REVOLUTIONISING INDIAN AGRICULTURE THROUGH DIGITAL TRANSFORMATION A STUDY WITH SPECIAL REFERENCE TO FARMERS IN TENKASI AREA

Abstract

The backbone of the Indian economy is agriculture. India currently claims to have the second-largest global agriculture market. Agriculture is a significant sector of the Indian economy, accounting for around 18.3% of total GDP. The Digital India programme has completely changed how farming is done in the nation with the goal of utilizing digital technologies to empower farmers, increase productivity, and ensure sustainable agricultural practices. The government is taking highly proactive measures to boost farming activities with the help of the Digital India Programme. The government has established a number of web portals and mobile-based applications for the free transmission of information on agricultural-related activities. The intention of the Digital India Programme project is to bring about several benefits and advancements in the Indian economy where agriculture is the dominating sector. Millions of small and marginal farmers in rural areas have benefited

Keywords: Indian Agriculture, Digital India, Digital Agriculture

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I. INTRODUCTION

The backbone of the Indian economy is agriculture, about half of India's population depends on agriculture and related industries for their living, the sector is crucial to create jobs in the country. India currently claims to have the second-largest global agriculture market. Agriculture is a significant sector of the Indian economy, accounting for around 18.3% of total GDP. According to industry estimates, approximately 60% of the nation's population currently relies on agriculture as their main source of income. However, the industry has experienced numerous changes over the years and is currently at the height of its digital transition. By digitizing the entire ecosystem, tech-based start-ups are playing a crucial part in relieving the burden of farmers.

India's digital economy has been disruptive across several industries, including agriculture. The Digital India programme has completely changed how farming is done in the nation with the goal of utilizing digital technologies to empower farmers, increase productivity, and ensure sustainable agricultural practices. Digital India has given farmers in rural India new opportunities for development, efficiency, and connectedness by incorporating ICT tools into agricultural processes.

The way farmers obtain information, manage resources, connect with markets, and overcome obstacles has changed intensely as a result of the usage of digital technologies in Indian agriculture. Farmers today have access to a multitude of information and tools at their fingertips because of the growing use of cell phones, internet connectivity, and digital platforms. Along with increasing the agriculture sector's overall production and efficiency, this digital transformation has also helped to empower farmers, especially those in rural areas.

II. REVIEW OF LITERATURE

P Lavanya Kumari, G Anupama and K Giridhar Reddy (2018) in their study "Digital India: Opportunities and challenges of farmers" brought out the awareness of farmers on Digital India Program in Southern Zone of Andhra Pradesh. They found that certain gaps in the implementation of the program due to factors relevant to farmers. Especially, the level of education, the level of awareness of technology of the farmers are few factors which hamper the affectivity of Digital India and they also suggested easy access to the tutorials in local languages can be coordinated to bring impact on the services, vernacular e-mail services will help the Indian farmers to connect and communicate better.

Raghu Raman Prema P. Nedungadi, Rajani Menon Georg Gutjahr (2018) made a study on "Towards an inclusive digital literacy framework for digital India" says that the provision of digital literacies to remote communities holds the promise of improvement, well-being and success at all levels – for individuals, families, tribal communities, and the nation as a whole.

P.Zearamane (2018) in his study "Digital Technology And Indian Agriculture" brought out about importance and challenges of digital agriculture in India and suggested that policies need to adapt to this changing Digital world to ensure that the challenges

mentioned above are overcome and lead to increased efficiency in the production, distribution and consumption of agriculture produce.

III. OBJECTIVES

- To identify the initiatives of the government through the Digital India Programme for the empowerment of farmers.
- To analyze the perception of the farmers towards the Digital India Programme.
- To highlight the challenges of the farmers in using digital technologies
- To offer suggestions based on the findings.

IV. RESEARCH DESIGN

1. **Source of Data:** The study consists of both primary data and secondary data.

   - **Primary data:** The primary data were collected from 150 respondents from the Tenkasi area through interview schedule.
   - **Secondary data:** The secondary data were collected from journals, magazines and websites.

2. **Sampling:** Considering the time constraints, the sample size was fixed as 150 for the study. A convenient random sampling technique was used for data analysis around the study area.

V. METHODOLOGY

The study has been conducted in Tenkasi area covering 150 farmers using digital technologies.

Statistical Tools: The following statistical tools were used for the analysis.

- Percentage Analysis
- Weighted Average Ranking method

VI. STATEMENT OF THE PROBLEM

Right now, we live in a technological and digital world. The Digital India programme is one of the Indian government's key initiatives for the transformation of a digitally empowered society. For the upliftment of the rural farming community and to progress and modernize the agriculture industry, the Government of India is focusing on innovations and utilizing the power of modern technologies like intelligence, the Internet of Things (IoT), and Big Data analytics. These innovative technological solutions will assist in transparency and lessen operational inefficiencies. They are working tirelessly to modernize India's agricultural system and have made a major contribution to the development and digitization of the country's agricultural industry. Through Digital India has given initiative technologies for the farmers still farmers are facing challenges to adopt those digital technologies. In this study, the researcher attempts to identify the role of digital

transformation in revolutionizing Indian Agriculture and the challenges of farmer's towards digital India initiatives with special reference to farmers in the Tenkasi area.

VII. DIGITAL INDIA PROGRAMME INITIATIVES FOR FARMERS

The government is taking highly proactive measures to boost farming activities with the help of the Digital India Programme. Initiatives related to digital India have improved farmers' access to essential agricultural data in rural areas. The government has established a number of web portals and mobile-based applications for the free transmission of information on agricultural-related activities. All farmers can use this web portals and mobile based application on their convenience at free of cost.

The Kisan Suvidha app offers data on five crucial factors - weather, input dealers, market price, plant protection and expert advisories, Pusha Krishi app informs farmers about modern technologies, Crop Insurance app gives information about insurance premiums and alerts areas, the Agri Market app helps farmers to find out the cost of different crops at the big market close to them and India Weather delivers the current weather conditions as well as a 4-day weather forecast these are the mobile application initiatives for farmers.

Farmers' Portal is a one-stop shop where farmers may obtain information on a variety of subjects, including as seeds, fertilizer, pesticides, credit, best practices, dealer networks, and the availability of inputs, as well as beneficiary lists, m Kisan Portal is centralized portal allows officials and experts to send farmers individualized text and voice-based advice on a range of topics pertaining to agriculture and associated fields, Crop Insurance Portal offer comprehensive information about the Crop Insurance programme currently in place in the nation and Participatory Guarantee System Portal (PGS), this website promotes a collaborative approach to the nation's organic farming certification these are the initiative web portals available for farmers.

Table 1: Socio Economic Profile of Farmers in Tenkasi Area

Variables	Categories	Respondents	
		Frequency	Percent
Gender	Male	107	77.33
	Female	43	28.67
	Total	**150**	**100**
Age	Below 30	21	14
	30 – 40	39	26
	41 – 50	32	21.33
	51 – 60	31	20.67
	Above 61	27	18
	Total	**150**	**100**
Educational Qualification	Illiterate	59	39.33
	School Level	73	48.67
	Graduation Level	18	12
	Total	**150**	**100**

Farming Experience	Below 10 years	16	10.67
	11 – 20	18	12
	21 – 30	51	34
	31 – 40	32	21.33
	Above 41 years	33	22
	Total	**150**	**100**
Monthly Income of the family	Up to Rs.10000	13	8.67
	10001 – 15000	22	14.67
	15001 – 30000	37	24.67
	30001 – 40000	49	32.67
	Above 40001	29	19.33
	Total	**150**	**100**
Education of the Family	One Person	17	11.33
	Two Person	92	61.33
	Three and more Person	41	27.34
	Total	**150**	**100**

It is inferred that 77.33 per cent of respondents are male and 21.33 per cent of respondents are between the age group of 41 – 50. Most of the respondents are educated atthe school level with 48.67 per cent and most of the respondents have 31 to 40 years of experience in farming (21.33 per cent). 32.67 percent of respondents get a monthly income between 30001 to 40000 and 61.33 percent of respondents have two educated persons in their family.

Weighted Average Ranking

Table 2: Benefits offered to Farmers through Digital India

S.NO	Benefits	W	5	4	3	2	1	W/A	Mean	Rank
		R	1	2	3	4	5			
1	Precision Farming Techniques	No	41	36	32	26	15	**482**	**3.21**	**VII**
		Ws	205	114	96	52	15			
2	Agricultural Extension Services	No	38	24	23	31	34	**451**	**3.01**	**VIII**
		Ws	190	96	69	62	34			
3	Access to Credit and Insurance	No	49	39	28	14	20	**533**	**3.55**	**IV**
		Ws	245	156	84	28	20			
4	Market Linkages	No	61	45	29	9	6	**596**	**3.97**	**III**
		Ws	305	180	87	18	6			
5	Weather Forecasting and Disaster Management	No	53	32	28	21	16	**535**	**3.57**	**V**
		Ws	265	128	84	42	16			

6	Improved Access to Information	No	62	48	26	10	4	**608**	**4.05**	**II**
		Ws	310	192	78	20	8			
7	Digital Payments and Financial Inclusion	No	58	43	33	10	6	**516**	**3.44**	**VI**
		Ws	290	172	99	20	6			
8	Direct Benefit Transfers (DBT)	No	67	51	21	9	2	**624**	**4.16**	**I**
		Ws	335	204	63	18	4			
9	Soil Health Management	No	32	21	32	32	33	**437**	**2.92**	**IX**
		Ws	160	84	96	64	33			

The above table shows the benefits offered to farmers through Digital India for revolutionizing Indian Agriculture, among the benefits Direct Benefit Transfer (DBT) has been ranked 1st with a mean score of 4.16. Improved Access to Information and Market Linkages have been ranked 2nd and 3rd respectively. Social Health Management has been ranked last with a mean score of 2.92.

Table 3: Challenges of the farmers in using digital technologies

S.NO	Challenges	W	5	4	3	2	1	W/A	Mean	Rank
		R	1	2	3	4	5			
1	Unawareness of digital technologies	No	56	33	28	19	14	**548**	**3.65**	**III**
		Ws	280	132	84	38	14			
2	Illiteracy of technology	No	77	39	19	11	4	**624**	**4.16**	**I**
		Ws	385	156	57	22	4			
3	Expensive electronic gadgets	No	62	41	24	13	10	**582**	**3.88**	**II**
		Ws	310	164	72	26	10			
4	Belief on technologies	No	24	29	28	32	37	**421**	**2.81**	**V**
		Ws	120	116	84	64	37			
5	The threat of digital crime	No	47	35	26	24	18	**519**	**3.46**	**IV**
		Ws	235	140	78	48	18			

From the above table, challenges of the farmers in using digital technologies it is observed that illiteracy of technology has been ranked 1st with a mean score of 4.16. Expensive electronic gadgets and unawareness of digital technologies have been ranked 2nd and 3rd respectively. Belief on technologies has been ranked last with a mean score of 2.81.

VIII. CONCLUSION AND SUGGESTIONS

The intention of the Digital India Programme project is to bring about several benefits and advancements in the Indian economy where agriculture is the dominating sector.

Millions of small and marginal farmers in rural areas have benefited from Direct Benefit Transfers (DBT) because it is eliminating the intermediates while availing their financial assistance. Government should take necessary measures to improve the benefits which can be gained from soil health management. The government can take steps to conduct lots of workshops to educate and demonstrate the technologies in rural areas so that illiterates can also access the technologies. Government can arrange local agents to help illiterate farmers so that they can have trust in technologies which can improve their way of working. Digitalization in agriculture is a cornerstone of India's agricultural development because of its enormous potential for sustainable growth, increased productivity, and improved livelihoods for farmers. The development of India has been largely dependent on its farmers. The goal of Digital India is to close the gap between those who have access to technology and those who do not by focusing on the needs of the impoverished and underprivileged. For the economy of India to grow steadily, farmers should be given priority. Because of this, there is still hope that digital platforms can enable Indian farmers' hopes to come true.

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