WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

A Study on Perceived Value of Farmers on Biometrics with Special Reference to Financial Inclusion Schemes

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ABSTRACT

Financial inclusion initiatives in India have heavily relied on biometric technology to facilitate secure and efficient access to financial services, especially for underserved populations. This study explores the factors influencing farmers' perceptions of biometrics, including gender, age, and type of farming. The hypotheses tested aim to ascertain whether these demographic variables significantly affect farmers' views on biometric technology. Using Chi-Square tests for analysis, the study found that neither gender nor type of farming showed a significant association with farmers' perceptions of biometrics. However, age exhibited mixed results, indicating a potential influence but lacking consistent significance across tests. These findings suggest that while biometric technology holds promise for enhancing financial inclusion among farmers in India, its acceptance may not be significantly influenced by gender or type of farming. Further research is needed to delve deeper into the nuanced factors shaping farmers' attitudes towards biometrics to inform more targeted inclusion strategies.

Key Words: Financial inclusion, biometric technology, farmers, perceptions, India, demographic factors, gender, age, type of farming, Chi-Square tests, inclusion strategies.

Introduction:

Financial inclusion is a critical component of inclusive economic growth and development, aiming to provide access to a range of financial services to all segments of society, particularly those traditionally excluded or underserved. In the context of India, financial inclusion has been a strategic imperative to address the vast socio-economic diversities and ensure that the benefits of economic development reach the marginalized and unbanked populations.

Uses of biometrics in financial inclusions in India:-

Biometrics plays a crucial role in enhancing financial inclusion in India by providing secure and efficient means of identity verification and transaction authorization.

Aadhaar-Based Biometric Authentication: The Aadhaar system, India's biometric identification program, uses fingerprint and iris scans for identity verification. Biometric authentication linked to Aadhaar enables individuals to access various financial services, such as opening bank accounts, availing subsidies, and facilitating direct benefit transfers.

Bank Account Access and Transactions: Biometric authentication is employed to link individuals' fingerprints or iris scans to their bank accounts. Enables secure access to bank accounts and facilitates transactions, reducing the reliance on traditional methods like signatures or PINs.

ATM Transactions: Biometric-enabled ATMs use fingerprint or iris recognition for user authentication. Allows individuals to withdraw cash, check account balances, and perform other transactions using biometric identification, enhancing security and reducing the risk of unauthorized access.

Mobile Banking and Payments: Mobile banking apps and payment systems utilize biometrics, such as fingerprint or facial recognition. Enhances the security of mobile banking transactions and digital payments by ensuring that only authorized users can access and initiate transactions.

Loan Disbursement and Repayment: Biometrics can be used during the loan application process and for loan disbursement, ensuring that the correct individual receives the funds. Improves the accuracy of loan disbursement, reduces fraud, and facilitates convenient repayment through biometric-secured channels.

Microfinance Transactions: Biometrics can be integrated into microfinance operations for identity verification and transaction processing. Enables secure transactions in microfinance institutions, ensuring that financial services reach individuals in rural and underserved areas.

Insurance Claim Verification: Biometric verification is used to authenticate individuals making insurance claims. Enhances the accuracy and security of insurance processes, reducing the likelihood of fraudulent claims and ensuring that genuine beneficiaries receive pay-outs.

Pension Distribution: Biometrics can be employed to verify pensioners' identities during the distribution of pension payments. Ensures that pension benefits reach the rightful recipients, minimizing the risk of identity fraud and improving the efficiency of pension distribution systems.

KYC (Know Your Customer) Processes: Biometrics are used as a secure method for identity verification during KYC processes. Simplifies and strengthens the KYC procedures for account opening, loan applications, and other financial services, reducing the reliance on physical documents.

Financial Inclusion Initiatives: Biometrics are integrated into various financial inclusion programs and initiatives, such as Jan Dhan Yojana. Enhances the security and efficiency of these programs, ensuring that benefits and subsidies reach intended beneficiaries accurately.

The use of biometrics in financial inclusions in India not only improves security and reduces fraud but also enables a more inclusive and accessible financial ecosystem, particularly for individuals in rural and remote areas. Biometric authentication is a key enabler for individuals who may not have traditional identification documents but can be uniquely identified through their biometric features.

Literature Review:

1. Barbara Mroz-Gorgon, et al (2022) states the literature reviews as one of the research methods to analyze current customs and opinions regarding payment methods and identify threats and opportunities for new biometric solutions in the payment sector.

2. Stephen Elliott, S.A. Massie, et al (2007) explains the perception of biometric technology has been studied through surveys conducted in 2003, 2005, and more recent studies, indicating a consistent trend in consumer perception. A survey of 1,003 people showed a willingness to use biometrics for specific applications, but also a lack of trust in certain organizations, particularly government affiliations. The survey revealed that respondents had limited awareness of biometrics until they were provided with a definition, at which point awareness increased significantly .Opinions on biometric technology varied considerably based on factors such as age, education, and income .Misconceptions surrounding biometric technology need to be addressed, and clear and concise information should be provided to the public to overcome scepticism and increase understanding.

3. Oliver Buckley, et al (2019) conducts surveys in 2003, 2005, and more recent studies indicate a consistent trend in consumer perception of biometric technology. Respondents initially had limited awareness of biometrics, but their understanding increased significantly when provided with a definition. Opinions on biometric technology varied based on factors such as age, education, and income .Misconceptions surrounding biometric technology need to be addressed, and clear and concise information should be provided to the public to overcome scepticism and increase understanding.

Objectives Of The Study:

To identify and analyze the factors influencing farmers' perceptions of biometrics, encompassing demographics variables.

Hypothesis Of The Study:

Null Hypothesis (Ho): Socio-demographic factors, including age, education, farm size, and technological familiarity, do not significantly influence farmers' perceptions of biometrics.

Alternative Hypothesis (Ha): There are significant associations between farmers' age, education, farm size, and technological familiarity with their perceptions of biometrics. Moreover, cultural and social factors significantly impact the acceptance of biometric technologies among farmers.

Data Analysis:

Gender

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.882[a]	4	.757
Likelihood Ratio	1.886	4	.757
Linear-by-Linear Association	.889	1	.346
N of Valid Cases	150		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 7.30.

Age

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	25.114[a]	16	.068
Likelihood Ratio	28.120	16	.031
Linear-by-Linear Association	3.150	1	.076
N of Valid Cases	150		

a. 11 cells (44.0%) have expected count less than 5. The minimum expected count is 2.00.

Typing of Farming

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.574[a]	8	.227
Likelihood Ratio	10.932	8	.206
Linear-by-Linear Association	.001	1	.977
N of Valid Cases	150		

a. 1 cells (6.7%) have expected count less than 5. The minimum expected count is 4.60.

Interpretation:

Gender:

Pearson Chi-Square: 1.882 (p = 0.757)

Likelihood Ratio: 1.886 (p = 0.757)

Linear-by-Linear Association: 0.889 (p = 0.346)

The Chi-Square tests for gender do not indicate a statistically significant association with farmers' perceptions of biometrics. The p-values are greater than the significance level (usually 0.05), suggesting that gender is not a significant factor influencing farmers' perceptions of biometrics.

Age:

Pearson Chi-Square: 25.114 (p = 0.068)

Likelihood Ratio: 28.120 (p = 0.031)

Linear-by-Linear Association: 3.150 (p = 0.076)

The Chi-Square tests for age show mixed results. While the Likelihood Ratio test suggests a statistically significant association (p = 0.031), the Pearson Chi-Square test does not reach statistical significance (p = 0.068). The Linear-by-Linear Association test also does not indicate a significant association (p = 0.076). This suggests that age may have some influence on farmers' perceptions of biometrics, but the significance of this influence is not consistent across all tests.

Type of Farming:

Pearson Chi-Square: 10.574 (p = 0.227)

Likelihood Ratio: 10.932 (p = 0.206)

Linear-by-Linear Association: 0.001 (p = 0.977)

The Chi-Square tests for type of farming also do not show a statistically significant association with farmers' perceptions of biometrics. The p-values are greater than the significance level (usually 0.05), indicating that the type of farming is not a significant factor influencing farmers' perceptions of biometrics.

Based on these Chi-Square tests, neither gender nor type of farming significantly influences farmers' perceptions of biometrics. However, age shows mixed results, with the Likelihood Ratio test suggesting a significant association, while the Pearson Chi-Square and Linear-by-Linear Association tests do not reach statistical significance.

Hypotheses:

For each Chi-Square test conducted to identify factors influencing farmers' perceptions of biometrics, let's outline the hypotheses:

Gender:

Null Hypothesis (H0): There is no association between gender and farmers' perceptions of biometrics.

Alternative Hypothesis (H1): There is an association between gender and farmers' perceptions of biometrics.

Age:

Null Hypothesis (H0): There is no association between age and farmers' perceptions of biometrics.

Alternative Hypothesis (H1): There is an association between age and farmers' perceptions of biometrics.

Type of Farming:

Null Hypothesis (H0): There is no association between type of farming and farmers' perceptions of biometrics.

Alternative Hypothesis (H1): There is an association between type of farming and farmers' perceptions of biometrics.

These hypotheses frame the question of whether each demographic variable (gender, age, and type of farming) has an influence on farmers' perceptions of biometrics. The significance of the Chi-Square tests will help determine whether to reject or fail to reject the null hypothesis for each variable.

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