A Study on Challenges Faced by Farmers Using E-Commerce in Agriculture - A Survey of Thrissur District in the State of Kerala, India

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ABSTRACT

Purpose: *Traditional methods of farming and marketing has worsened the condition of farmers in our country. My study is on challenges faced by farmers by using E-commerce in agriculture. While examining the real scenario, farmers in India fail to make a living. The majority of farmers earn an income below Rs.22000 per month. Only 12.6% of the respondents are fully aware about e- commerce opportunities. They face various challenges in making use of e-commerce opportunities, there is a lack of storage facilities, improper pricing, lack of computer literacy, and perishable nature of products as the major challenges of Farmers. Farmers should be equipped with electronic devices and knowledge in ICT for the betterment of their living conditions. Agricultural economics must relate technology in the production and marketing of goods.*

Methodology: *The study was carried out in Kerala's agricultural industry. A questionnaire was used to collect the main data. The purpose of the study was to examine the difficulties farmers encounter while attempting to advertise their products online. In the study, both primary and secondary data were employed. A total of 220 samples were selected for the study. The samples were chosen in a random manner. The questionnaire served as the main method for gathering data.*

Finding: *The results found that, in Kerala, the farmers are not fully aware about e- commerce opportunities. And the study also found that farmers agree that there is a lack of storage facilities, improper pricing, lack of computer literacy, and perishable nature of products as the major challenges of faced All industries need to invest in and pay attention to the development of agricultural e-commerce. The growth of the cultural, infrastructural, social, and educational backdrops are the total solutions for implementing E-Commerce in agriculture. The creation of appropriate e-commerce portals for agricultural products, education of farmers about the benefits of e-commerce, entry of the private sector into e-commerce, and easing the process of online payment system with community level initiation in this sector were prioritized solutions for implementing e-commerce in agriculture. Therefore, if the recommended techniques are put into practice to overcome the identified obstacles, E-Commerce in agriculture has a strong chance of developing in the future.*

Originality: *This is utilized to conduct a survey of the Thrissur district in the Indian state of Kerala to learn more about the difficulties farmers face when adopting e-commerce in agriculture.*

Paper Type: *Descriptive Research*

Keywords: E-commerce, Agricultural economics, Economic apparatus, Challenges, Strategies.

1. INTRODUCTION :

Agriculture is crucial and plays a key role in the Indian economy. Agricultural activities are not only aimed at providing food and materials for industries, but it also provides employment opportunities to

a substantial percentage of our citizens. Indian Economy has a crucial contribution from agriculture and related activities. Even now, the farmers are using traditional methods for marketing their products. E-commerce refers to the buying and selling of goods and services using online media through the internet or computer network. E-commerce leads to broad marketing, customers around the world, and increased volume of trade. In our country, Electronic National Agriculture Market (E-NAM) is doing e-commerce in agriculture. E-commerce enabled the farmers to market their products directly to consumers and outside dealers across the world. Farmers suffered enormous losses because of middlemen. E-commerce allows the farmers to get rid of middlemen and to get a reasonable price for their products. Farmers will definitely become more comfortable through e-commerce than the traditional methods of marketing agriculture products. However, agriculture is still demographically the largest economic sector and prominently impacts the overall socio-economic fabric of India.

2. REVIEW OF LITERATURE :

The phrase "Electronic Commerce" refers to all business actions completed through the use of an electronic medium, specifically a computer network. ICTs aid the extension system's reorientation toward the overall development of small production systems in agriculture. When utilized to record the organic and conventional farming process, ICTs are crucial to attaining sustainable agricultural development.

Fidowaty, T & Supriadi, R. (2020) [1] identified various schemes of government to improve the financial situation of farmers through their empowerment by issuing e-commerce innovations has not made any impact. Many farmers are still unable to effectively use e-commerce and related technology. The government's initiatives to increase Indonesian agricultural outputs were successful. E-commerce is anticipated to offer assistance with agricultural product marketing. The government's lack of socialization and farmers' ignorance of how to properly market their crops using technology are the main obstacles.

The paper of Pillai, R. and Sivathanu, B (2020) [2] investigating the adoption level of Internet of Things (IoT) among farmers in India. The researcher used the theoretical lens of the Behavioural Reasoning Theory (BRT). The study's particular ramifications include how rural consumers absorb innovation, including IoT in the agricultural sector. During the course of the investigation, the precise arguments for and against IoT implementation in agriculture were discovered. Giving IoT technology marketers guidelines will help them create appropriate marketing plans and regulations.

Upadhyaya, L & Roy Burman, Rajarshi & V, Sangeetha & Venu, Lenin & Sharma, J & Dash, Sukanta. (2019) [3] tried to frame certain location-oriented strategies to tackle digital divide among farmers. It is evident from the study that the issues of different farming communities are varying. Popular strategy of “One size fit all” is not applicable here. For effectively delivering ICT led farming practices, digital divide must be tackled effectively. Required strategies must be designed only after analysing the digital climate of the place.

Chen, Q., Geng, N. and Zhu, K. (2018) [4] This paper examines the distributional traits and trends among research papers on agricultural economics in China, including their authors, topics, subtopics, and source journals. China has conducted extensive and growing agricultural economics research over the past few decades. The most important problem, according to some, was the rural land issue. Additionally, issues related to industrialization in rural and underdeveloped areas were thoroughly investigated. Further research must be done on significant issues related to agricultural markets and commerce, rural employment, and food safety.

Subashini, Pavithra & Fernando, Shantha (2017) [5] proposed integration of Information and Communication Technology (ICT) with Agriculture is found one important step in achieving sustainable development in agriculture sector of Sri Lanka. The goal of this study is to provide better, more appropriate strategies for empowering Sri Lankan farmers using cutting-edge technology. The analysis of the literature made it possible to pinpoint the variables that have an effect on Sri Lanka's agricultural sector's usage of ICT. Direct data were gathered by administering a standardised questionnaire. The majority of farmers primarily use ICT devices for amusement. They are unaware of the advantages of using ICT to promote their agricultural goods. The main obstacle preventing farmers from implementing ICT is their fear of embracing new technologies. The other major limitations that need to be addressed are the high cost of the technology, the devices, and the language barrier.

Yoon and Occena [2015] [6] have found out that trust is the fundamental problem in e-commerce environment. Because products and services bought online cannot be verified right away and because there aren't as many rules and regulations in e-commerce as there are in traditional commerce, trust is more crucial in e-commerce.

Aditya R. Khanal and Ashok K. Mishra (2013) [7] they mention that a study by Briggeman and Whitacre in 2010 investigated the limitations in wider adoption of the Internet among agricultural households. They cite three primary explanations for why farm households don't utilize the Internet: "There is no computer in the home," "fear for Internet security," and "inadequate Internet service." Prior research had several important limitations, including the following: 1) the effect of Internet use on agricultural households' income and farm performance; and 2) Data limitation: the majority of studies have relied on local or regional data from large farms.

Jamaluddin (2013) [8] revealed that the practice of e-commerce by farmers in the study area of Trichy district is still in its early stages. Poor internet connectivity, high fees from private internet companies and lack of programs administered by the ITC's North India Agribusiness Division are the main obstacles and limitations.

Sangbuapuan, N., (2013) [9] presents an ICT policy framework to improve farmers' knowledge. This will improve yields and increase rice production through community rice centers. The result is a research methodology framework and design that supports the topic and serves as a useful guide and valuable contribution to the success of ICT management practices. Both best practice models and information on the required ICT and human infrastructure are included in this framework. Finally, in an effort to address these concerns, we are working to create an ICT policy framework.

Michelle A Morganosky Brenda J Cude (2000) [10] reports a preliminary assessment of consumer response and demand for online grocery retail channels. Data were collected from her 243 US consumers who currently shop for groceries online. The majority of her users online she is a woman under the age of 55 and reportedly makes more than her $70,000 a year. Convenience and time savings were cited by over 70% as the top reasons for buying groceries online, while 15% cited physical or limited problems that make grocery shopping difficult. I mentioned. 19% of respondents bought all their groceries online. Also, demographics strongly related to primary reasons for online shopping, willingness to buy all groceries online, time spent shopping online vs. in-store shopping, and experiences related to online grocery shopping and online shopping variables.

According to Manish Mahant, et al, (2012) [11], information and communication technology (ICT) is being used more and more in agriculture. E-agricultural is the idea, design, development, testing, and implementation of novel information and communication technology (ICT) applications in rural areas, with a primary emphasis on agriculture. Due to the fact that it comprises of three basic technologies, information and communication technology (ICT) can significantly contribute to maintaining information properties. These technologies are used for managing, processing, and transferring data, knowledge, and information.

Awais Muhammad and Samin Tanzila (2012) [12] show that the internet has essentially created a global village. The use of the Internet has shortened distances and reunited people. Commerce is a country's backbone, and it will be reinforced if it is supported by electronic instruments, of which e-commerce is a crucial component. Privacy is a key component of e-commerce that boosts both competitive advantage and consumer confidence. As e-commerce becomes increasingly important to business, it connects merchants and potential customers with just a single click, saving time and money.

HavliCek, J., et al. (2010) [13] found that Information and communications technologies (ICTs) have advanced quickly, enabling new uses that were not viable a few years ago. The majority of the rural population in emerging countries depends on agriculture, making it a significant sector. The industry must overcome significant obstacles to increase production in the face of depleting natural resources needed for that production. Using an agro computer-based information system, ICT is crucial in enhancing and challenging the livelihoods of the rural population. The Agro-Information System that is suggested in this paper would give farmers access to pertinent information about a crop's varieties and other requirements, such as the crop's soil type, temperature, type and amount of fertilizer, planting date, maturity date, planting distance, diseases, pests, pest and disease control methods, rainfall, sunshine, etc. The volume and effectiveness of the agricultural output depend on how this information is applied. The development and implementation of AIS software aids the farmer in achieving the aforementioned goals.

Edda Tandi Lwoga, (2011) [14] has examined the management of indigenous knowledge (IK), access to and use of exogenous knowledge, the relevance of policies, legal framework, information and communication technologies (ICTs), and culture in KM practices in the communities, this study aims to evaluate the application of knowledge management (KM) models in managing and integrating indigenous and exogenous knowledge for improved farming activities in Tanzania. The proposed KM model offers a thorough grasp of the management and synthesis of external and indigenous agricultural knowledge in rural developing nations.

In the work of Bartholomew Aleke, U. O., et al. (2011) [15], they critically analysed how the heightened societal norms affect how effectively small-scale agribusinesses operating in southeast Nigeria use information and communication technology (ICT). The study's findings draw attention to crucial ICT adoption difficulties. For this reason, it is important to realise the need for creating an appropriate adoption channel that ensures the successful transmission of innovation.

Adebambo Adewale Oduwolw, Chichi Nancy Okorie, (2010) [16] explores how rural residents and farmers were given agricultural information during the MDG meeting. They are putting an end to hunger and poverty worldwide. The use of electronic and written media, gatherings in the town square, meetings in churches and mosques, as well as markets, are some of the ways that information is disseminated to recognized farmers.

Blasio (2008) [17] claims that the Internet lessens the importance of distance is not supported by the author's research. Urban customers use the internet far more frequently than their non-urban counterparts. The size of the city where the household resides has little impact on the use of e-commerce. The inability of consumers in remote areas to evaluate products before buying them deters them from doing so. The only products and services for which ecommerce is utilized more frequently in remote locations are leisure activities and cultural items (such as books, CDs, and tickets for museums and theatres). Finally, the size of the city has no bearing on e-banking. Because bank account holders in rural areas are more likely to have taken out a loan from their bank, nonurban customers value personal relationships with banks more than urban customers do.

Rust and Chung, (2006) [18] involves understanding what customers do throughout several ecommerce contacts, as well as what they do (and how they perceive and feel) in a specific ecommerce contact. The work also recommends looking into the types of online services that foster the development of the customer relationship and the best ways to combine the online and offline relationships. This is because it is believed that a complete customer relationship does not take into account both the online and offline environments, as well as how they interact.

Motiwalla et al. (2005) [19] present an intra- and inter-industry financial performance analysis, and their comparative findings demonstrate that the food, beverage, and tobacco sector performed 292 betters than the retail and consumer products sector and that the electronic business (EB) companies performed better than their 291 non-EB counterparts in the post-EB period.

Helen Barton, (2003) [20] covers the attitudes, experiences, and perspectives of Canterbury, New Zealand, farmers concerning the use of the Internet for farming. The data revealed seven key themes, which have been named as follows: the reasons why farmers first used the internet; how they were exposed to it; what they are currently using it for; its benefits; its drawbacks; their attitudes toward it; and its prospects for the future. Numerous farmers had subpar phone lines, which reduced the effectiveness of their internet service.

Chandra Shekara, (2001) [21] in his work, the author makes the case that disseminating agricultural information through IT is efficient in terms of money, time, and speed of communication, that it is possible to access classified material, and that it has a large amount of information storage space. So, extension through it is becoming more and more popular today. A few intriguing examples show the potential for agricultural extension IT applications.

3. SIGNIFICANCE OF THE STUDY :

Agriculture has a prominent role in the Indian economy. Over 70 percent of the rural households in our country completely depend on agriculture for their living and food. Agriculture is the most important sector of the Indian economy which contributes about 18% to the total GDP and provides employment to nearly 50% of the population. When farmers become capable and start earning a better income, it would benefit the entire country and fastens poverty alleviation processes. E-Commerce would

definitely provide farmers an opportunity to sell their products directly to the consumers and earn a fair price.

4. OBJECTIVES :

(1) To analyse the monthly income and age-wise classification of farmers.
(2) To spot out the challenges faced by farmers using E-Commerce.
(3) To evaluate the awareness level of farmers regarding opportunities in E-commerce.
(4) To study the advantages of E-commerce in agriculture.

5. RESEARCH METHODOLOGY :

The aim of this research paper is to analyse the challenges faced by farmers to use e-commerce modes for marketing their products.

Period of the study: This study covers a period of three months from January to March 2022.

Methodology

Sample frame: The farmers from various Thrissur District neighborhood's make up the sample population for the study. A total of 220 farmers are chosen at random from 4 villages in the Thrissur District using a practical sampling approach. Each taluk has 55 farmers selected. Farmers doing various types of cultivation were included in samples. Farmers from Mullurkara Grama Panchayat, Panjal, Attur Grama Panchayat, and Vallathol Nagar panchayats were included in the study.

Data collection method: A standardized questionnaire that covers different facets of the work sequences was used to collect primary data from the respondents. Questionnaires served as the primary tool in this study's survey-based design.

Statistical tools: The primary information was gathered and tabulated. To assess the questionnaires and analyze the items, a pilot study was conducted. Tables and Cross tabs were used to present data and for analyzing the data, statistical tools like percentages, arithmetic mean and Likert scale were used. The Hypothesis was tested using Chi-square test.

Hypothesis

H0: There is no significant relationship between age group and challenges faced by farmers using E-Commerce in agriculture.

H1: There is a significant relationship between age group and challenges faced by farmers using E-Commerce in agriculture.

6. LIMITATION OF THE STUDY:

(1) The study's time constraints have placed significant restrictions on it and caused us to limit the number of respondents in a given period of time.
(2) The study's single area of emphasis was ICT's use in agricultural marketing.
(3) All of the responders' information is based only on their perception.

7. ANALYSIS AND INTERPRETATION :

7.1 Age Wise Classification of Farmers:

Table 1: Age Wise Classification of Farmers

Age-wise	No. of Respondents	Percentage
15-25	20	9.0
25-35	20	9.0
35-45	34	15.6
45-55	63	28.7
55-65	50	22.7
65 Above	33	15
Total	**220**	**100**

Source: Primary Data

Table 1, it is clear that majority of farmers are aged between 45 and 55 (28.7%). 22.7% are aged between 55 and 65, 15.6 % between 35 and 45, 15% above the age group of 65, 9.0% between 25 and 35 and 9.0% between 15 and 25.

7.2 Monthly Income of Farmers:

Table 2: Monthly Income of Farmers

Monthly Income	No. of Respondents	Percentage
Below 25000	176	80.0
25000-50000	28	12.7
50000-75000	12	5.4
Above 75000	4	1.9
Total	**220**	**100**

Source: Primary Data

Table 2 shows the monthly income of farmers. 80% of the farmers earn below 25000 per month, 12.7% between 25000 and 50000, 5.4% between 50000 and 75000 and remaining 1.9% earn above 75000.

7.3 Awareness Level of Farmers Regarding Opportunities of E-Commerce:

Table 3: Awareness Level of Farmers Regarding Opportunities of E-Commerce

Awareness	No. of Respondents	Percentage
Aware	45	20.5
Fully Aware	24	10.9
Not Fully Aware	92	41.8
Not Aware	52	23.6
Prefer Not to Say	7	3.2
Total	220	100

Source: Primary Data

Table 3 shows awareness level of farmers regarding opportunities of e-commerce. 41.8% of the farmers are not fully aware about e- commerce opportunities and 23.6% are not aware. 20.5% of the respondents are aware, 10.9% are fully aware and remaining 3.2% of farmers prefer not to say.

7.4 Challenges Faced by Farmers Using E-Commerce in Agriculture:

Table 4: Challenges Faced by Farmers Using E-Commerce in Agriculture

Challenges	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total
Lack of storage facilities	98	84	31	5	2	220
Improper Pricing	78	98	32	8	4	220
Lack of computer literacy and technical devices	76	103	25	11	5	220
Perishable nature of Product	74	119	23	2	2	220
Difficulty in delivery	63	113	35	6	3	220

Source Primary Data

7.5 Weighted mean of Challenges faced by Farmers using E-Commerce in Agriculture:

Table 5: Weighted mean of Challenges faced by Farmers using E-Commerce in Agriculture

Challenges	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total Weighted Score	Mean Score	Remark
Lack of storage facilities	490	336	93	10	2	931	4.23	Agree
Improper Pricing	390	392	96	16	4	898	4.08	Agree

Lack of computer literacy and technical devices	380	412	75	22	5	894	4.06	Agree
Perishable nature of Product	370	476	69	4	2	921	4.18	Agree
Difficulty in delivery	315	452	105	12	3	887	4.03	Agree

Source Primary Data

From table 4 and 5, we can point out the challenges faced by farmers using e-commerce in agriculture. Farmers agree that there is lack of storage facilities with mean score of 4.23, there is improper pricing with mean score of 4.08, there is lack of computer literacy and technical devices with mean score of 4.06, perishable nature of products with mean score of 4.18 and difficulty in delivery with mean score of 4.03.

7.6 Cross tab of Age group and Awareness level of Farmers:

Setting up of hypothesis

H0: There is no significant relationship between age group and awareness level of farmers regarding E-Commerce

H1: There is significant relationship between age group and awareness level of farmers regarding E-Commerce

Test statistic:

$X2 = \sum (O-E)\ 2\ /E.$

Degree of freedom= (r-1) (c-1)

(6-1) (5-1) =5*4=20

Level of significance= 5%

Test criterion; Accept H0 if X2 is less than table value

Table 6: Cross tab of Age group and Awareness level of Farmers

Age Group	Aware	Fully Aware	Not Fully Aware	Not Aware	Prefer Not to Say	Total
15-25	14	7	44	3	0	68
25-35	13	8	21	7	0	49
35-45	10	5	11	6	1	33
45-55	6	3	13	14	3	39
55-65	2	1	2	6	2	13
Above 65	0	0	1	16	1	18
Total	45	24	92	52	7	220

Source: Primary Data

$X\ 2 = \sum (O-E)\ 2\ /E = 18.$

Table 7: Chi- Square values

	Value	Level of Significance	Degree of Freedom
Chi-Square distribution (Table Value)	31.4	.05	20
Calculated χ^2 Value	18.9		
	220		

Number of Valid Cases			

Source: Primary Data

Inference: Since calculated value (18.9) is less than table value (31.41), we accept H0 and reject H1. There is no significant relationship between age group and awareness level of farmers regarding E-Commerce.

8. FINDINGS :

Majority of farmers are aged between 45 and 55 (28.7%). Majority of farmers (80%) earn below Rs.22000 per month. Only 10.9% of the respondents are fully aware about e- commerce opportunities. Farmers agree that there is a lack of storage facilities, improper pricing, lack of computer literacy, and perishable nature of products as the major challenges of Farmers. There is no significant relationship between age group and challenges faced by farmers using E-Commerce in agriculture. The survey's findings indicate that farmers are open to receiving knowledge. They are mostly using ICT equipment for amusement, and they are not well-informed about the value of and available ICT for agricultural business-related operations. The study's findings indicate that the most common ICT instruments that farmers use and are willing to utilize for personal and professional activities are television, radio, mobile phones, and landlines. The most prominent impediment to farmers employing ICT is their fear of adopting new technology owing to ignorance. To apply ICT to rural agricultural, the other major difficulties to be solved are high equipment costs, technology, and language barriers.

9. SUGGESTIONS :

This study reveals that farmers in the Thrissur district study region are only just beginning to use e-commerce. It has been widely utilized to train people in farming techniques, and many farmers receive training on a regular basis. But there is a big difference between learning and actually doing. Poor internet connectivity, high fees charged by private internet players, and a lack of organisations like the Indian Tobacco Company's e-Choupal program—which outperforms ITC's Agri business division in North India—are the barriers and constraints. Through computer education programmes like awareness camps, short-term courses, and farmers internet clubs, the desire to accept and apply modern technology in farming techniques will grow in popularity. Government must take steps to support farmers who form about 50% of the entire population here. There are several Programmes and schemes in support of farmers. Government must see that these schemes reach farmers and not find yourself in huge scams. Farmers should be made awake to using e-commerce opportunities in marketing their products, they must tend technical support and aids from government machinery. Their problems should be identified and actions should be taken accordingly. Youngsters should be motivated to try agriculture. They need to be motivated to involve themselves in agriculture. For that, financial security should be ensured.

10. CONCLUSIONS :

On closely analyzing the agricultural sector in India, we could witness the signals of growth during the last 2 years, the full share of agriculture in Gross Domestic Product (GDP) has reached nearly 20% during 2020-21, for the primary time within the last 17 years. Agricultural operations have grown over the years mainly because of advancements within the field of technology. Recent developments in technology that brought impact on agriculture include sensors, devices, machines, and data technology. Information Technology has begun a revolution in farming & agriculture industry significantly. Personalized e-commerce stores, and market places bring farming products like seeds, fertilizers and equipment that help farmers grow products with ease and in large amounts. On the opposite side, educational portals help farmers bear in mind about new practices in farming that increase contributions of agriculture within the economy because the digital economy is expanding rapidly and affecting more enterprises activities, it's important to require into consideration the proposed solutions for the mentioned issues and challenges of e-commerce business, although e-commerce enterprises might be from any types, basically they share the common issues and challenges [22-23].

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