

PROMOTING DIGITAL FINANCIAL INCLUSION AMONG FARMERS

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Abstract

The agricultural sector plays a critical role in ensuring food security, employment, and economic stability, yet rural farmers face significant challenges, particularly limited access to financial services. This study explores the potential of digital financial inclusion to empower farmers and enhance agricultural productivity. Digital financial inclusion refers to using digital tools such as mobile banking, digital wallets, and online lending platforms to deliver financial services to underserved populations. Despite its benefits, including improved access to credit, savings, and insurance, adoption among farmers is hindered by inadequate digital literacy, poor infrastructure, and cultural resistance.

This research, conducted among 100 farmers in Palaj, Gandhinagar, reveals that while mobile banking apps are widely used, barriers such as security concerns and lack of awareness persist. The study highlights the role of government programs and local organizations in promoting digital financial literacy and emphasizes the need for targeted educational initiatives, improved infrastructure, and tailored financial products.

Findings suggest that digital financial tools enhance financial security and productivity, offering long-term socioeconomic benefits. However, challenges such as mistrust of digital systems and insufficient internet access remain significant. Addressing these issues will enable broader financial inclusion, supporting sustainable economic growth and improving the livelihoods of rural farming communities.

Keywords- *Digital Financial Inclusion, Awareness, Financial Literacy, Farmers satisfaction*

INTRODUCTION

The agricultural sector remains the backbone of many economies worldwide, providing food security, employment, and economic stability. However, despite its significance, rural farmers often face systemic challenges, including limited access to financial services, which impedes their ability to invest in modern farming techniques, manage risks, and improve productivity. Financial inclusion—the process of ensuring that individuals and businesses have access to affordable and effective financial products and services—has emerged as a crucial solution to address these barriers (Demirgüç-Kunt et al., 2018). In particular, the rapid advancement of digital technology presents a transformative opportunity to promote financial inclusion among farmers, enabling them to access credit, savings, insurance, and payment systems with greater ease and efficiency.

Digital financial inclusion refers to the use of digital platforms and tools to deliver financial services, especially to underserved populations, such as smallholder farmers in rural areas. These tools include mobile banking, digital wallets, online lending platforms, and blockchain-based solutions, which have the potential to overcome traditional barriers, such as distance, cost, and lack of formal documentation. The World Bank (2021) highlights that digital financial services can drive economic growth, reduce poverty, and improve resilience by providing farmers with resources to weather financial shocks and invest in productivity-enhancing measures.

The importance of promoting digital financial inclusion among farmers cannot be overstated. According to a report by the Consultative Group to Assist the Poor (CGAP, 2020), approximately 1.7 billion adults globally remain unbanked, with a significant proportion residing in rural areas and depending on agriculture as their primary source of income. In India, where agriculture employs nearly half of the workforce, only 26% of rural households have access to formal credit (RBI, 2022). This financial gap underscores the urgent need for digital solutions tailored to the specific needs of farmers, such as weather-based insurance, crop-specific loans, and real-time market price updates.

Moreover, integrating farmers into the digital financial ecosystem can lead to broader socioeconomic benefits. For instance, digital payments can reduce the reliance on cash transactions, which are often associated with high transaction costs and risks of theft or fraud. Digital financial tools can also promote financial literacy, encouraging farmers to adopt better saving habits and make informed investment decisions. Studies have shown that financial inclusion not only improves individual livelihoods but also contributes to overall economic development by fostering entrepreneurship, reducing income inequality, and enhancing social mobility (Suri & Jack, 2016).

Despite these advantages, several challenges hinder the widespread adoption of digital financial services among farmers. These include inadequate digital infrastructure, low levels of digital literacy, and cultural resistance to adopting new technologies. Furthermore, issues such as unreliable internet connectivity, high costs of digital devices, and concerns over data privacy and security exacerbate the problem. Addressing these challenges requires a multi-stakeholder approach involving governments, financial institutions, technology providers, and community organizations to design and implement inclusive digital financial strategies.

This research paper aims to explore the potential of digital financial inclusion in empowering farmers and enhancing agricultural productivity. By analyzing case studies, examining policy frameworks, and assessing the impact of digital financial initiatives, the paper seeks to provide actionable recommendations for promoting financial inclusion among rural farmers. The findings will contribute to ongoing efforts to bridge the rural-urban financial divide and support sustainable development in agricultural communities.

LITERATURE REVIEW

Financial inclusion has emerged as a vital factor in enhancing the socio-economic status of farmers. Nithyashree and Vallabhaneni (2023) explored the role of financial services in fostering financial inclusion among farmers. Their study highlighted the relationship between farmers' awareness of financial services, the usage of bank financing, and their level of education. Using a structured questionnaire in both Kannada and English, the study collected data from 160 farmers. The findings emphasized the need for government interventions to improve access to financial services for farmers.

Raghi and Boniface (2022) analyzed the understanding and utilization of e-banking products among farmers. Through descriptive research involving 60 respondents, the study identified that low awareness and technical challenges hinder the adoption of online banking. It suggested that financial literacy programs should be implemented to address these barriers and educate farmers about the benefits of e-banking.

Aziz and Naima (2021) examined digital financial inclusion in rural Bangladesh. Their longitudinal mixed-method study revealed that digital literacy, access to devices, and social support systems significantly impact the effectiveness of digital financial services. They argued that mere availability of services is insufficient without fostering the necessary digital competencies.

Malladi, Soni, and Srinivasan (2021) delved into the challenges and opportunities of digital financial inclusion in India. Drawing from various government reports, they emphasized the importance of improving financial literacy, educational inclusion, and digital infrastructure to advance the next wave of financial inclusion.

Dhaliwal (2020) assessed rural digital inclusion through the Digital India initiative. This qualitative study evaluated efforts to integrate rural communities into the digital economy, focusing on farmers. It provided insights into the challenges of implementing digital services and proposed solutions for enhancing e-services for rural populations.

Mahesh et al. (2021) investigated the impact of Indian government schemes on agriculture, productivity, and financial inclusion. The study, based on secondary data, highlighted the success of initiatives like PM-KISAN, PMJDY, and e-NAM in boosting farmers' economic welfare and promoting financial inclusion.

Singh and Naik (2018) conducted a case study on the impact of PMJDY in Gubbi Taluk, Tumkur. Using data from 209 respondents, including 150 farmers, the study revealed that the program significantly contributed to financial inclusion, particularly for women and small-scale farmers.

Ibrahim and Jyothi (2020) assessed the perception of medium and small farmers in Puducherry regarding banking services. Through a descriptive study using simple random sampling, they found that awareness of financial products like the Kisan Credit Card played a crucial role in improving financial inclusion.

Shukla and Kumari (2023) examined the financial and digital literacy of women farmers and agripreneurs. Surveying 85 respondents, they identified cultural biases, limited access, and high costs as major barriers to digital transformation. Their study emphasized the need to address these constraints to improve inclusion.

Finally, Schuetz and Venkatesh (2020) highlighted blockchain technology as a potential solution to overcome challenges in financial inclusion, such as limited literacy, high costs, and unsuitable banking products. Their study underscored the role of blockchain in connecting rural communities to broader supply chain networks, thereby enhancing financial access.

These studies collectively emphasize the significance of financial literacy, technological infrastructure, and government interventions in promoting financial inclusion among farmers. Addressing these challenges can foster economic growth and improve the livelihoods of rural communities.

OBJECTIVES

- [1] To study the concept of “Promoting digital financial inclusion among farmers”.
- [2] To find that whether the farmers is aware about digital financial inclusion or not.
- [3] To analyse which financial services they use and which service they most liked.

RESEARCH METHODOLOGY

This study utilized a descriptive research design, combining both qualitative and quantitative data to address the research questions and generate precise predictions about digital financial inclusion among farmers. The target population consisted of farmers from Palaj, Gandhinagar, with a sample size of 100 respondents, selected using a convenient sampling technique. Primary data was collected through a self-designed questionnaire, providing unique insights into the research topic, while secondary data was gathered from relevant websites and research papers. Data collection was carried out using a survey method, with physical questionnaires analyzed through Google Forms. The data was subsequently analyzed and presented in graphical and tabular formats using Microsoft Excel. Limitations of the research include challenges related to self-reporting, recall bias, the potential impact of time-sensitive economic conditions, resource constraints affecting data collection, language and cultural barriers, and external factors influencing farmers’ awareness and behaviour.

DATA ANALYSIS

Age	No. of Respondents	Percentage
Below 20	0	0
20-30	18	18
30-40	36	36
40-50	35	35
Above 50	11	11
Total	100	100

These findings suggest that the farming community in the region is predominantly composed of middle-aged individuals, with moderate representation from younger and older age groups. This demographic distribution could influence the adoption of digital financial services, as middle-aged farmers might be more open to adopting new technologies compared to older farmers, while younger farmers could bring digital familiarity but might lack significant decision-making roles.

Gender	No. of Respondents	Percentage
Male	98	98
Female	2	2
Total	100	100

The low percentage of female respondents highlights potential cultural or societal factors that may restrict women's

participation in farming or their access to financial decision-making roles. It could also indicate a gender gap in awareness or utilization of digital financial services, which may require targeted interventions to promote inclusivity and gender equity in agriculture.

Education	No. of Respondents	Percentage
No formal education	8	8
Primary education	28	28
Secondary education	46	46
Bachelor's degree	10	10
Master' degree	8	8
Total	100	100

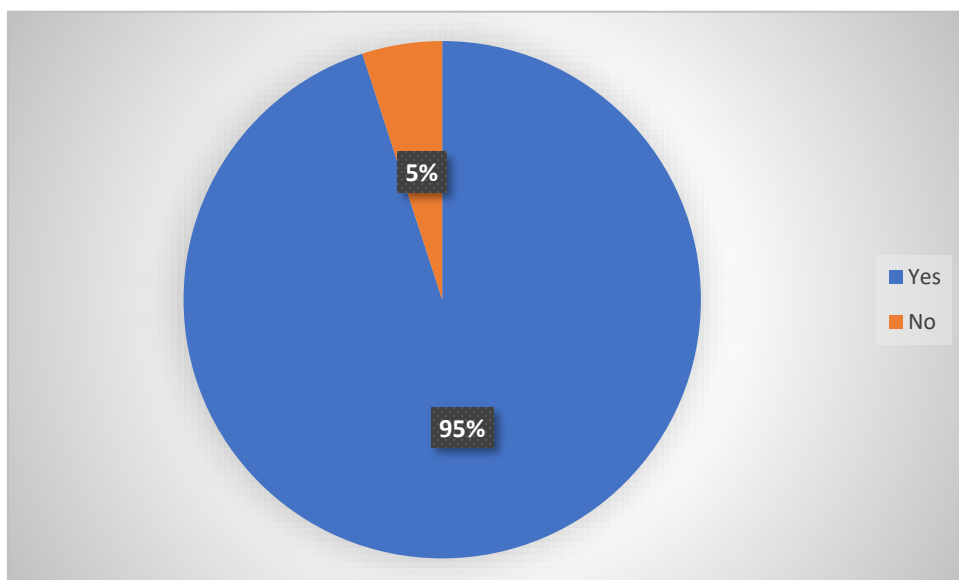
This distribution suggests that while a majority of farmers possess some level of formal education, there is a need for tailored financial literacy and digital inclusion initiatives to address the varying educational levels, particularly for those with lower education.

Income	No. of Respondents	Percentage
Below 1 lakh	2	2
1-10 lakhs	60	60
10-20 lakhs	29	29
20-30 lakhs	5	5
Above 30 lakhs	4	4
Total	100	100

Overall, the data suggests that while a majority of farmers have moderate to high incomes, a small percentage of low-income farmers may need additional assistance to ensure equitable access to digital financial tools and services.

Graphical presentation of do you use any digital financial services: -

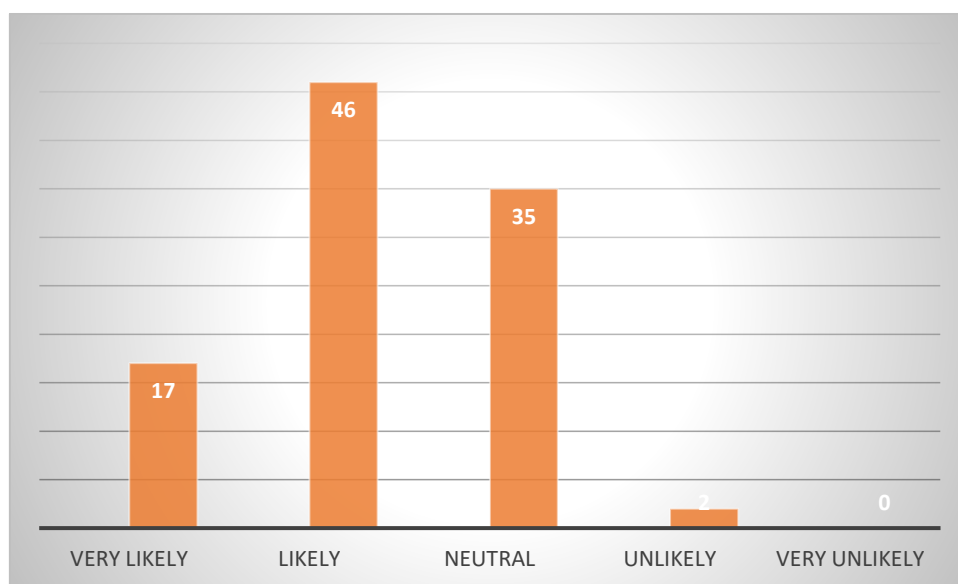
Heard about digital financial inclusion before	No. of Respondents	Percentage
Yes	95	95
No	5	5
Total	100	100



This distribution underscores the potential of digital financial services to transform financial inclusion among farmers. However, the 5% who are not yet users indicate the need for targeted efforts to address the challenges preventing complete adoption. Strategies such as digital literacy programs, improved infrastructure, and user-friendly financial tools could help bridge this gap and ensure that all farmers can benefit from digital financial inclusion.

Graphical presentation of how likely are you to continue using digital financial services in the future: -

How likely are you to continue using digital financial services in the future	No. of Respondents	Percentage
Very likely	16	17
Likely	44	46
Neutral	33	35
Unlikely	2	2
Very unlikely	0	0
Total	95	100

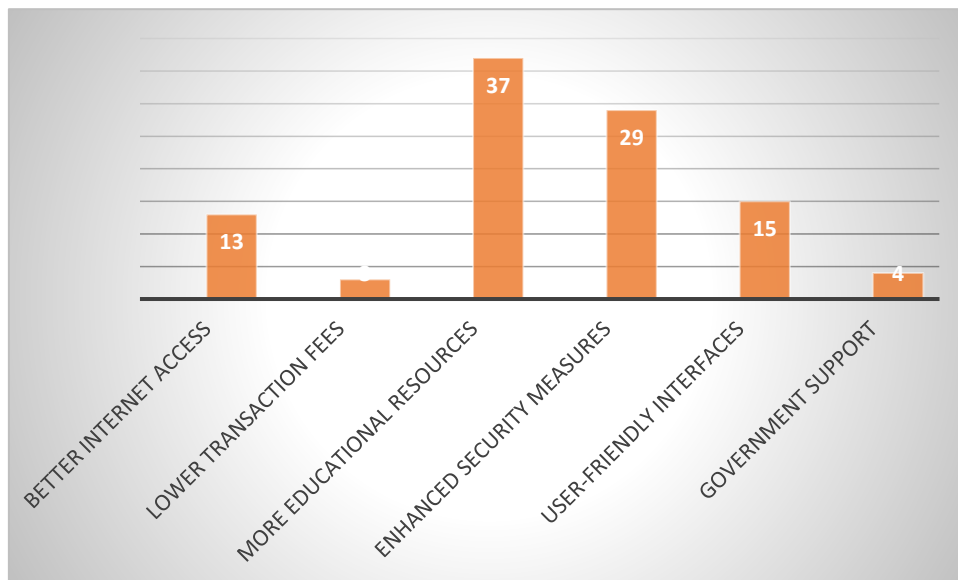


Overall, the data suggests that most farmers are open to or confident about continuing with digital financial services, but efforts are needed to engage and address the concerns of neutral and hesitant users to ensure sustained adoption.

Graphical presentation of what do you think could improve your use of digital financial services: -

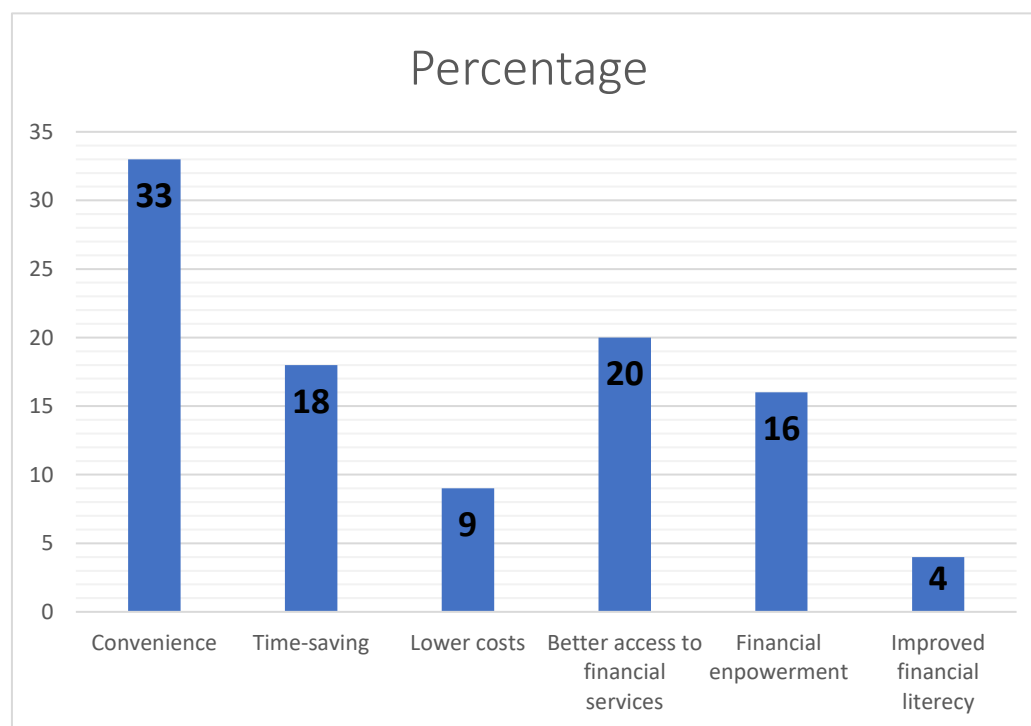
Improvement	No. of Respondents	Percentage
Better internet access	20	13
Lower transaction fees	4	3
More educational resources	57	37
Enhanced security measures	46	29
User-friendly interfaces	23	14
Government support	6	4
Total	156	100

Overall, the data indicates that while farmers acknowledge the usefulness of digital financial services, significant improvements in education, security, and infrastructure are needed to foster greater adoption and satisfaction.



Graphical presentations of what benefits do you associate with digital financial inclusion: -

Benefits	No. of Respondents	Percentage
Convenience	53	33
Time-saving	29	18
Lower costs	15	9
Better access to financial services	32	20
Financial empowerment	27	16
Improved financial literacy	7	4
Total	163	100



Overall, the findings indicate that the primary benefits of digital financial services for farmers are convenience, better access to financial services, and time-saving, while other benefits such as financial empowerment and lower costs are also recognized but to a lesser extent.

Chi square test of independence

Observed value

Age	Daily	Weekly	Monthly	Never	
20-30	16	0	0	0	16
30-40	46	3	0	0	49
40-50	9	0	0	21	30
Above 50	1	0	2	2	5
	72	3	2	23	100

Expected value

H0- Age and Usage of digital financial service are Independent

H1- Age and Usage of digital financial service are not Independent

Age	Daily	Weekly	Monthly	Never	
20-30	(11.52) 16	(0.48) 0	(0.32) 0	(3.68) 0	16
30-40	(35.28) 46	(1.47) 3	(0.98) 0	(11.27) 0	49
40-50	(21.6) 9	(0.9) 0	(0.60) 0	(6.9) 21	30
Above 50	(3.6) 1	(0.15) 0	(0.1) 2	(1.15) 2	5
	72	3	2	23	100

Chi	99.74107759
DF	9
Chi square table value (0.05,2)	16.919
Table value is greater than original value	
Table value is lesser than original value	
99.74108 > 16.919	H0 Rejected

The Chi-square test was conducted to determine if there is a significant association between age groups and the frequency of engagement (daily, weekly, monthly, never). The calculated Chi-square value is **99.7411** with **9 degrees of freedom**. The critical Chi-square value at a significance level (α) of 0.05 is **16.919**.

Since the calculated Chi-square value (**99.7411**) is significantly greater than the critical value (**16.919**), the null hypothesis (H0) is rejected. This indicates that there is a statistically significant association between age groups and the frequency of engagement.

In other words, the frequency of engagement (daily, weekly, monthly, never) is not uniform across age groups, and age appears to have a notable influence on engagement behavior. For instance, individuals in the **30-40 age group** show higher daily engagement, while those in the **40-50 age group** tend to engage less frequently. Similarly, individuals aged **above 50** exhibit relatively low engagement overall.

This result highlights the importance of considering age demographics when analyzing or planning strategies aimed at improving engagement. Tailored approaches may be necessary to cater to the unique preferences and behaviors of each age group.

FINDINGS

Local organizations and government programs that encourage digital inclusion. Based on my research studies, I can say that the majority of farmers use digital financial services, most of farmers use mobile banking apps. prevent, I can say that using digital financial services is a security concern and lack of knowledge. Based on my studies, I can say that more educational resources could improve the use of digital financial services.

Also, the majority of farmers use digital financial services daily. Barriers include a lack of specialized financial goods, a lack of internet connection, a lack of digital literacy, and mistrust of digital systems. Benefits include lower transaction costs, better financial management, quicker access to loans and insurance, and on-time payments. From the research we get to know that farmers are going to adopt digitalisation in near future.

Overall comments of the farmers have likely to use digital financial services.

CONCLUSION

Encouraging farmers to adopt digital financial inclusion offers an important opportunity to improve their financial security and stability. Our findings show that although people are becoming more aware of and accepting of digital financial services, there are still significant gaps in infrastructure, knowledge, and trust.

Adoption and use of digital financial instruments can increase if these issues are addressed with focused education initiatives, enhanced digital infrastructure, and reliable financial services. In the end, providing farmers with these tools will encourage sustainable economic growth and community development.

LIMITATION

This study acknowledges several limitations that may affect the generalizability and accuracy of the findings. Firstly, the data collection process was subject to **self-reporting and recall bias**, as respondents may have unintentionally provided inaccurate or incomplete information based on their perceptions or memory. Additionally, the **findings are influenced by time-sensitive factors**, such as economic conditions and policy changes, which could alter farmers' access to or attitudes toward digital financial services over time. External factors, including **community awareness, local infrastructure**, and cultural beliefs, may have influenced respondents' behavior and their willingness to adopt digital financial tools. Moreover, **language and cultural barriers** may have impacted the clarity of the survey questions and the ability of farmers to fully understand and respond to them, especially in rural areas with diverse linguistic backgrounds.

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