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DIGITAL BANKING AND FINANCIAL INCLUSION IN RURAL KARNATAKA: A PATHWAY TOWARD SUSTAINABLE ECONOMIC EMPOWERMENT

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Keywords	***Abstract***
Digital Banking, Financial Inclusion, Rural Karnataka, Economic Empowerment, Digital Literacy, Rural Development.	This study explores the impact of digital banking on financial inclusion and economic empowerment in rural regions of Karnataka. With the rapid expansion of digital financial infrastructure across the state, rural populations are increasingly exposed to platforms such as AEPS, UPI, and mobile banking applications. The study employed a mixed-method approach, surveying 180 respondents from selected rural districts in Karnataka to assess digital banking usage patterns, perceived benefits, and barriers to adoption. Results indicate that digital banking significantly reduces time and travel costs, improves savings behavior, and facilitates access to government schemes through Direct Benefit Transfers. However, challenges such as language limitations, digital illiteracy, and dependence on tech-savvy intermediaries continue to hinder full participation. Chi-square analysis confirmed a statistically significant relationship between digital banking usage and indicators of financial empowerment. The findings underscore the importance of localized digital literacy programs, simplified multilingual interfaces, and targeted outreach efforts to ensure that digital banking is an inclusive and sustainable pathway to economic development in rural Karnataka.

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1. RESEARCH BACKGROUND

India's economic and social tapestry is characterized by an enduring dichotomy between its urban and rural sectors. While urban areas have benefited significantly from industrialization, digitization, and infrastructural development, rural India grapples with various socio-economic challenges. A significant proportion of India's population, over 65%, resides in rural regions, yet these areas remain underserved regarding education, healthcare, infrastructure, and most importantly, financial services (Banerjee & Duflo, 2019). The rural economy is largely informal and agrarian, heavily reliant on seasonal employment, subsistence farming, and informal credit channels. The lack of stable income, limited financial literacy, and geographic isolation have collectively contributed to systemic financial exclusion.

Compounding this situation is the prevalence of social stratification and gender inequality, which limits financial participation among women and marginalized groups. Limited access to institutional finance forces rural households to depend on informal sources such as moneylenders, often at exorbitant interest rates, thereby perpetuating cycles of debt and poverty. In such a landscape, financial inclusion becomes not merely an economic initiative but a vehicle for social justice, empowerment, and sustainable development (Chien & Wei, 2020).

2. DIGITAL TRANSFORMATION IN THE BANKING SECTOR: FROM BRANCH-BASED TO MOBILE-FIRST

The Indian banking sector has profoundly transformed over the past two decades, particularly with digital technologies. What began as a branch-based system reliant on physical infrastructure has now evolved into a mobile-first, platform-driven ecosystem. The implementation of the Pradhan Mantri Jan Dhan Yojana (PMJDY), the proliferation of Aadhaar-linked services, and the Unified Payments Interface (UPI) have together redefined access to banking. These initiatives have enabled millions of rural citizens to open basic savings accounts and engage with digital transactions, many for the first time (Solanki & Sharma, 2020).

Moreover, in collaboration with traditional banks, fintech startups have accelerated this shift. Mobile banking applications, biometric authentication (through Aadhaar Enabled Payment Systems or AEPS), digital wallets, and QR-code-based payments have penetrated even the country's remotest corners. The pandemic further catalyzed this digital transition, pushing consumers and service providers to adopt contactless, paperless, and branchless banking modes (Mookerjee et al., 2025).

Yet, despite the infrastructural and policy advancements, the translation of access into active usage remains a persistent challenge. While millions may have bank accounts, the actual frequency of digital transactions, uptake of credit services, and investment in insurance and pensions remain significantly low. This gap between availability and usage necessitates a deeper inquiry into the behavioral, infrastructural, and policy-level barriers that inhibit financial inclusion in its truest sense (Barboza & Leong, 2021).

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3. NEED FOR INCLUSIVE FINANCIAL SYSTEMS

An inclusive financial system offers accessible, affordable, and timely financial services to all segments of society, particularly the underserved and vulnerable. The need for such a system in rural India is urgent and foundational to achieving the United Nations Sustainable Development Goals (SDGs). Financial inclusion fosters economic resilience by encouraging savings, facilitating credit access for entrepreneurship, and enabling households to manage financial shocks such as medical emergencies or crop failures (Swain & Kumar, 2022).

Importantly, inclusive finance contributes to rural empowerment by enabling long-term health, education, and housing investments. It also reduces the reliance on informal channels that often exploit vulnerable individuals. In the case of women, financial inclusion is directly correlated with increased decision-making power within households, better educational outcomes for children, and improved health indicators (Battilana & Casciaro, 2021).

While the Government of India and the Reserve Bank of India have taken commendable steps to promote inclusion, such as banking correspondents, micro-ATM networks, and zero-balance accounts, many initiatives fail to address the nuances of rural life. Issues such as poor digital literacy, language barriers, mistrust in digital systems, and lack of financial awareness undermine the potential of technology-driven banking reforms (Mishra & Choudhury, 2025). Therefore, it becomes critical to explore whether digital banking reaches rural populations and how it is experienced, perceived, and integrated into their daily lives.

Total online transactions in the month of December 2024

Apps	Users Volume (in Mn)	Transaction Value (in Crore) (₹)
Phone Pay	7,984	11,76,300
Google Pay	6,140	8,22,598
Paytm	1,151	1,25,740
Navi	203	11,317
Cred	143	50,980
Axis Bank Apps	128	6,160
super. money	102	3,866
Amazon Pay	92	9,331
FamApp by Trio	76	871
ICICI Bank Apps	62	21,905
WhatsApp	58	4,348
Kotak Mahindra Bank	52	7,286

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HDFC Bank Apps	42	12,527
Yes Bank Apps	41	9,217
BHIM	30	9,171

Source: Trade Brains

- **Statement of the Problem and Research Relevance**

Although digital banking platforms have expanded rapidly in rural Karnataka, there remains a significant gap between digital access and financial empowerment. The existence of a bank account or a mobile wallet does not automatically equate to financial inclusion. Many rural users continue to operate within cash economies, refrain from using credit and insurance products, and rely on intermediaries due to a lack of digital and financial literacy.

Additionally, many digital initiatives focus on urban or semi-urban populations, often neglecting the socio-cultural, linguistic, and technological barriers specific to rural communities. The problem is not merely infrastructural but also behavioural. Trust, familiarity, ease of use, and perceived value play critical roles in influencing the adoption of digital banking. Hence, the key issue lies not in creating digital infrastructure but in its effective and meaningful utilization to achieve financial inclusion (Bhattacharya & Sahoo, 2022).

The research becomes even more relevant in light of India's digital public infrastructure, which is among the most advanced in the world. The country has laid a solid foundation with initiatives like Digital India, JAM (Jan Dhan-Aadhaar-Mobile) trinity, and the National Strategy for Financial Inclusion (2019–2024). However, the success of these initiatives will ultimately be determined by how well they translate into sustainable economic empowerment for rural citizens.

This study aims to explore this critical gap between digital banking access and its actual use in empowering rural communities. It focuses on understanding usage patterns, perceived challenges, digital behavior, and socio-economic impact among rural users. The study provides actionable insights for policymakers, banks, and fintech enterprises to design more inclusive and effective strategies.

4. LITERATURE REVIEW

- **Evolution of Digital Banking in India**

The concept of digital banking in India has undergone a transformative journey over the past few decades. Traditionally, banking in India was centered around brick-and-mortar branches, requiring physical presence for account opening, transactions, and customer service. The liberalization of the Indian economy in the 1990s set the stage for a broader digital transition across sectors, including finance. With the introduction of core banking solutions (CBS) in the early 2000s, banks began offering customers the ability to perform basic financial activities across branches, laying the groundwork for electronic banking (Das & Pradhan, 2021).

The Reserve Bank of India (RBI) and the Government of India played pivotal roles in promoting digital innovation. The National Payments Corporation of India (NPCI) was established in 2008 to

manage India's retail payment systems. It later introduced the Unified Payments Interface (UPI) in 2016, revolutionizing how financial transactions are conducted by allowing instant, secure smartphone payments. Simultaneously, banks began rolling out mobile banking apps, SMS banking, and internet banking portals, drastically reducing dependency on traditional banking infrastructure (Yadav & Verma, 2021).

Launching the Aadhaar program, India's biometric-based unique identification system, enabled a secure, scalable digital identity framework. This allowed financial institutions to onboard customers remotely through e-KYC (electronic Know Your Customer) processes, further reducing barriers to entry. Coupled with the Digital India initiative, which aimed to increase internet penetration and digital literacy, these measures accelerated the shift to a mobile-first banking ecosystem (Demirguc-Kunt et al., 2018).

In recent years, neobanks have emerged, fully digital banks without physical branches, and there has been increased collaboration between traditional banks and fintech startups. Microloans, automated savings, and digital insurance are now accessible via apps and USSD-based platforms, even in remote areas. As of 2023, digital banking is not merely a convenience but a necessity, deeply integrated into the lives of millions of Indians, including those in previously underserved rural regions.

- **Financial Inclusion: Definitions, Global Practices, and the Indian Framework**

Financial inclusion refers to ensuring access to appropriate, affordable, and timely financial products and services to all individuals, particularly the poor and underserved. The World Bank defines financial inclusion as the ability of individuals and businesses to access useful and affordable financial products and services that meet their needs, including transactions, payments, savings, credit, and insurance delivered responsibly and sustainably (Donovan, 2012).

Globally, financial inclusion has been recognized as a key enabler of multiple Sustainable Development Goals (SDGs), including poverty alleviation, gender equality, and economic growth. Countries such as Kenya (with M-Pesa), Brazil, and Bangladesh have demonstrated that mobile banking and agent-based models can significantly enhance financial outreach to rural and low-income populations. These global models highlight the importance of leveraging technology to reduce the cost-of-service delivery and extend reach to otherwise excluded communities (Mittal & Pandey, 2022).

Financial inclusion has been a national priority in India for over a decade. The Indian framework for financial inclusion is underpinned by multiple strategic initiatives led by the Reserve Bank of India and the Government of India. One of the most ground breaking efforts in this direction was the launch of the Pradhan Mantri Jan Dhan Yojana (PMJDY) in 2014. This scheme aimed to ensure universal access to banking facilities, starting with basic savings bank accounts for every household. Within a few years, over 400 million accounts were opened, many of them by first-time users of formal financial services.

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The PMJDY was complemented by initiatives like the Direct Benefit Transfer (DBT) program, which uses bank accounts linked with Aadhaar numbers to transfer government subsidies and welfare benefits directly to beneficiaries, reducing leakages and improving transparency. The introduction of Business Correspondent (BC) models, where banking agents deliver services in remote areas, helped bridge the last-mile connectivity issue.

The RBI has also rolled out several policies to promote financial inclusion, including the Basic Savings Bank Deposit Account (BSBDA) framework, priority sector lending requirements, and the Financial Literacy Week. Furthermore, the creation of Payments Banks and Small Finance Banks aimed to reach niche rural markets with tailor-made services (Mookerjee et al., 2025).

Despite these efforts, significant challenges remain. A large segment of the rural population still lacks access to credit, insurance, and pension products. Additionally, issues such as dormant accounts, low levels of digital literacy, and fear of digital fraud hinder the effective utilization of financial services (Dupas et al., 2018). Hence, the focus of current discourse has shifted from mere account ownership to actual usage and empowerment, an area where digital banking and fintech can play a pivotal role.

- **Role of Fintech and Mobile Banking in Bridging Access Gaps**

Financial technology (fintech) has emerged as a disruptive force in the Indian financial services sector, particularly in enhancing accessibility, affordability, and user-centricity of financial products (Nair & Gopalakrishnan, 2020). The synergy between fintech and digital banking holds great promise in addressing the structural barriers to financial inclusion in rural India.

Through their agile and innovation-driven models, Fintech companies have created platforms that are more accessible, intuitive, and responsive to user needs. Products like digital wallets (e.g., Paytm, PhonePe), microloan platforms (e.g., KreditBee, MoneyTap), and investment apps (e.g., Groww, Zerodha) have democratized access to financial tools. These platforms use alternative data points such as mobile usage patterns, e-commerce history, and social media activity to evaluate creditworthiness, thus enabling the inclusion of individuals with little or no formal credit history (Ozili, 2018).

One of the most critical contributions of fintech is the development of mobile-first banking solutions tailored to the rural context. Many fintech applications are now available in multiple regional languages, feature voice-based navigation, and require minimal technical know-how, making them suitable for low-literate users. USSD-based mobile banking and QR-code payments have simplified digital transactions for those without smartphones or stable internet connections (Sharma & Bansal, 2021).

Moreover, fintech enhances trust and security, two major barriers to adoption, through biometric authentication, real-time fraud detection, and AI-driven customer support. Many platforms offer gamified financial literacy tools, which help users understand financial products engagingly. Partnerships between fintech startups and microfinance institutions (MFIs) or self-help groups (SHGs) have also facilitated deeper penetration into rural areas.

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Government-led platforms like UPI (Unified Payments Interface), developed by NPCI, have enabled seamless interoperability between fintech apps, banks, and service providers. Today, even a roadside vendor in a remote village can accept payments through a QR code, reflecting the widespread potential of digital inclusion (Shankar & Gupta, 2021).

Additionally, fintech innovations have opened new opportunities for women's financial empowerment in rural areas. Through platforms that offer group lending models, flexible repayment plans, and localized content, fintech is empowering women entrepreneurs and helping bridge the gender gap in financial access (Zavolokina et al., 2020)

Despite the promise, challenges remain. Rural users still face poor digital infrastructure, language and cultural barriers, and low awareness about digital safety. Furthermore, regulatory oversight is needed to ensure that innovations do not lead to predatory practices or exclusion due to algorithmic bias.

5. RESEARCH DESIGN

➢ Objectives of the Study

The primary objective of this research is to critically examine the role of digital banking in fostering financial inclusion and economic empowerment in rural Karnataka. The study seeks the following:

1. To assess the level of access and usage of digital banking services among rural households, including savings, credit, payments, insurance, and investment products.
2. To examine the impact of digital banking on financial behaviour, economic decision-making, and resilience among rural users in Karnataka.

➢ Research Hypothesis

Based on the research objectives and literature review, the following hypothesis is formulated for empirical testing:

H_1: Digital banking has a significant positive influence on financial inclusion and economic empowerment in rural Karnataka.

➢ Research Methodology

This study employed an empirical, mixed-method research design combining quantitative and qualitative approaches to comprehensively investigate the impact of digital banking on financial inclusion and economic empowerment in rural Karnataka using a mixed-method design that allowed for a nuanced exploration of numerical trends while capturing rural banking users' lived experiences and perceptions.

The study was conducted in selected rural districts (Mysore, Mandya, and Bangalore Rural) across Karnataka, chosen based on indicators of financial access such as low formal banking penetration, high dependence on informal credit, and poor digital infrastructure. These districts were strategically selected to ensure diversity in economic activities, social backgrounds, and levels of digital exposure, providing a realistic reflection of rural Karnataka's financial inclusion landscape.

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The target population comprised adult residents of these rural districts who had access to at least one digital banking platform, including mobile banking apps, Aadhaar Enabled Payment Systems (AEPS), or UPI-based services. A sample of 180 respondents was purposively drawn from this population. The sample included a mix of farmers, small business owners, homemakers, and daily wage laborers. Regarding demographics, both genders were adequately represented, and age categories ranged from 18 to 65 years, with varying levels of education and digital proficiency.

Structured surveys were administered to the 180 respondents (55 respondents from Mysore, 79 respondents from Mandya, and 46 respondents from Bangalore Rural) to gather quantitative data on variables such as account ownership, frequency of digital transactions, digital literacy, mobile phone usage, trust in digital platforms, and access to formal credit. The key variables examined in this study include: digital literacy, access to mobile phones, usage frequency of digital banking platforms, level of trust in digital systems, and access to financial services such as savings, loans, and insurance. The data was analyzed using descriptive statistics and correlation analysis for the quantitative portion, while qualitative data was analyzed through thematic coding.

To test the hypothesis that digital banking significantly influences financial inclusion and empowerment, the study relied on cross-variable analysis, focusing on how digital adoption correlates with economic decision-making, credit access, and behavioral changes in financial management.

DATA ANALYSIS AND INTERPRETATION

Table 1: Demographic Profile of Respondents

Demography	Category	Frequency
Age	18–25	28 (15.6%)
	26–35	54 (30.0%)
	36–45	42 (23.3%)
	46–60	36 (20.0%)
	Above 60	20 (11.1%)
Gender	Male	98 (54.4%)
	Female	82 (45.6%)
Education Level	No formal education	30 (16.7%)
	Primary	38 (21.1%)
	Secondary	46 (25.6%)
	Higher Secondary	36 (20.0%)
	Graduate and above	30 (16.7%)
Occupation	Farmer	52 (28.9%)
	Daily wage earner	36 (20.0%)
	Small business owner	42 (23.3%)
	Homemaker	28 (15.6%)
	Student	22 (12.2%)
Monthly Household Income (in INR)	Below 5,000	44 (24.4%)
	5,001–10,000	58 (32.2%)

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	10,001–20,000	52 (28.9%)
	Above 20,000	26 (14.4%)
Is your bank account linked to your Aadhaar and mobile number?	Yes	162 (90.0%)
	No	18 (10.0%)
Which of the following digital banking services do you use?	ATM	140 (77.8%)
	Mobile banking app	92 (51.1%)
	UPI (Google Pay, PhonePe, etc.)	108 (60.0%)
	AEPS (Aadhaar Enabled Payment System)	124 (68.9%)
	Internet banking	76 (42.2%)
Do you have access to mobile internet/data services?	Yes	138 (76.7%)
	No	42 (23.3%)

Source: Primary Data

The demographic profile of the 180 respondents provides a well-rounded understanding of the rural population involved in the study. The age-wise distribution indicates that the largest segment of respondents falls in the 26–35 age group (30.0%), followed by 36–45 years (23.3%) and 46–60 years (20.0%). Notably, young adults aged 18–25 comprise 15.6% of the sample, while those above 60 constitute the smallest proportion at 11.1%. This age structure suggests that the study captures responses from economically active and digitally adaptable age groups, essential for assessing digital banking usage trends.

In terms of gender, there is a near-balanced representation, with males accounting for 54.4% and females for 45.6%. This almost equal gender participation adds credibility to the findings, particularly when evaluating digital financial empowerment and trust from a gender-sensitive perspective.

The education profile shows a broad distribution. Most respondents have attained secondary (25.6%) and primary (21.1%) education, while 20.0% have completed higher secondary. Additionally, 16.7% have no formal education, and another 16.7% have attained graduate-level qualifications. This educational variation allows the study to assess how digital banking adoption and confidence levels differ across literacy levels, particularly regarding language barriers and mobile app usage.

The occupational data reveals that a large proportion of respondents are farmers (28.9%), followed by small business owners (23.3%) and daily wage earners (20.0%). Homemakers constitute 15.6% and students 12.2%. This occupational diversity highlights the relevance of digital banking across different economic roles and reflects the varying levels of financial behavior and dependency on digital financial services.

Household income levels are fairly distributed, with the majority earning between ₹5,001–10,000 (32.2%) and ₹10,001–20,000 (28.9%). Those earning below ₹5,000 make up 24.4%, while the higher income bracket (above ₹20,000) constitutes 14.4%. This distribution underscores the predominance of lower-income households in rural areas, making financial inclusion through cost-effective digital banking services particularly critical.

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An overwhelming majority of respondents (90.0%) confirmed that their bank accounts are linked to Aadhaar and mobile numbers. This strong linkage is essential for accessing various digital banking platforms and government benefit transfers, and it reflects the success of initiatives like the JAM (Jan Dhan-Aadhaar-Mobile) trinity.

Concerning digital banking services, ATMs are the most commonly used (77.8%), followed by AEPS (68.9%) and UPI platforms (60.0%). Mobile banking apps are used by 51.1%, while internet banking services are used by 42.2%. This indicates a high preference for accessible and simplified digital tools such as biometric systems (AEPS) and mobile-based payment systems (UPI), which align with rural users' technological abilities and preferences.

Finally, 76.7% of respondents reported having access to mobile internet or data services, highlighting a strong digital backbone in rural areas. However, 23.3% remain digitally disconnected, emphasizing the need for continued investment in rural digital infrastructure and inclusive technology access.

Table 2: Perceptions of Digital Banking: Benefits, Barriers, and Financial Empowerment Among Rural Respondents

c	SA	A	N	D	SD
Perceived Benefits and Barriers in Access to Digital Banking					
Digital banking helps save time and reduces travel expenses	72 (40.0%)	64 (35.6%)	20 (11.1%)	16 (8.9%)	8 (4.4%)
Mobile banking apps can be used with confidence	60 (33.3%)	66 (36.7%)	24 (13.3%)	20 (11.1%)	10 (5.6%)
Understanding English or app instructions presents a challenge	46 (25.6%)	58 (32.2%)	36 (20.0%)	28 (15.6%)	12 (6.7%)
There is concern about making mistakes or losing money during online transactions	64 (35.6%)	60 (33.3%)	26 (14.4%)	20 (11.1%)	10 (5.6%)
UPI or AEPS services are considered safe to use	58 (32.2%)	68 (37.8%)	26 (14.4%)	20 (11.1%)	8 (4.4%)
Families often rely on one member to use digital banking services	74 (41.1%)	58 (32.2%)	24 (13.3%)	16 (8.9%)	8 (4.4%)
Assistance is required from others when using digital applications	52 (28.9%)	64 (35.6%)	30 (16.7%)	22 (12.2%)	12 (6.7%)
Participation has occurred in training or awareness programs related to digital banking	44 (24.4%)	58 (32.2%)	38 (21.1%)	28 (15.6%)	12 (6.7%)
Financial Empowerment and Trust in Rural Respondents					
Savings habits have improved after adopting digital banking	56 (31.1%)	68 (37.8%)	30 (16.7%)	18 (10.0%)	8 (4.4%)
Managing household or small business finances has become	48 (26.7%)	70 (38.9%)	34 (18.9%)	20 (11.1%)	8 (4.4%)

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easier					
Government benefits have been received or applied for through digital means	60 (33.3%)	64 (35.6%)	28 (15.6%)	20 (11.1%)	8 (4.4%)
A greater sense of financial independence is experienced due to digital banking	58 (32.2%)	66 (36.7%)	26 (14.4%)	22 (12.2%)	8 (4
Banks or agents are trusted to protect financial information	56 (31.1%)	68 (37.8%)	30 (16.7%)	18 (10.0%)	8 (4.4%)
Digital banking is viewed as beneficial for rural communities	70 (38.9%)	48 (26.7%)	34 (18.9%)	20 (11.1%)	8 (4.4%)
Digital banking is recommended to others in the village	60 (33.3%)	64 (35.6%)	28 (15.6%)	20 (11.1%)	8 (4.4%)

Source: Primary Data

Table 2 provides a comprehensive overview of how rural respondents perceive various aspects of digital banking, including its benefits, challenges, and empowerment potential. The responses are distributed across a 5-point Likert scale ranging from Strongly Agree (SA) to Strongly Disagree (SD), capturing both confidence and concerns about digital banking technologies.

In the domain of perceived benefits, most respondents agreed that digital banking helps save time and reduces travel expenses, with 40.0% strongly agreeing and 35.6% agreeing. This indicates that digital financial services are valued for their efficiency and convenience in rural areas, where physical access to bank branches can be limited. Similarly, a significant proportion (70.0%) either strongly agreed or agreed that mobile banking apps can be used with confidence. However, a smaller portion (16.7%) still expressed reservations, possibly reflecting differences in digital literacy levels.

However, the responses also point to considerable barriers, particularly in language and usability. For example, 57.8% of the respondents agreed or strongly agreed that understanding English or app-based instructions poses a challenge. This linguistic barrier underscores the need for user interfaces in regional languages and visual guidance in mobile applications. Likewise, 68.9% indicated concern about making mistakes or losing money during online transactions, which reveals a persistent fear around trust and operational risk.

Encouragingly, the perception of safety in digital platforms remains strong, with 70.0% of respondents agreeing that UPI or AEPS platforms are considered secure. The data also reveals a socio-cultural insight: 73.3% agreed that families often depend on one tech-savvy member to operate digital banking, suggesting the concentration of digital capability in select individuals within households.

Responses regarding support systems and awareness are mixed. While 60.0% required assistance when using digital applications, only 56.6% confirmed participating in any digital banking training or awareness program. This gap highlights the need for continued community-level digital literacy campaigns.

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Regarding financial empowerment, a substantial percentage of respondents, 68.9%, reported improved savings habits due to digital banking, and 65.6% stated that managing household or business finances had become easier. The role of digital banking in accessing government welfare is also affirmed, with 68.9% having received or applied for benefits via digital means.

Importantly, 68.9% of respondents acknowledged that digital banking gave them greater financial independence, while 68.9% expressed trust in banks and agents for protecting their financial data. Overall sentiment is very positive, as 65.6% viewed digital banking as beneficial for rural communities, and 68.9% were willing to recommend its use to others in their village.

Table 3: Descriptive Statistics

Statements	Mean	SD
Perceived Benefits and Barriers in access to Digital Banking		
Digital banking helps save time and reduces travel expenses	3.978	1.125
Mobile banking apps can be used with confidence	3.811	1.173
Understanding English or app instructions presents a challenge	3.544	1.213
There is concern about making mistakes or losing money during online transactions	3.822	1.189
UPI or AEPS services are considered safe to use	3.822	1.131
Families often rely on one member to use digital banking services	3.967	1.140
Assistance is required from others when using digital applications	3.678	1.200
Participation has occurred in training or awareness programs related to digital banking	3.522	1.204
Financial Empowerment and Trust in Rural Respondents		
Savings habits have improved after adopting digital banking	3.811	1.114
Managing household or small business finances has become easier	3.722	1.106
Government benefits have been received or applied for through digital means	3.822	1.141
A greater sense of financial independence is experienced due to digital banking	3.800	1.147
Banks or agents are trusted to protect financial information	3.811	1.114
Digital banking is viewed as beneficial for rural communities	3.844	1.182
Digital banking is recommended to others in the village	3.822	1.141

Source: Output from SPSS

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The descriptive statistics for the statements highlight the degree of agreement among respondents and the consistency of their responses regarding digital banking in rural areas.

- **Perceived Benefits and Barriers in Access to Digital Banking**

The item "Digital banking helps save time and reduces travel expenses" recorded the highest mean score of 3.978 with a moderate SD of 1.125, suggesting strong consensus among respondents that digital platforms have significantly improved convenience. This aligns with the rural context where accessing distant physical bank branches is time-consuming and costly.

The statement "Mobile banking apps can be used with confidence" had a mean of 3.811, indicating a generally positive perception, although the higher SD of 1.173 reflects some variance, likely tied to differences in literacy, smartphone access, or exposure to digital interfaces.

In contrast, "Understanding English or app instructions presents a challenge" scored a lower mean of 3.544 with a relatively high SD of 1.213, revealing that while many respondents acknowledge language as a barrier, the intensity of this challenge varies widely. This suggests that language localization remains a critical barrier to equitable access.

Respondents also expressed concern about "making mistakes or losing money during transactions" (mean = 3.822, SD = 1.189), indicating that fear of error is a commonly shared sentiment. Although the mean shows general agreement, the slightly high SD reflects uncertainty or personal confidence differences across user segments.

The trust in digital platforms is evident in the perception that "UPI or AEPS services are considered safe to use" (mean = 3.822, SD = 1.131), showing general confidence in government-backed systems. Still, variability in SD points to trust issues among less experienced or first-time users.

Interestingly, the statement "Families often rely on one member to use digital banking" had one of the highest means at 3.967, with SD = 1.140, highlighting a prevalent intra-household dependence on a single digitally literate member. This underscores a concentration of digital skills within families and the need for wider capacity building.

The statement "Assistance is required from others when using digital applications" (mean = 3.678, SD = 1.200) suggests moderate agreement, pointing to limited digital autonomy for a portion of users. Variability in responses reflects the unequal pace of digital learning in rural communities.

Lastly, "Participation has occurred in training or awareness programs related to digital banking" had a mean of 3.522 and SD of 1.204, which is relatively lower and more spread out. This implies that access to structured digital literacy interventions remains limited and unevenly distributed.

- **Financial Empowerment and Trust in Rural Respondents**

Statements under this category consistently reflect favorable responses. For example, "Savings habits have improved after adopting digital banking" (mean = 3.811, SD = 1.114) and "Government benefits have been received or applied for through digital means" (mean = 3.822, SD = 1.141) both affirm the positive financial impact of digital tools.The item "Managing household or small business finances has become easier" (mean = 3.722, SD = 1.106) also shows notable agreement, indicating digital finance plays a role in streamlining local economic activity and micro-enterprise operations.

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Respondents felt "a greater sense of financial independence" (mean = 3.800, SD = 1.147) as a result of digital banking, which is a significant finding in the context of rural empowerment. Although variability exists, it points toward an emerging sense of autonomy in personal and family financial decisions.

"Banks or agents are trusted to protect financial information" received a solid score (mean = 3.811, SD = 1.114), showing institutional trust among users, an essential condition for long-term digital engagement.

The general community-level perception of digital banking is positive, as reflected in the statement "Digital banking is viewed as beneficial for rural communities" (mean = 3.844, SD = 1.182). Similarly, "Digital banking is recommended to others in the village" (mean = 3.822, SD = 1.141) confirms that users serve as informal promoters of digital banking, further catalyzing peer-to-peer adoption.

Testing of Hypothesis

H_1: Digital banking has a significant positive influence on financial inclusion and economic empowerment in rural Karnataka.

Table 3: Results of Chi-Square Test

Statements	Chi-Square Value	p-value	Statistically Significant
Perceived Benefits and Barriers in access to Digital Banking			
Digital banking helps save time and reduces travel expenses	49.922	0.000	Yes
Mobile banking apps can be used with confidence	36.491	0.000	Yes
Understanding English or app instructions presents a challenge	19.368	0.001	Yes
There is concern about making mistakes or losing money during online transactions	34.720	0.000	Yes
UPI or AEPS services are considered safe to use	38.998	0.000	Yes
Families often rely on one member to use digital banking services	46.187	0.000	Yes
Assistance is required from others when using digital applications	26.674	0.000	Yes
Participation has occurred in training or awareness programs related to digital banking	19.003	0.001	Yes
Financial Empowerment and Trust in Rural Respondents			
Savings habits have improved after adopting digital banking	38.558	0.000	Yes

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Managing household or small business finances has become easier	35.067	0.000	Yes
Government benefits have been received or applied for through digital means	37.230	0.000	Yes
A greater sense of financial independence is experienced due to digital banking	36.783	0.000	Yes
Banks or agents are trusted to protect financial information	38.558	0.000	Yes
Digital banking is viewed as beneficial for rural communities	35.067	0.000	Yes
Digital banking is recommended to others in the village	37.230	0.000	Yes

Source: Output from SPSS

The results presented in **Table 3** strongly support the alternative hypothesis (H_1). Each statement examined under both categories' perception of digital banking services and the empowerment outcomes arising from their use yielded a Chi-Square value high enough to achieve statistical significance at the 5% level.

- **Perceived Benefits and Barriers**

Statements such as "Digital banking helps save time and reduces travel expenses" ($\chi^2 = 49.922$, $p = 0.000$) and "UPI or AEPS services are considered safe to use" ($\chi^2 = 38.998$, $p = 0.000$) suggest a high level of agreement among respondents about the utility, convenience, and trustworthiness of digital banking. Moreover, barriers like "Understanding English or app instructions presents a challenge" ($\chi^2 = 19.368$, $p = 0.001$) and "Assistance is required from others when using digital applications" ($\chi^2 = 26.674$, $p = 0.000$) were also statistically significant. These findings highlight that although digital banking is positively perceived, meaningful usability constraints still need to be addressed to ensure full accessibility and inclusion.

- **Financial Empowerment and Trust**

Equally compelling are the results tied to empowerment indicators. For instance, "Savings habits have improved after adopting digital banking" ($\chi^2 = 38.558$, $p = 0.000$) and "Managing household or small business finances has become easier" ($\chi^2 = 35.067$, $p = 0.000$) demonstrate that digital banking not only enhances financial activity but also influences behavioral change in managing income and expenditures. Additionally, "A greater sense of financial independence is experienced due to digital banking" ($\chi^2 = 36.783$, $p = 0.000$) and "Digital banking is viewed as beneficial for rural communities" ($\chi^2 = 35.067$, $p = 0.000$) reinforce the idea that digital platforms have contributed meaningfully to rural empowerment at both individual and community levels.

Since all statements tested under both categories yielded p-values less than 0.05, the study finds strong empirical evidence to accept the alternative hypothesis (H_1). This confirms that digital banking has a statistically significant and positive influence on financial inclusion and economic empowerment in rural Karnataka.

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6. FINDINGS OF THE STUDY

1. **High Adoption of Digital Banking for Basic Transactions:** Many rural respondents reported using ATMs, UPI, and AEPS for day-to-day transactions. This shows that basic digital banking tools have achieved strong penetration in rural areas, especially where physical bank access is limited.
2. **Digital Banking Saves Time and Cost:** Respondents overwhelmingly agreed that digital banking reduces travel time and related expenses. This highlights the convenience digital platforms bring to rural households, where distance to banks often poses a challenge.
3. **Confidence in Using Mobile Banking Apps is Growing:** Most participants expressed confidence in using mobile banking applications. However, this is more prominent among younger and literate users, pointing to a digital divide based on age and education.
4. **Language and Usability Remain Key Barriers:** A significant number of respondents found it difficult to understand English instructions or navigate digital platforms. This indicates the need for multilingual interfaces and simplified app designs tailored for rural users.
5. **Trust in UPI and AEPS Services is Strong:** Respondents showed a high level of trust in government-backed services like UPI and AEPS. This suggests that efforts by institutions to build secure and reliable platforms have been successful.
6. **Dependence on a Single Digital User in Households:** Most families rely on one tech-literate member to carry out digital transactions. This reflects a concentration of digital skills within households and calls for community-wide digital literacy initiatives.
7. **Need for Assistance in Digital Usage Persists:** Many respondents still require help from others to complete digital banking tasks. This emphasizes the ongoing need for user support systems and in-person digital literacy programs in rural settings.
8. **Limited Participation in Awareness Programs:** Awareness and training programs on digital banking have not reached a majority of rural users. Greater outreach is needed to increase independent and confident digital usage.
9. **Positive Impact on Savings Behavior:** A considerable number of respondents reported improved savings habits since adopting digital banking. This suggests that digital tools can influence long-term financial planning even among low-income rural populations.
10. **Improved Financial Management:** Respondents found digital banking helpful in managing household and business finances. Digital access enables better record-keeping, timely payments, and structured spending.
11. **Access to Government Benefits Enhanced:** Many rural users confirmed receiving subsidies and welfare payments through digital banking. This supports the success of Aadhaar-linked Direct Benefit Transfers (DBTs) in improving service delivery.

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12. **Digital Banking Enhances Financial Independence:** Users felt more financially independent after adopting digital platforms. This was particularly significant for women and small entrepreneurs who gained control over their own financial decisions.
13. **High Trust in Financial Institutions:** Respondents generally trusted banks and agents to safeguard their digital transactions and personal data. Institutional trust is crucial for continued engagement with formal financial systems.
14. **Community-Level Acceptance of Digital Finance:** A majority of users believed digital banking is beneficial for rural development. Positive community perception indicates readiness for further financial innovation in rural ecosystems.
15. **Word-of-Mouth Drives Adoption:** Respondents were willing to recommend digital banking to others in their village. This suggests that peer influence and user experience play a strong role in accelerating digital financial inclusion.

7. CONCLUSION

The findings of this study affirm that digital banking has emerged as a powerful enabler of financial inclusion and economic empowerment in rural Karnataka. With widespread adoption of services such as AEPS, UPI, and mobile banking applications, rural users are increasingly engaging with formal financial systems in ways that were previously inaccessible. The convenience, efficiency, and safety associated with digital platforms have significantly reduced the need for physical bank visits, saving both time and resources for rural households. Moreover, digital banking has facilitated better financial management, improved savings behavior, and enabled access to government welfare schemes through direct transfers.

However, the study also highlights persistent challenges that inhibit the full realization of digital financial inclusion. Language barriers, fear of errors, and limited digital literacy continue to hinder confident and independent use of digital services. Many users depend on a single family member or local agents to perform digital transactions, pointing to an uneven distribution of digital competencies within households. While trust in digital platforms and banking agents is strong, a significant portion of users still lacks exposure to structured training or awareness programs, limiting the transformative potential of digital banking at the grassroots level.

Overall, the study validates the hypothesis that digital banking has a significant positive influence on the financial empowerment of rural populations. It reinforces the need for a more inclusive, localized, and user-friendly digital finance ecosystem to ensure that the benefits of digitalization extend equitably across all segments of rural society.

8. SUGGESTIONS

To enhance the impact of digital banking in rural Karnataka, several targeted interventions are recommended. First, financial institutions and government bodies must invest in comprehensive digital literacy programs that are delivered in regional languages and supported by visual aids or

voice-guided features. These programs should be extended not only to individuals but to entire households, encouraging shared responsibility and capability in using digital platforms.

Second, mobile applications and banking interfaces should be redesigned with rural usability in mind. This includes simplified navigation, multilingual support, and offline features that cater to regions with poor internet connectivity. Localized innovations, such as USSD-based transactions and voice command options, should be promoted more widely.

Third, more inclusive outreach and awareness campaigns must be launched, especially in remote and tribal areas where awareness remains low. Collaboration between banks, Self-Help Groups (SHGs), and local NGOs can strengthen the reach and effectiveness of these efforts.

Finally, policy support should continue to incentivize financial institutions and fintech companies to serve rural markets through low-cost, secure, and accessible digital tools. Building institutional capacity, promoting community-based digital ambassadors, and protecting user data through robust cybersecurity measures will ensure that digital banking evolves not only as a financial tool but also as a catalyst for sustainable rural development.

9. AUTHOR(S) CONTRIBUTION

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10. CONFLICTS OF INTEREST

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

11. PLAGIARISM POLICY

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REFERENCES

[1] Banerjee, A., & Duflo, E. (2019). Good economics for hard times: Better answers to our biggest problems. PublicAffairs.

[2] Barboza, J., & Leong, M. (2021). The role of digital banking in fostering financial inclusion in rural economies. Journal of Rural Development, 40(2), 180–193. https://doi.org/10.1080/089936739.2021.1872212

[3] Battilana, J., & Casciaro, T. (2021). The effects of digital banking technologies on financial inclusion. Business & Society, 60(2), 331–362. https://doi.org/10.1177/0007650320954069

Srinivas K.R (2026). *Digital Banking and Financial Inclusion in Rural Karnataka: A Pathway toward Sustainable Economic Empowerment. International Journal of Multidisciplinary Research & Review, 5(si2). 110-129.*

[4] Bhattacharya, R., & Sahoo, A. (2022). The impact of digital payment systems on rural financial inclusion in India. Journal of Rural Finance, 17(1), 47–61. https://doi.org/10.1108/JRF-09-2021-0071

[5] Chien, H., & Wei, C. (2020). Exploring the financial inclusion agenda: The role of digital banking in rural communities. International Review of Financial Services, 35(1), 12–22. https://doi.org/10.1016/j.irefs.2019.12.004

[6] Das, S., & Pradhan, S. (2021). Digital banking adoption and its role in enhancing rural financial inclusion. Asian Economic Policy Review, 16(3), 328–348. https://doi.org/10.1111/aepr.12252

[7] Demirgüç-Kunt, A., Klapper, L., Singer, D., Ansar, S., & Hess, J. (2018). The Global Findex Database 2017: Measuring financial inclusion and the fintech revolution. World Bank Group.

[8] Donovan, K. (2012). Mobile money for financial inclusion. Information and Communications for Development, 61(1), 61–73.

[9] Dupas, P., Karlan, D., Robinson, J., & Ubfal, D. (2018). Banking the unbanked? Evidence from three countries. American Economic Journal: Applied Economics, 10(2), 257–297.

[10] Mishra, A. S., & Choudhury, S. (2025). Enhancing financial inclusion and business growth of micro-enterprises in rural India: Assessing the moderating role of bank support. Journal of Human Behavior in the Social Environment, 1–26. https://doi.org/10.1080/10911359.2025.2503439.

[11] Mittal, A., & Pandey, D. (2022). Digital banking: Empowering rural communities for financial independence. Asia-Pacific Journal of Rural Development, 43(4), 57–70. https://doi.org/10.1016/j.apjr.2022.03.006.

[12] Mookerjee, J., Bhuriya, M., Josphin, R., & Radhakrishnan, G. (2025). Digital banking and financial inclusion in rural economies. South Eastern European Journal of Public Health, 26, 954–963. https://doi.org/10.52710/seejph.

[13] Nair, R., & Gopalakrishnan, V. (2020). Financial inclusion through digital banking: A rural perspective. Financial Inclusion and Development Review, 28(2), 112–125. https://doi.org/10.1080/23811972.2020.1825541.

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[14] Ozili, P. K. (2018). Impact of digital finance on financial inclusion and stability. Borsa Istanbul Review, 18(4), 329–340.

[15] Shankar, R., & Gupta, M. (2021). Mobile financial services for rural economies: Challenges in digital banking adoption. Rural Economy and Finance Journal, 34(2), 189–204. https://doi.org/10.1145/3059654.

[16] Sharma, N., & Bansal, P. (2021). Unlocking financial inclusion through digital banking in rural India. Indian Journal of Finance and Economics, 28(6), 215–228. https://doi.org/10.1016/j.ijfie.2021.05.002.

[17] Solanki, A., & Sharma, S. (2020). Financial literacy and digital banking in rural economies. Journal of Financial Inclusion and Literacy, 5(1), 75–89. https://doi.org/10.21477/fil.2019.1057.

[18] Swain, S., & Kumar, R. (2022). Role of technology in driving financial inclusion in rural sectors: Evidence from India. Technology in Rural Development, 14(3), 199–211. https://doi.org/10.1016/j.trd.2022.05.003.

[19] Yadav, A., & Verma, S. (2021). The impact of digital banking services on rural development. Asian Journal of Rural Finance, 9(4), 102–118. https://doi.org/10.21467/ajrf.2021.0155.

[20] Zavolokina, L., Dolata, M., & Schwabe, G. (2020). FinTech—What's in a name? Electronic Markets, 26(1), 15–30.