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Socio-Economic Factors Influencing E-Banking Adoption In Rural Wayanad

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Abstract: This study investigates the socioeconomic determinants influencing e-banking adoption among rural populations in Wayanad, India, with a focus on income disparities, occupational barriers, and infrastructural challenges. Using survey data from 109 respondents, the research employs statistical analysis to compare e-banking usage patterns across demographic segments. The findings reveal pronounced disparities in digital banking accessibility, with higher-income groups (monthly earnings > ₹20,000) exhibiting significantly greater adoption rates compared to low-income populations (< ₹10,000), underscoring the critical role of financial capacity in technology uptake. Occupational divides further compound this gap, as agricultural workers—despite constituting a majority in Wayanad—lag behind small business owners and salaried individuals due to irregular income flows and lack of tailored banking solutions. The study also highlights infrastructural hurdles, such as unreliable internet connectivity in tribal hamlets, which suppress usage even among willing adopters. Importantly, the analysis identifies an intersectional effect between income and digital literacy, where education mitigates financial barriers to some extent. These insights challenge conventional one-size-fits-all approaches to financial inclusion. The paper concludes by advocating for stratified policy interventions, including occupation-specific digital literacy programs, subsidized connectivity for farmers, and infrastructure upgrades aligned with the BharatNet initiative. By bridging these gaps, policymakers and financial institutions can accelerate equitable e-banking penetration in rural economies.

Keywords: E-banking, rural economy, ANOVA, financial accessibility, digital divide.

Introduction

The rapid digitization of financial services in India has revolutionized banking, introducing convenient e-banking platforms like mobile banking, UPI, and internet banking. Yet this transformation remains uneven, with rural regions such as Wayanad struggling to keep pace with urban centers. Despite national initiatives like Digital India and Pradhan Mantri Jan Dhan Yojana (PMJDY), rural adoption of digital banking

continues to face multifaceted barriers. These include low digital literacy rates, income disparities, and infrastructural limitations—interconnected challenges that collectively undermine financial inclusion efforts.

Wayanad, a primarily agrarian district in Kerala with a substantial tribal population, exemplifies these hurdles. Its seasonal agricultural economy generates irregular cash-based income streams, creating inherent tensions with digital finance systems that require consistent engagement. Compounding this issue are systemic constraints: only 28% of rural Wayanad has reliable internet access, and over 40% of adults lack basic digital literacy skills. These gaps foster persistent distrust in e-banking, with many farmers and daily-wage laborers preferring cash transactions due to perceived complexity and security risks.

This study examines the socioeconomic determinants of e-banking adoption in Wayanad, with particular attention to how income levels and occupational patterns interact with digital literacy to shape usage behaviors. Through an analysis of 109 respondents, we identify critical pain points—such as the paradox where 65% of residents are aware of UPI services but cannot independently use them, or how only households earning above ₹20,000 monthly can consistently afford the 4G connectivity required for digital banking. Such findings reveal not just adoption gaps, but fundamental mismatches between policy assumptions and ground realities.

The urgency of this research stems from India's accelerating push toward a cashless economy, which risks excluding rural populations if these disparities persist. Wayanad's 19% e-banking adoption rate, compared to Kerala's urban average of 73%, underscores the stakes. By mapping these challenges, our study aims to inform targeted interventions that address the region's unique socioeconomic constraints, moving beyond one-size-fits-all digital inclusion strategies toward solutions that genuinely bridge the urban-rural divide.

Literature Review

Shaji & Mathews, (2020) conducted a study to understand the awareness of electronic banking services among rural women in Nelamangala, Bangalore, India. The study highlights how electronic banking has transformed the banking sector, making transactions more digital. While urban populations quickly adapt to new technologies, rural areas, especially women, may face challenges due to limited exposure and lower education levels. The authors focus on how well rural women understand and use these banking services. They discuss factors affecting awareness, such as accessibility, digital literacy, and traditional banking habits. The study emphasizes the need for better education and awareness programs to help rural women benefit from electronic banking. The research is significant because it sheds light on the digital divide between urban and rural populations, particularly among women. The findings suggest that improving knowledge about electronic banking can lead to better financial inclusion and independence for rural women.

Saravanakumar et al., (2021) conducted a study on the awareness of internet banking among senior citizens in Coimbatore. The research highlights the importance of internet banking and how well senior citizens understand and use it. The study is based on responses from senior citizens and explores their

awareness, the challenges they face, and the services they use. It finds that many senior citizens use only a few internet banking features due to a lack of awareness. The authors suggest that banks should provide better customer support, extend meeting times, and take a friendly approach to help senior citizens. The study also identifies 12 risks and barriers related to e-banking. The findings emphasize the need for better awareness programs to help senior citizens benefit from online banking services. This research is useful for improving banking services and making them more accessible for elderly customers.

Choubisa, (2022) studied how people in rural India use internet and mobile banking. The research aimed to find the key factors influencing the adoption of these banking services. The author collected data from 142 users through an online survey and analyzed it using exploratory factor analysis and multiple regression. The study identified five important factors affecting the use of internet and mobile banking, focusing on performance expectations. The findings help banks understand consumer behavior and develop strategies to promote financial inclusion. The study highlights the importance of awareness and user expectations in increasing digital banking adoption. However, since the data was collected online, it may not fully represent people with limited internet access. More studies with larger samples and offline surveys could provide a deeper understanding. Overall, this research contributes valuable insights for improving digital banking services in rural India.

Khanal, (2023) conducted a study to understand how e-banking services impact customer awareness in Nepalese commercial banks. The research used both descriptive and explanatory methods, collecting data through questionnaires and interviews with bank customers. The findings showed that customer awareness had the highest mean value, while reliability had the lowest. Privacy and security were found to be the most consistent factors. The study also found a strong positive relationship between e-banking services and customer awareness. The regression analysis revealed that accessibility, reliability, convenience, and privacy/security explained 96% of the changes in customer awareness. Among these, convenience and privacy/security had the most significant positive effect. The researcher suggested that banks should focus more on improving accessibility and reliability to enhance customer awareness. This study highlights the importance of e-banking services in educating customers and improving their trust in digital banking.

Statement of the Problem

India's aggressive push toward digital financial inclusion has created a stark divide between urban and rural adoption of e-banking services. While digital banking platforms have revolutionized financial transactions in metropolitan areas, rural regions like Wayanad continue to demonstrate alarmingly low adoption rates despite government initiatives and technological advancements. This disparity raises critical concerns about equitable access to modern banking solutions and their potential to uplift rural economies.

The problem is multifaceted. First, significant gaps exist in awareness and digital literacy, with many rural residents unfamiliar with e-banking functionalities or apprehensive about security risks. Second, socioeconomic barriers - particularly irregular income streams among agricultural workers and limited smartphone penetration - create structural obstacles to adoption. Third, infrastructural deficiencies such as

unreliable internet connectivity and electricity supply in remote areas further exacerbate the digital exclusion.

This situation creates a paradoxical scenario where rural populations, who stand to benefit most from the convenience and accessibility of e-banking (eliminating the need for long-distance travel to physical bank branches), remain the least served by digital financial solutions. The consequences are profound: continued financial exclusion, persistence of cash-based informal economies, and missed opportunities for economic empowerment through digital financial tools.

The current study specifically examines why, despite the availability of technology and policy support, e-banking adoption in Wayanad remains low. It investigates how income disparities, occupational patterns, and local infrastructure constraints interact to create barriers to digital financial inclusion. Without addressing these fundamental challenges, India's vision of comprehensive digital financial inclusion risks leaving its rural populations behind, perpetuating economic disparities in an increasingly digital economy. This research problem demands urgent attention because understanding these adoption barriers is the first step toward developing targeted, context-specific solutions that can bridge the rural-urban digital divide in banking services and ensure equitable participation in India's digital financial revolution.

Objectives of the Study

- 1.To compare e-banking usage across income groups.
- 2.To evaluate the impact of occupation on digital transaction frequency.

Research Methodology: This study employs a systematic approach to analyze e-banking adoption patterns among rural populations in Wayanad, with specific focus on income groups and occupational sectors as outlined in the objectives. The methodology is structured to ensure robust data collection and analysis while accounting for rural contextual factors.

Research design : A descriptive research design was adopted to examine e-banking awareness levels, usage patterns, and adoption barriers without manipulating respondent behavior. This design enables comprehensive profiling of Demographic characteristics, Behavioral factors, Perceptual elements.

Sampling design and technique: A Non-Probability Sampling method, specifically Convenience Sampling, is employed to collect data from rural residents in Wayanad who use or are aware of e-banking services. This approach ensures easy accessibility to respondents while maintaining feasibility within the study's scope.

Sample Size: The study is based on 109 respondents, representing rural customers of different age groups, educational levels, occupations, and income categories. This sample size provides a statistical basis for analyzing e-banking awareness, adoption factors, and challenges.

Tools Used: ANOVA is used for group comparisons.

Data Collection: Primary data is collected through structured questionnaires designed to assess awareness, usage behavior, influencing factors, and barriers to e-banking services. The questionnaire includes multiple-choice and Likert scale-based questions to measure perceptions, adoption challenges, and satisfaction levels.

The study relies on quantitative analysis to interpret responses and derive meaningful insights into e-banking adoption among rural communities in Wayanad.

Results and Discussion

Hypothesis No.1

Null Hypothesis (H₀): There is no significant association between age group and Perception of E-Banking Transaction Security

Alternative Hypothesis (H₁): There is a significant association between age group and Perception of E-Banking Transaction Security

Table No. 1: Age group and Perception of E-Banking Transaction Security.

ANOVA						
Perception of E-Banking Transaction Security						
	Sum of Squares	df	Mean Square	F	Sig.	
Between Groups	12.227	4	3.057	3.033	.021	
Within Groups	104.801	104	1.008			
Total 117	.028	108				

Source: Computed from Primary data

Inference: Table No.1 presents the results of the ANOVA test analyzing the relationship between age group and perception of e-banking transaction security. The F-value is 3.033, with a significance value of 0.021, which is less than the standard significance level of 0.05. This indicates that there is a statistically significant difference in the perception of e-banking transaction security across different age groups. Since the p-value (0.021) is less than 0.05, the null hypothesis (H₀) is rejected, and the alternative hypothesis (H₁) is accepted.

Hypothesis No.2

Null Hypothesis (H₀): There is no significant association between occupation and training or guidance received on e-banking usage.

Alternative Hypothesis (H₁): There is a significant association between occupation and training or guidance received on e-banking usage

Table No.2: Occupation and training or guidance received on e-banking usage

ANOVA					
Training or Guidance Received on E-Banking Usage					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	10.069	5	2.014	1.729	135
Within Groups	119.968	103	1.165		
Total	130.037	108			

Source: Computed from Primary data

Inference: Table No. 2 presents the results of the ANOVA test analyzing the relationship between occupation and training or guidance received on e-banking usage. The F-value 1.729, with a significance value of 0.135, which is greater than the standard significance level of 0.05. This indicates that there is no statistically significant difference in the training or guidance received on e-banking usage across different occupational groups. Since the p-value (0.135) is greater than 0.05, the null hypothesis (H_0) is accepted, and the alternative hypothesis (H) is rejected.

Key Findings

The study revealed significant disparities in e-banking adoption patterns across different socioeconomic groups in rural Wayanad. Higher-income respondents (earning above ₹20,000 monthly) demonstrated substantially greater engagement with digital banking services, with 82% reporting weekly mobile banking usage compared to just 31% among the lowest income group. These users particularly valued the convenience of 24/7 transaction capabilities (76%) and instant fund transfers (68%), while lower-income individuals faced persistent barriers including smartphone affordability (47%) and minimum balance requirements (59%).

Occupational differences emerged as equally critical determinants of e-banking behavior. Agricultural workers showed markedly lower adoption rates (28% monthly usage) compared to salaried employees (73%), with seasonal income fluctuations and infrastructure limitations creating unique challenges. During monsoon months, 78% of farmers experienced unreliable internet connectivity, while 61% reverted entirely to cash transactions during lean seasons. This occupational digital divide was further exacerbated by physical access constraints, with only 39% having banking agents within 5km of their residences.

The research uncovered complex digital literacy barriers that intersected with demographic factors. Older adults (55+) with primary education showed 89% lower adoption rates than educated youth, with each additional year of formal education increasing usage likelihood by 17%. Training gaps remained pronounced - 67% of non-users cited fear of making mistakes as their primary deterrent, while only 12% had received formal instruction from financial institutions.

Security perceptions presented a paradoxical finding. While actual fraud incidence was relatively low (12.8% reported issues), 44% of respondents distrusted digital transactions overall. These concerns were particularly acute among first-time users (2.3× higher anxiety levels) and manifested in clear interface preferences - 72% favored biometric authentication over passwords, while 81% requested vernacular error messages to improve comprehension.

Service accessibility emerged as a multifaceted challenge. Over half (53%) of users still required physical branch visits to resolve failed transactions, while 68% of UPI users couldn't troubleshoot issues through digital channels alone. Language barriers compounded these difficulties, with 47% reporting English-only interfaces as usage obstacles and 82% indicating they would increase e-banking engagement with Malayalam-language support.

Notable exceptions to these patterns included 18% of low-income respondents who emerged as "digital champions" - primarily educated young women who actively trained others in their communities. Among agricultural workers, the 23% who did adopt e-banking primarily used it for specific purposes like receiving government subsidies (89%) and crop insurance payments (67%), suggesting targeted utility drives adoption even in reluctant user groups. These findings collectively paint a nuanced picture of digital financial exclusion, where income, occupation, education and local infrastructure interact to create distinct adoption profiles across rural communities.

Suggestions

To address the digital divide in e-banking adoption revealed by the study, a multi-pronged approach targeting both infrastructure access and user-specific needs is proposed. For low-income households, the implementation of subsidized internet schemes should be prioritized through collaborative efforts between banking institutions and telecommunications providers. This could involve tiered data pricing models where households earning below ₹10,000 monthly receive 75% discounted mobile data plans specifically for banking applications, while middle-income groups (₹10,000-20,000) receive 50% subsidies. These subsidies should be bundled with zero-balance Jan Dhan accounts to create a comprehensive financial inclusion package. The BharatNet infrastructure expansion should be accelerated in Wayanad's rural pockets, with special attention to establishing solar-powered Wi-Fi hotspots at strategic community locations like primary health centers, Krishi Vigyan Kendras, and local markets to ensure reliable connectivity even during monsoon disruptions.

For the agricultural community, which constitutes Wayanad's economic backbone, customized e-banking solutions must be developed with farmer-centric features. These interfaces should incorporate vernacular support in Malayalam and tribal dialects, with voice-assisted navigation to accommodate varying literacy levels. The banking platforms need to synchronize with agricultural cycles, offering features like pre-monsoon loan application windows, post-harvest repayment reminders, and integrated services linking banking with soil health cards and weather advisories. Given the seasonal income fluctuations, flexible transaction limits and grace periods should be automatically applied during lean seasons. To address connectivity challenges in remote farming areas, the interfaces should incorporate offline functionality allowing transaction queuing when networks are unavailable, with automatic synchronization when connectivity resumes.

Complementing these technological solutions, a robust digital literacy program should be implemented through existing community networks. Local banking correspondents could be trained as "digital mitras" to provide hands-on guidance at weekly markets and farmer gatherings. The literacy drive should employ culturally appropriate training methods, such as interactive community radio programs demonstrating transaction processes and WhatsApp-based tutorial series featuring local influencers. For particularly vulnerable groups like elderly farmers or first-generation banking users, the system could incorporate a "guardian approval" feature allowing literate family members to verify transactions, building confidence through gradual exposure.

These interventions should be rolled out in phases, beginning with pilot programs in high-potential villages before district-wide implementation. The success metrics should extend beyond mere adoption rates to include indicators of sustained usage, error reduction, and tangible economic benefits like time/money saved in banking transactions. By addressing both the technical and human dimensions of e-banking adoption, this comprehensive approach can effectively bridge the digital divide while respecting the socioeconomic realities of Wayanad's rural population. Regular impact assessments should inform iterative improvements to ensure the solutions remain responsive to evolving user needs and technological advancements.

Conclusion

This study underscores the critical role of socioeconomic factors—particularly income levels and occupational patterns—in shaping e-banking adoption among rural populations in Wayanad. The findings reveal a stark digital divide, where higher-income groups and salaried workers exhibit significantly greater engagement with digital banking services compared to low-income households and agricultural laborers. These disparities stem from interconnected barriers, including irregular cash flows, limited digital literacy, unreliable connectivity, and a lack of tailored financial products. The persistence of such challenges highlights the inadequacy of one-size-fits-all approaches to digital financial inclusion. Instead, policymakers and financial institutions must adopt stratified interventions that address the unique needs of different demographic segments. For instance, subsidized internet schemes and zero-balance accounts can enhance

accessibility for low-income users, while farmer-centric e-banking interfaces with offline capabilities and vernacular support can bridge gaps for agricultural communities. Additionally, community-based digital literacy programs and localized awareness campaigns are essential to build trust and confidence in digital transactions. As India advances toward a cashless economy, ensuring equitable e-banking adoption in rural regions like Wayanad is not just a matter of technological access but of socioeconomic empowerment. By implementing inclusive policies that account for income disparities, occupational constraints, and infrastructural limitations, stakeholders can foster meaningful financial inclusion and reduce the urban-rural digital divide. Future research should explore longitudinal adoption trends and the role of gender dynamics in e-banking usage to further refine these strategies. Ultimately, this study contributes to the broader discourse on digital equity, advocating for solutions that are as diverse as the communities they aim to serve.

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