IJNRD.ORG ISSN : 2456-4184
INTERNATIONAL JOURNAL OF NOVEL RESEARCH AND DEVELOPMENT (IJNRD) | IJNRD.ORG
An International Open Access, Peer-reviewed, Refereed Journal

Study On The Impact Of Agricultural Applications On Sustainable Development Of Farmers

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Abstract

Technology has made significant advancements across various sectors, including agriculture. It is now playing an essential role in informing farmers by providing access to government agricultural information through apps, facilitating better communication, and increasing awareness. Digital technology plays a crucial role in delivering agricultural information, which is key to improving farming practices. Agricultural apps help farmers access important data, such as weather forecasts, crop advice, and market prices. This research analyses the impact of agricultural apps on farmers, focusing on their effectiveness, ease of use, and overall convenience. Data will be gathered through questionnaires and interviews to assess how farmers use these apps, taking into account variables such as age, education, and experience. The findings of this study could inform the development of appropriate technologies and policies to improve the delivery of information to farmers.

Keywords: Agricultural Apps, Farmers, Digital Information, Technology.

Introduction

India is an agriculturally dominant country, and its farmers are often referred to as the backbone of the nation. Historically, agriculture has been central to India's economy and culture, even as the world has evolved through technological advancements. Despite significant progress in technology, fundamental food crops like grains and vegetables, which sustain the population, are still produced through traditional farming practices. The longevity of previous generations is partly attributed to their reliance on traditional farming and the consumption of natural, locally grown produce. However, the agricultural landscape is facing numerous challenges, including changes in weather patterns, declining soil fertility due to urban expansion, the overuse of chemical fertilizers, and irregular rainfall.

India ranks second in the world for agricultural production, and a large portion of the population still relies on agriculture for their livelihood. Given the importance of agriculture, the government has implemented programs to encourage technological adoption and provide essential information to farmers. Despite these efforts, rural areas remain underserved in terms of access to modern technologies. In recent years, the telecommunications sector in India has seen tremendous growth, with India now having the largest mobile network in the world. This expansion has created opportunities for digital solutions to reach rural farmers.

Recent surveys in rural Karnataka indicate that although rural populations have access to some agricultural information technologies, there is still a significant gap in technology use compared to urban populations. However, rural farmers are increasingly benefiting from agricultural apps that provide services such as soil fertility testing, climate monitoring, fertilizer usage advice, and updates on government programs. The availability of agricultural apps in local languages has further enhanced accessibility, enabling farmers to obtain crucial information and solutions from the comfort of their homes.

Globally, the adoption of mobile applications in agriculture has been growing. As of 2018, there were approximately 600 agriculture-related mobile applications worldwide, according to the research paper titled "Global Trends in Apps for Agriculture." In India, the number of agricultural apps has been steadily increasing. A study titled "Mobile Applications for Smart Agriculture in India: An Analytical Approach" found that Indian farmers used 73 such apps across various agricultural sectors in 2020. By 2022, the number of agricultural apps in India had reached 100.

Recognizing the importance of mobile technology in agriculture, the Karnataka state government has also taken initiatives to support farmers through digital platforms. The government has developed 23 agriculture-related mobile applications to assist farmers in areas such as crop management, weather forecasting, and market price tracking. These efforts, as documented in the article *"Mobile Apps: Role in Indian Agriculture,"* highlight the growing role of digital tools in modernizing agriculture and improving farming outcomes.

Objectives

1. To examine how farmers are obtaining information about agricultural apps and their usage.
2. To analyse the impact and challenges associated with the use of agricultural apps.
3. To explore potential improvements in agricultural apps in the future.

Literature Review

Devakumar N discusses the benefits of using organic fertilizers in Karnataka. Although farmers are aware of their advantages, many are slow to adopt organic farming practices. Organic fertilizers play a vital role in maintaining soil fertility and supporting crop growth. Both government and non-government organizations are working to promote organic farming.

Deepika Kumari studies the influence of agricultural mobile apps in improving the agricultural system. Apps have helped farmers, particularly in situations where local cattle have prematurely died, by providing faster solutions and accurate information

Dharmendar singh utilization pattern of mobile app among farmers for agriculture production (2023) this research investigates how farmers in hariyana, india, utilize mobile application for agricultural production. Data collected form 240 respondents across 16 villages revealed that over half perceived a medium level of app utilization in their farming practices. The study suggests that to increase app usage, outreach programs and training sessions are essential.

Parashuram kambale Mobile technology for farmers: an overview of agricultural apps (2024) this study examines the growing trend of mobile application usage among farmers, emphasizing these tool provide accessible information on pests, diseases, agriculture schemes and best practices. The authors note that while many apps serve specific informational needs, other offer multifunctional capabilities. The study concludes that the plantix application stands out for its user- friendly interface and comprehensive information, making it particularly effective for farmers.

Methodology and scope of study

This study primarily employs a **quantitative research methodology**, utilizing a **structured questionnaire** as the primary data collection instrument. The data was systematically gathered from **100**

farmers residing in the **Hospet Taluk** of **Vijayanagar District**, ensuring a comprehensive and representative sample for analysis.

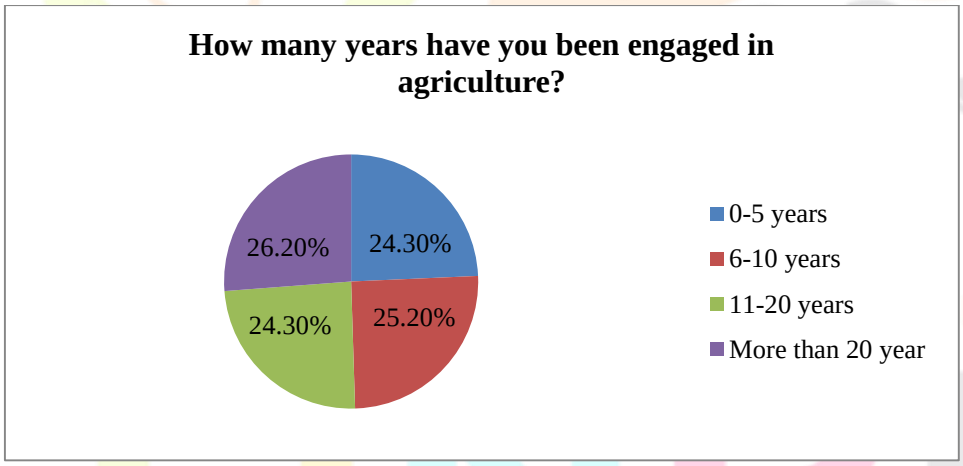
Agrarian apps

1. Agri market : Farmer Alliance Agriculture Application is an official app by the Karnataka Government's Agriculture Department, which is mainly informed about the weather forecasting, marketing rate, agricultural advice for farmers and various government schemes.
2. IFFCO Kisan: This app informs farmers about new information and technology. Farmers are advised to advise, and elements of market price and climate.
3. Agri Market: This helps farmers learn the market rate about their products and can get other agricultural information.

Data Analysis

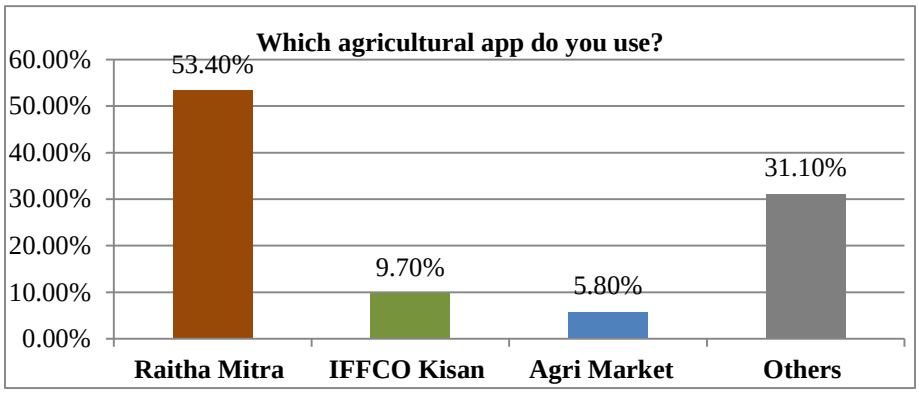
Agriculture has been experiencing a rapid transformation with the integration of technology, particularly through mobile applications. To evaluate the effectiveness of these agricultural apps, data has been collected from farmers using a structured questionnaire approach. This study aims to analyze the level of awareness, usage patterns, and challenges faced by farmers in adopting agricultural apps. The study also explores the factors influencing farmers' preferences and suggests ways to enhance the digital agricultural ecosystem.

Experience of Farmers in Agriculture



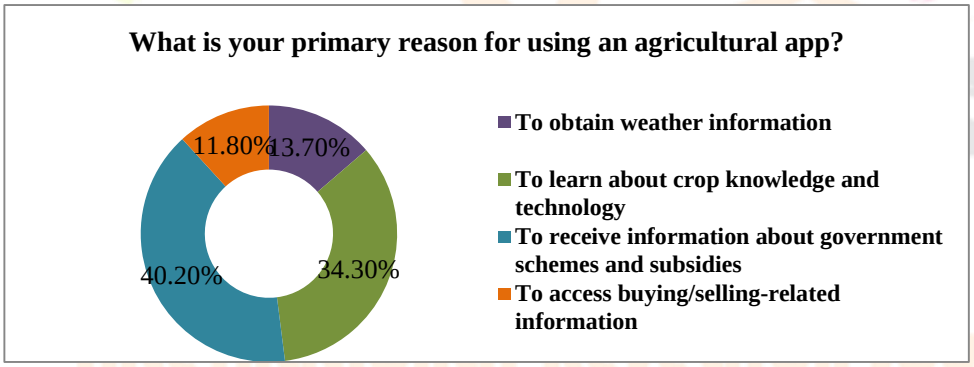
The study classifies farmers into different experience levels based on their years of involvement in agriculture. The findings show that farmers with 1-5 years of experience constitute 24.3%, while those with 6-10 years of experience make up 25.2%. This near-equal distribution suggests a balance between new entrants and mid-experienced farmers. Additionally, the proportion of farmers with 11-20 years of experience (24.3%) and those engaged for over 20 years (26.2%) indicates a strong presence of long-term farmers who consider agriculture their primary occupation. The depth of experience signifies the persistence of traditional farming practices while also highlighting the need for modernization through digital solutions.

Usage of Agricultural Apps



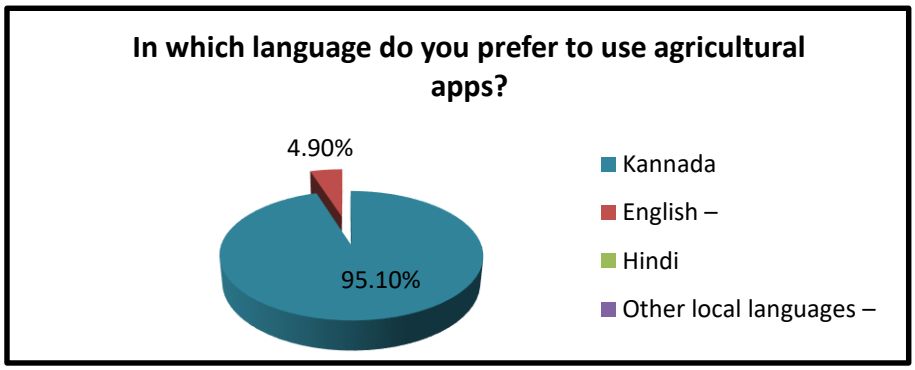
Among various agricultural apps, "Farmer's Allies" emerges as the most frequently used app, with 53.4% of farmers relying on it. However, the use of other apps such as "IFFCO Kisan" (9.7%) and "Agri Market" (5.8%) remains relatively low. This could be attributed to their limited popularity and accessibility. A significant percentage of farmers (31.1%) reported using other apps, indicating a diverse range of preferences. The rising adoption of "Farmer's Allies" suggests its reliability in providing relevant information, yet further improvements are needed to enhance advisory services for farmers.

Apps Purpose of Using Agricultural



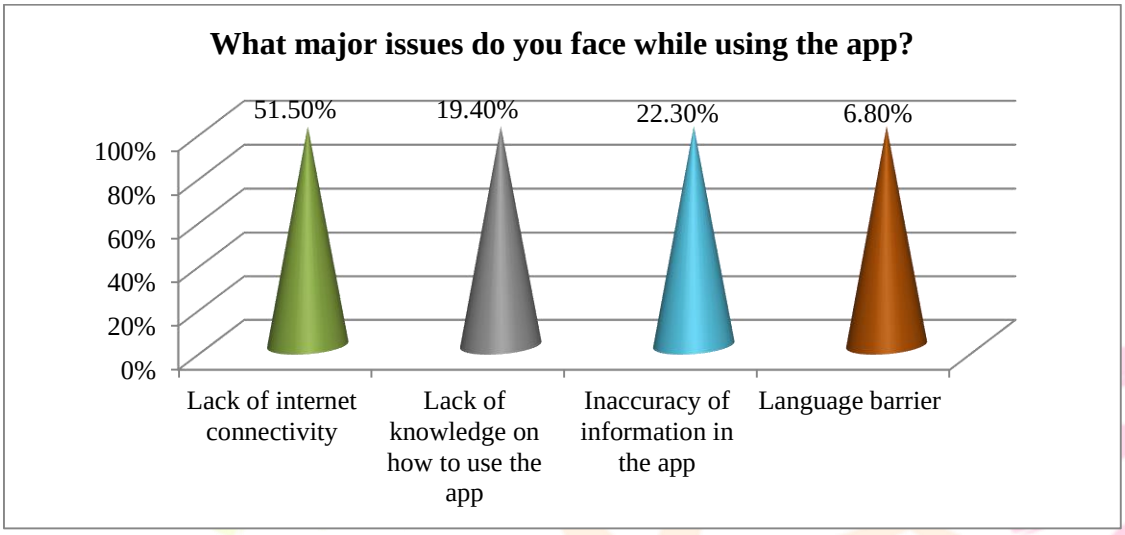
The primary reason for using agricultural apps is to obtain information about government schemes and subsidies, as indicated by 40.2% of farmers. This highlights the crucial role of these apps in disseminating policy-related updates. Additionally, 34.3% of farmers use the apps to access information on crop technology, reflecting an interest in advanced farming methods. Weather updates (13.7%) and market-related information (11.8%) are among other reasons for app usage. However, the lower reliance on weather and market-related data suggests that farmers might be accessing such information through other traditional means or alternative sources.

Language Preferences for Agricultural Apps



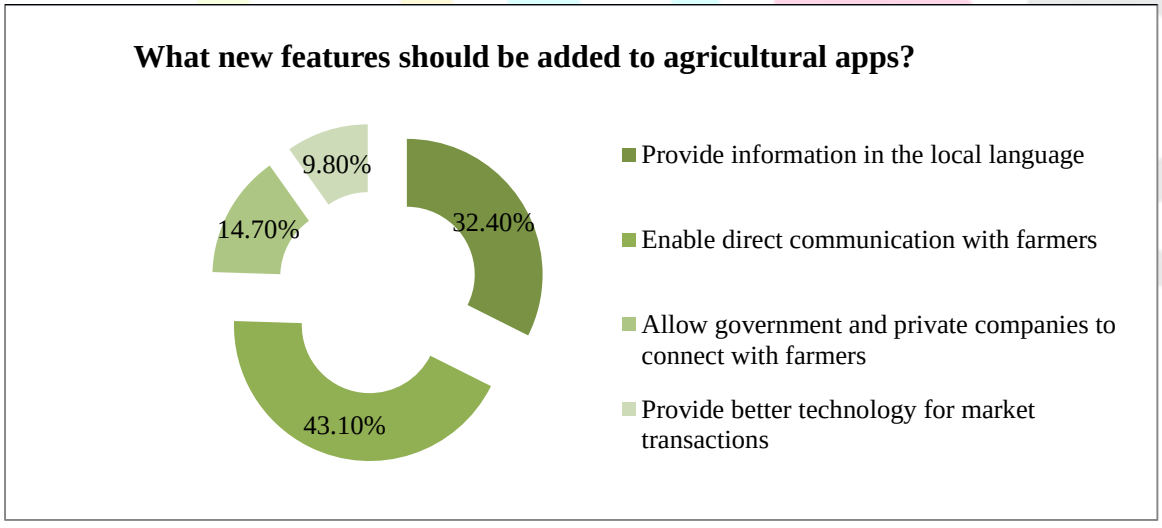
A dominant majority (95.1%) of farmers prefer receiving agricultural information in Kannada, whereas only 4.9% opt for English. There were no recorded responses for Hindi or other regional languages. This preference underscores the need for agricultural apps to prioritize content in Kannada to ensure better comprehension and accessibility for farmers in Karnataka.

Challenges in Using Agricultural Apps



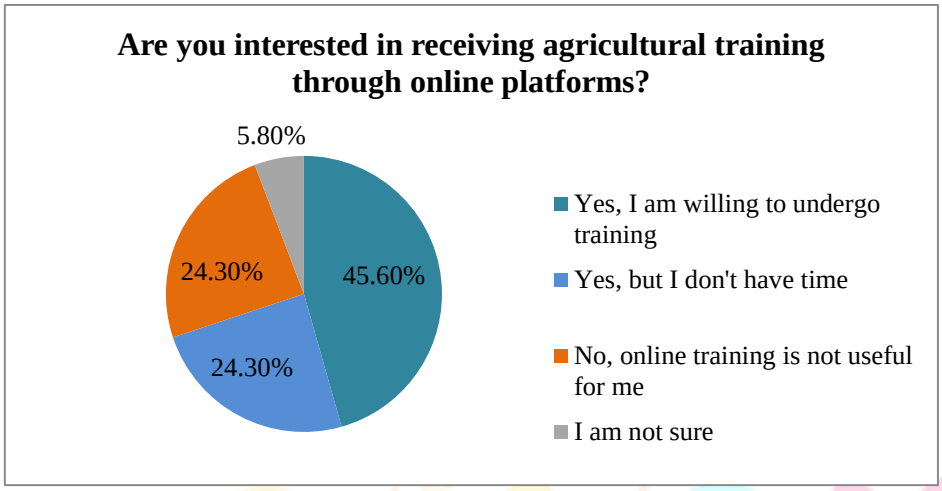
One of the major obstacles faced by farmers in using agricultural apps is poor internet connectivity, as reported by 51.5% of respondents. This issue is more prevalent in rural areas where digital infrastructure remains underdeveloped. Additionally, 19.4% of farmers struggle with app usability due to a lack of digital literacy. Furthermore, 18.5% of farmers cited educational barriers, limiting their ability to navigate digital tools effectively. Accuracy of information remains a concern, with 22.3% of farmers expressing dissatisfaction. Only 6.8% of farmers reported language as a challenge, indicating that most agricultural apps are already catering to regional language needs.

Suggestions for Improvement



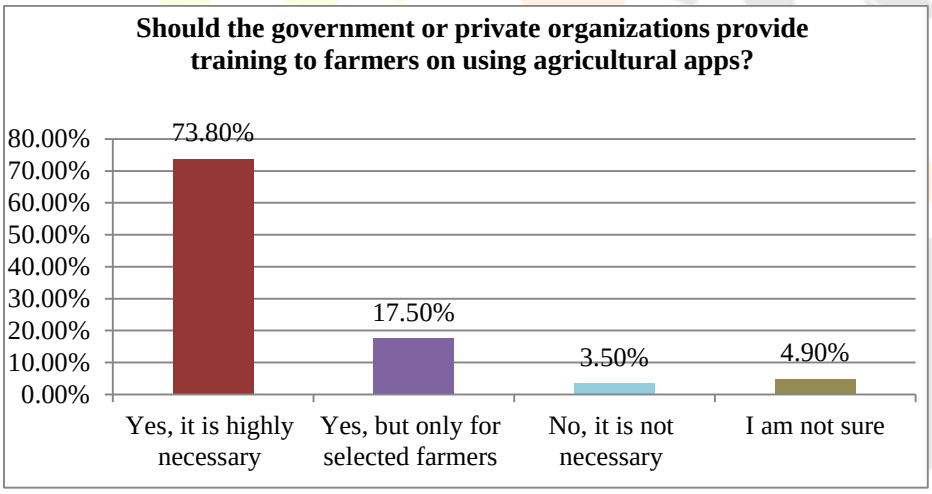
To enhance the effectiveness of agricultural apps, 32.4% of farmers suggest incorporating more information in the local language. A substantial portion (42.1%) emphasizes the need for real-time online interaction with agricultural experts. Additionally, 14.7% of farmers advocate for stronger collaborations between government and private organizations to support farmers. Furthermore, 9.8% of respondents highlight the need for improved technological solutions to facilitate better market transactions.

Farmers' Readiness for Online Training



A significant 45.6% of farmers express complete willingness to receive agricultural training through online platforms, indicating a positive attitude toward digital learning. However, 24.3% of respondents are interested but lack the time to participate. Another 24.3% feel that online training is not beneficial, as they perceive traditional learning methods to be more effective. A small percentage (5.8%) remains uncertain, suggesting the need for awareness programs to educate farmers on the advantages of digital training.

Need for Training on App Usage



When asked whether the government or private organizations should provide training on using agricultural apps, 73.8% of farmers responded affirmatively, reinforcing the necessity for digital literacy programs. Additionally, 17.5% of respondents believe that such training is crucial, especially for small-scale and less educated farmers. Only 3.9% stated that training is unnecessary, while 4.9% remained uncertain. These findings underscore the importance of structured initiatives to familiarize farmers with digital tools, ensuring they can maximize the benefits of agricultural apps.

The study highlights the growing significance of digital agriculture and the role of mobile applications in enhancing farming practices. While farmers are increasingly adopting agricultural apps, challenges such as internet connectivity, digital literacy, and accuracy of information need to be addressed. Government and private sector collaborations can play a crucial role in improving accessibility, providing real-time advisory services, and promoting digital literacy programs. Strengthening local language support and offering online training programs can further empower farmers, enabling them to make informed decisions and optimize agricultural productivity.

Results

1. Most farmers are literate and familiar with the use of agricultural apps, but some still face challenges, particularly with smartphone usage and internet connectivity.
2. The majority of farmers prefer information in their local language (Kannada), which should be prioritized in app development.
3. Internet connectivity issues are a significant barrier, especially in rural areas, limiting farmers' access to timely information.
4. Younger farmers are more engaged in the use of technology in agriculture.

Suggestions

1. Farmers should receive proper training on the use of agricultural apps.
2. The development of agricultural apps should prioritize local languages, particularly Kannada.
3. Internet access in rural areas should be improved to ensure timely access to agricultural information.
4. The government should support the provision of accurate and up-to-date information to farmers.
5. Technologies that increase communication between farmers and agricultural experts should be prioritized.

Conclusion

This study highlights the critical role of agricultural apps in providing essential information to farmers. The findings show that farmers are significantly impacted by the use of apps that provide climate forecasts, crop management strategies, and market prices. However, there is a need to raise awareness about the use of these apps and address the technological barriers faced by farmers, especially those in rural areas. The government should also support the development of policies that ensure easy access to relevant agricultural information and foster digital literacy among farmers.

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