size				Total	Value	Sig	N/NS
	0-1 acres	1-2 acres	2-5 acres	5+ acres				
Up to Rs.20000	7	2	6	4	19	77.496	0.001	S
Rs.20001-Rs.40000	3	10	16	3	32			
Rs.40001-Rs.60000	1	4	28	31	64			
Above 60000	0	0	5	30	35			
Total	11	16	55	68	150			

Source: Computed Data, S-Significant

Interpretation

The above table depicts that there is no significant relationship ($X^2 = 77.496$, $P = 0.001$) between Farm size and Monthly income. As the significant value is less than 0.05 it shows that there is a significant relationship between Farm size and Monthly income. **Hence the null hypothesis is rejected.**

Relationship Between The Demographic Factor And The Awareness And Perception Of Agricultural Digitalisation-Anova

H₀ = "There is no significant difference between demographic factor and the awareness and perception of agricultural digitalisation

Factors	Classification	No of Respondent	Mean	Standard Deviation	f	Sig.	S/NS
Age	Below 25 years	26	3.7756	0.83658	2.832	0.027	S
	25-35 years	28	3.5298	0.69840			
	36-45 years	47	3.3972	0.63375			
	46-55 years	38	3.6228	0.85044			
	Above 55 years	11	4.1515	0.63006			
Gender	Male	129	3.6318	0.78053	1.617	0.205	NS
	Female	21	3.4048	0.59993			
Educational Qualification	No Formal Education	6	3.9722	1.24907	3.128	0.017	S
	Primary School	12	4.0833	0.85428			
	Secondary School	32	3.7813	0.83327			
	Under Graduate	86	3.4419	0.65017			
	Post Graduate	14	3.5833	0.67858			
Farm Size	0-1 acres	11	3.7576	1.03108	3.295	0.022	S
	1-2 acres	16	4.1042	0.65511			
	2-5 acres	55	3.5788	0.86237			
	5+ acres	68	3.4730	0.59126			
Monthly Income	Upto Rs.20000	19	3.5088	0.85972	0.676	0.568	NS
	Rs.20001-Rs.40000	32	3.7656	0.87052			
	Rs.40001-Rs.60000	64	3.5547	0.69138			
	Above 60000	35	3.5810	0.72802			

Source: Computed Data, NS-Not Significant

Interpretation

The results of the ANOVA table shows that the F-value as for age 2.832, 1.671 for gender, 3.128 for educational qualification, 3.295 for farm size, 0.676 for monthly income. The calculated p-value for age is 0.027, gender is 0.205, educational qualification is 0.017, farm size is 0.022, monthly income is 0.568. Since the p value is more than 0.05 for gender, monthly income so it can be concluded that it is not significant.

Hence the null hypothesis is accepted. Since the p value is less than 0.05 significance for age, educational qualification, farm size, it is considered as significant. **Hence the null hypothesis is rejected.**

Suggestions

- Develop structured surveys targeting farmers, agribusiness professionals, and stakeholders to assess their knowledge, attitudes, and usage of digital agricultural tools.
- Investigate the effectiveness of digitalization policies, subsidies, training programs, and private-sector-driven digital solutions in increasing awareness and adoption.
- Conduct comparative studies between different regions or countries to understand how awareness and perception vary based on technological advancements and policies.
- To Analyse trends using data tools to see how digital farming is growing.

Conclusion

The study on farmers' awareness and perception of agricultural digitalization in Erode reveals valuable insights into the current state of digital adoption in the agricultural sector. The findings indicate that while a significant number of farmers are aware of digital tools and technologies, the level of adoption remains varied due to factors such as education, farm size, income, and accessibility to reliable digital infrastructure. Farmers rely on multiple sources of information, including media, government programs, and cooperatives, to learn about digital agriculture, yet challenges such as affordability, lack of technical knowledge, and inadequate internet connectivity hinder widespread adoption. In conclusion, while awareness of agricultural digitalization is growing among farmers in Erode, strategic efforts are needed to enhance accessibility, affordability, and technical knowledge to ensure that digital advancements contribute effectively to sustainable and profitable farming practices. Future research and policy measures should focus on addressing the specific barriers identified in this study to facilitate a smoother transition towards digital agriculture.

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