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A Systematic Review of the Role of Digital Banking in Promoting Financial Inclusion

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Introduction

Financial inclusion is recognized globally as a crucial tool for achieving equitable economic growth and social development. It's about making financial services affordable and easy to get to for everyone in society, especially the underserved and marginalized. Through a variety of policy measures and technological interventions, significant efforts have been made to improve financial inclusion in India. Among these, digital banking has emerged as a transformative force, bridging the gap between unbanked populations and formal financial institutions, particularly in semi-urban and rural areas.

The Malnad region of Karnataka, characterized by its hilly terrain and predominantly agrarian economy, presents unique challenges and opportunities in achieving comprehensive financial inclusion. Despite infrastructural and socio-economic barriers, digital banking initiatives have shown promising potential in enhancing financial accessibility in this region.

This study aims to systematically review the literature on financial inclusion with a specific focus on the role of digital banking in the Malnad region, identifying gaps and providing a conceptual foundation for further empirical exploration.

Objectives

- To understand the concept and evolution of financial inclusion, particularly in the Indian context.
- To analyze the role of digital banking in advancing financial inclusion efforts.
- To examine the specific impact of digital banking in the Malnad region of Karnataka.
- To identify research gaps and propose areas for future study.

Systematic Review of Literature

Relevant literature has been systematically reviewed in this section of the thesis, and the results are presented chronologically. The idea of financial inclusion, the role of payment and small banks, and the research gaps that led to the current study are all discussed in this chapter. One of the first researchers to examine the idea of financial exclusion was Leyshon and Thrift (1995). They referred to it as a process that prevents some people and social groups with low socioeconomic status from gaining access to well-known and reputable financial institutions and systems. The lack of financial access was referred to as "financial exclusion" at the time, when the term "financial inclusion" was not yet used. In 1998, Britain officially introduced the idea of "financial inclusion," which marked a significant shift in global discourse toward providing equitable access to financial services. Financial inclusion was first discussed in India in the Reserve Bank of India (RBI)'s 2005 Annual Report, which outlined the policy statement for the 2005–06 fiscal year. The report emphasized the importance of developing genuine and inclusive banking practices and standards that are appealing to and accessible to large segments of the unbanked population. This included people who earned a daily wage, pensioners, self-employed people, and workers in the unorganized sector. The beginning of a more methodical approach to integrating underrepresented groups into the formal financial system was the RBI's call for inclusive banking.

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Further advancing this agenda, the RBI (2006) introduced the Business Correspondents (BC) model. Under this model, banks were permitted to engage third-party agents (BCs) to provide banking and financial services such as credit and savings on their behalf. This approach aimed to overcome infrastructural and operational challenges in reaching remote and rural populations. By 2019, the BC network had expanded significantly, comprising approximately 500,000 agents in rural areas and around 150,000 agents in urban areas. This expansion represented a sixfold increase compared to the number of traditional bank branches in these regions, highlighting the model's effectiveness in extending outreach.

The preferred strategy to achieve comprehensive financial inclusion, as recommended by the committee, was a bank-led model coupled with a service area approach. This approach advocated for better monitoring and implementation, guided by the "one district, one branch" concept. Initially piloted in Andhra Pradesh, this model involved the formation of District Level Steering Committees (DLSCs) to coordinate with banks for effective execution, particularly in implementing Electronic Benefit Transfer (EBT) schemes.

Thorat (2007) provided critical insights into the extent of financial exclusion in India. According to Thorat, only 59 percent of the adult population in the country had bank accounts, leaving 41 percent unbanked. The situation was more severe in rural areas, where only 39 percent of the population had access to bank accounts, compared to 60 percent in urban areas. These statistics underscored the significant divide in financial access between urban and rural populations and highlighted the urgent need for targeted inclusion strategies.

In summary, the evolution of financial inclusion in India has been marked by a transition from addressing "financial exclusion" to implementing structured policies and innovative models like the BC system. While considerable progress has been made, large segments of the rural population, including those in the Malnad region of Karnataka, continue to face challenges in accessing formal financial services. Digital banking emerges as a promising solution to bridge this gap, offering opportunities to overcome physical, geographical, and infrastructural barriers. This review underscores the necessity for further exploration of digital banking's role in enhancing financial inclusion, particularly in underdeveloped and geographically unique regions such as Malnad.

Review on Financial Inclusion

Financial inclusion is the provision of affordable financial services to all people, with an emphasis on disadvantaged and marginalized communities. A comprehensive analysis of the research on financial inclusion is presented in this review, with a primary focus on studies conducted between 2006 and 2019. The reviewed works draw attention to a variety of strategies, obstacles, and technological interventions aimed at increasing financial inclusion worldwide and in India.

Devarprakash (2006) examined the approach of financial inclusion as a strategy to revitalize rural branches. The study highlighted that introducing no-frills accounts enables vulnerable populations to open bank accounts without the burden of mandatory initial deposits. Additionally, reducing collateral requirements for rural loans could significantly increase the participation of unbanked rural residents in formal financial systems.

Savarimuthu (2006) described financial inclusion as a process of integrating the poor and marginalized into the formal banking system by providing them with accessible financial services. In India, approximately 65% of households lacked access to banking services, with the figure standing at 69.5% in rural areas and 50.5% in urban areas, reflecting the severe extent of exclusion.

Basu (2006), through a World Bank report titled "Improving Access to Finance for India's Rural Poor," identified several barriers faced by rural clients, including resistance from banks, high transaction costs, procedural delays, and the potential for bribery.

Reddy (2007) argued that financial inclusion aims to bring every household within the banking network. Mr., in support of this view, Chidambaram (2007), in his Union Budget address, defined financial inclusion as the process of ensuring access to adequate and appropriate financial services and credit at an affordable cost to the weaker sections of society.

Anand and Saxena (2010) analyzed the role of technology adopted by Indian commercial banks in promoting financial inclusion. Technologies such as internet banking, telephone banking, telebanking, ATMs, biometric ATMs, mobile ATMs, Common Service Centres (KIOSKs), and smart cards have been introduced to widen financial outreach. Despite these innovations, customer reluctance persists. The study emphasized the need for banks to educate customers to overcome fears related to electronic payment platforms.

Kumar and Mohanty (2011) asserted that financial inclusion, characterized by universal accessibility, availability, and usage of the formal financial system, is a precondition for inclusive growth.

Ardic et al. (2011) reported that globally, 56% of adults lacked access to formal financial services, with the figure rising to 64% in developing countries. Interestingly, even in high-income countries, one in five adults remained unbanked. The researchers found that informal financial services are 5–10 times more expensive and less efficient compared to formal services. Thus, expanding affordable, formal financial services to unbanked populations could significantly improve their economic well-being.

Chakraborty and Mukherjee (2012) argued that promoting financial inclusion is a crucial social and economic imperative. In India, commercial banks bear primary responsibility for this initiative under the regulation of the RBI. Given India’s diversity and vast population, banks have collaborated with various social and financial institutions to extend their reach.

Mishra (2013) explored the definition, existence, and determinants of urban financial inclusion. The study found that financial inclusion efforts have been present in India for over 44 years. Following nationalization in 1969, the establishment of RRBs and subsequent banking reforms led to branch expansion, which later experienced a decline.

Phatowali (2013) focused on financial inclusion in Assam's urban areas, identifying demand- and supply-side barriers limiting access. The study, utilizing both primary and secondary data, concluded that the overall financial inclusion level was low. Key barriers included lack of awareness, absence of KYC documents, and poor economic conditions.

Shashank (2014) investigated the role of Information and Communication Technology (ICT) in enhancing financial inclusion. The study highlighted the success of ICT-driven efforts in integrating marginalized populations into the formal financial system, especially in rural areas. Technologies have improved back-end operations and simplified front-end services, making financial services more user-friendly. Over recent years, the RBI and commercial banks have implemented various ICT initiatives to support financial inclusion.

Priyanka (2014) assessed rural populations’ awareness and usage of financial services. Conducting a survey among 2,000 individuals across 49 villages in Indore, she found that no-frills accounts alone

were insufficient. There was an urgent need for financial education and counselling, especially regarding credit and debt.

Manjunath (2015) studied the extent of financial exclusion in India, revealing that only 40% of the population had bank accounts, 10% had life insurance, and 13% possessed debit cards. These statistics highlight the significant portion of India's population deprived of essential financial services.

Bajrang (2015) explored the impact of socio-economic factors on the decision to open bank accounts among Haryana's rural households. The study found limited adoption of digital banking services: only 11% used internet banking and 9% used mobile banking, although 63% had access to ATMs and debit cards. Social networks, including friends and family, played a critical role in promoting financial awareness.

Sharma and Goyal (2017) discovered that wages, sources of financial information, and awareness of inclusion programs influenced financial inclusion. A strong correlation was found between demographic factors and rural households' awareness of the Pradhan Mantri Jan Dhan Yojana (PMJDY). Proximity to bank branches increased the likelihood of inclusion.

Dutta and Das (2017) analyzed various banks' strategies for financial inclusion and consumer responses. While banks complied with RBI directives — opening branches, no-frills accounts, Kisan Credit Cards (KCC), and simplifying KYC norms — further efforts were necessary to achieve comprehensive inclusion. The study stressed the need for coordinated action among the RBI, banks, and the public.

Ouma et al. (2017) examined the role of mobile phone technologies in promoting savings in Sub-Saharan Africa. The study found that mobile-enabled financial services significantly increased savings and deposits among low-income and vulnerable groups who otherwise had limited access to formal services.

Goela and Sharma (2017) proposed a financial inclusion index to provide an overview of India's financial inclusion status. The index measured access and usage dimensions and indicated that financial inclusion in India strengthened notably during 2014–2015, categorizing the country in the "strong inclusion" range with index values between 0.6 and 1.

Badar Alam Iqbal and Shaista Sami (2017) analyzed the impact of financial inclusion on economic growth over a seven-year period using regression analysis. The study concluded that branch expansion and credit-deposit ratios significantly influenced GDP, whereas the growth of ATMs had a negligible impact.

Babych et al. (2018) explored market-driven obstacles to financial inclusion. Supply-side barriers included high costs of managing small deposits and loans, asymmetry of information, and limited entry points. Demand-side challenges comprised low-income levels, lack of financial literacy, and distrust of formal financial services.

Kunal (2018) focused on utilizing existing infrastructure such as post offices, mobile phones, fair price shops, banking technologies, and business correspondents to make financial services more accessible and user-friendly for rural populations. The study recommended that banks adopt explicit policies, form partnerships with microfinance institutions, NGOs, and local governments, and support no-frills accounts as a viable option. Additionally, technological adaptations, such as customizing ATMs to cater

to illiterate and non-English-speaking users, were suggested as crucial for deepening rural financial inclusion.

Table 1 – Table summarising the various reviews

Year	Author(s)	Key Focus / Findings
2006	Devarprakash	No-frills accounts encourage vulnerable groups to open bank accounts; reducing collateral requirements helps rural inclusion.
2006	Savarimuthu	Financial inclusion integrates the poor into formal banking; about 65% of Indian households lack access, with higher exclusion in rural areas.
2006	Basu	Barriers for rural clients include bank resistance, high transaction costs, delays, and bribery.
2010	Anand & Saxena	Role of IT in inclusion (e-banking, ATMs, kiosks); customers hesitant due to fear; need for financial education.
2011	Kumar & Mohanty	Financial inclusion is essential for inclusive growth; focus on accessibility and usage of formal systems.
2011	Rachana	Studied rural Gujarat; found low inclusion; RRBs and PACS have wider reach but financial losses; banks should view it as opportunity.
2011	Ardic et al.	56% of adults globally unbanked; informal services are costlier; expanding formal access improves lives.
2012	Chakraborty & Mukherjee	Banks primarily responsible; collaborate with social institutions to expand outreach.
2013	Mishra	Urban inclusion trends: branch expansion post-nationalization but later declined.
2013	Phatowali	Assam study; low inclusion; barriers: lack of awareness, KYC documents, poor economic conditions.
2014	Shashank	ICT crucial for rural inclusion; improved backend and user-friendly frontend; RBI and banks increased ICT efforts.
2014	Priyanka	Rural Indore study; no-frills accounts insufficient; strong need for financial education and counselling.
2015	Manjunath	Only 40% had bank accounts; 10% life insurance; 13% debit cards; high overall exclusion.
2015	Bajrang	Haryana rural study; low adoption of digital banking; social networks important for awareness.
2017	Sharma & Goyal	Inclusion influenced by wages, information sources; awareness linked to proximity to banks; PMJDY awareness important.
2017	Dutta & Das	Banks complied with norms, but further work needed; emphasized collaboration among RBI, banks, and public.
2017	Ouma et al.	Mobile tech in Africa improved savings and inclusion among low-income groups.

2017	Goela & Sharma	Inclusion index showed improvement in 2014–15; India moved to "strong inclusion" category.
2017	Iqbal & Sami	Financial inclusion positively influenced GDP; branches and credit-deposit ratio impactful; ATM growth less significant.
2018	Babych et al.	Supply barriers: high costs, info asymmetry; demand barriers: low income, poor literacy, distrust.
2018	Kunal	Suggests using post offices, BCs, fair price shops; no-frills accounts viable; tech adaptation essential for rural, illiterate users.

Review on Impact of Online Banking on Financial Inclusion

Vijay M. Kumbhar (2011) observed that nearly all banks have adopted information and communication technologies to improve service efficiency. Through electronic banking, internet banking, and online banking, banks are able to provide ICT-based e-services that enhance customer satisfaction by making banking more convenient, customer-centric, efficient, and cost-effective.

Bill Maurer (2012) examined the emerging field of mobile money — mobile phone-enabled value transfer and storage systems — which have become key interventions for promoting financial inclusion among the unbanked, particularly in developing economies. Maurer discussed how economic narratives, and social explanations shape the consumer market for mobile money, emphasizing the potential of users to repurpose mobile money and airtime as new forms of value exchange and storage, thereby reimagining traditional notions of money.

Ardhendu Shekhar Singh et al. (2014) highlighted the role of mobile banking in achieving financial inclusion in India and beyond. The researchers proposed a structural framework that leverages the extensive reach of India Post to deliver mobile banking services to disadvantaged populations, thus bridging gaps in financial access.

Lasisi Ma A Ruf Adeniran and Dr. Abubakar Sambo Junaidu (2014) investigated customer satisfaction with ATM services using a cross-sectional survey of United Bank for Africa customers in Sokoto metropolis, Nigeria. The study, involving 100 respondents and analyzed using multiple logistic regression, found that ATM services had a significant positive effect on perceived ease of use, transaction costs, and service security. While ATM services also had a favourable impact on money availability, this effect was found to be minor.

Mago and Chitokwindo (2014), in their study conducted in Zimbabwe's Masvingo province, found that low-income individuals were willing to adopt mobile banking due to its simplicity, affordability, availability, safety, and convenience. The study suggested that mobile banking enabled low-income groups, traditionally excluded from formal financial services, to access financial facilities, leading to enhanced economic participation and growth in rural areas.

Amitava Ghosh et al. (2014) explored the potential of mobile banking in advancing financial inclusion in India. The researchers proposed a cloud-based mobile banking model using Interactive Voice Response (IVR) technology, suitable for developing economies like India. This model minimizes dependence on physical agents and business correspondents by enabling basic banking transactions through mobile phones with internet access. While most existing models rely on SMS, the proposed IVR-based approach aims to reach a broader segment of the population, including fewer literate users.

Sujoy Dhar (2015) examined the nature, challenges, and opportunities of electronic banking in India. The study reviewed scholarly literature and secondary data from the RBI and other sources to highlight how online banking can promote financial inclusion. Dhar suggested that customized, user-friendly electronic banking solutions are essential to extend banking services to financially disadvantaged groups, thereby distributing the benefits of development more equitably.

Henok Arega Asfaw (2015) studied the challenges and opportunities for mobile banking growth in Ethiopia. Using an exploratory design, the research identified the absence of timely regulatory support, lack of interoperability frameworks, and limited integration between content providers and retail agents as key barriers. However, high mobile phone penetration rates and per capita income (PCI) were identified as significant opportunities for expanding mobile banking services.

Stephanie Kadzo Kombe and Moses Kimani Wafula (2015) assessed the impact of internet banking on the financial performance of Kenyan financial institutions. Conducting a descriptive study among 31 employees at KCB Treasury Square, Mombasa, the research found that ICT adoption improved the banking sector's efficiency primarily through time savings and service quality enhancements.

Lenka and Barik (2018) analyzed data from 2004 to 2014 to study the impact of mobile phone and internet penetration on financial inclusion in SAARC countries. By constructing a financial inclusion index using principal component analysis and employing econometric models, the study concluded that higher mobile and internet penetration significantly increased financial inclusion. Additionally, wealth and education positively correlated with inclusion, while rural population and unemployment were negatively associated.

Emeka et al. (2019) investigated the impact of electronic banking on financial inclusion in Nigeria. Using the total number of ATMs and point-of-sale (POS) systems as proxies for electronic banking, and the proportion of banked adults as a metric for financial inclusion, the study applied multiple regression analysis. Results indicated that ATMs had no significant effect on financial inclusion, whereas POS systems had a significant positive impact. The study recommended that deposit money banks work to eliminate barriers to ATM use and improve POS accessibility to enhance overall inclusion.

Year	Author(s)	Key Focus / Findings
2011	Vijay M. Kumbhar	Adoption of ICT improves service efficiency, enhances customer satisfaction, and makes banking more cost-effective and customer-centric.
2012	Bill Maurer	Mobile money as an emerging tool for inclusion; explores repurposing mobile money and airtime as value exchange, reconstructing traditional money concepts.
2014	Ardhendu Shekhar Singh et al.	Mobile banking critical for financial inclusion in India; suggests using India Post network to reach disadvantaged groups.
2014	Lasisi Ma A Ruf Adeniran & Dr. Abubakar Sambo Junaidu	ATM services positively impact ease of use, transaction cost, and service security; minor impact on cash availability.
2014	Mago & Chitokwindo	In Zimbabwe, mobile banking helps low-income groups access services due to its simplicity, affordability, safety, and convenience; improves rural economic growth.
2014	Amitava Ghosh et al.	Proposes IVR-based cloud mobile banking model for developing countries; reduces reliance on agents and expands reach to less literate users.

2015	Sujoy Dhar	Analyzes challenges and opportunities of online banking in India; advocates for customized, user-friendly solutions to reach disadvantaged groups.
2015	Henok Arega Asfaw	Ethiopian study identifies lack of regulatory support and interoperability as challenges; high mobile penetration and PCI as opportunities for mobile banking expansion.
2015	Stephanie Kadzo Kombe & Moses Kimani Wafula	Internet banking improves efficiency in Kenyan banks through time savings and better service quality.
2018	Lenka & Barik	Strong positive link between mobile/internet penetration and financial inclusion in SAARC; wealth and education support inclusion, rurality and unemployment hinder it.
2019	Emeka et al.	In Nigeria, POS systems significantly improve financial inclusion; ATMs have no significant impact; recommends reducing ATM use barriers and improving POS access.

Review on Digital Financing

Dan Radcliffe and Rodger Voorhies (2012) suggested that connecting poor people to a digital financial system could result in substantial welfare benefits. According to the authors, countries cannot overcome the cash-to-digital divide in a single leap but must progress through four stages of business and market development on their way to a more inclusive economy. At each stage, distinct financial regulations and business models are needed to maximize the potential of digital finance.

Agufa Midika Michelle (2016) investigated the impact of digital finance on financial inclusion in Kenya's banking industry. The study concluded that digital finance initiatives were introduced primarily to reduce operational costs associated with maintaining physical branches, enabling banks to improve profitability and operational efficiency, rather than to promote financial inclusion.

Aaluri et al. (2016) analyzed data from the Reserve Bank of India (RBI) and various banks to examine the role of selected banks in promoting financial inclusion through ICT-based services. The study emphasized that financial inclusion plays a crucial role in reducing poverty and that new government policies are expected to ensure that every Indian citizen has access to a bank account and IT-enabled financial services.

Yan Shen and Yiping Huang (2016) introduced the concept of "digital finance" or "Fintech" in China, describing it as the application of the internet and information technology in a wide array of financial activities such as third-party payments, online trading, direct fund transactions, crowdfunding, online insurance, and digital banking. The authors noted that digital finance reduces transaction costs, minimizes information asymmetry, enhances risk-based pricing and risk management, and expands the scope of financial transactions.

Niranjan (2017) identified several barriers to digital financial inclusion, including the lack of appropriate financial products, limited skills among potential users to operate digital technologies, technological challenges, interoperability issues between different platforms, and affordability concerns among low-income consumers.

Peterson K. Ozili (2017) argued that digital finance provided by FinTech firms significantly influences financial inclusion in both developing and mature economies. He emphasized that the convenience offered by digital finance is valued more by people with low and fluctuating incomes than the lower costs of traditional banking services.

Anchit and Swati (2018) examined the use of mobile phones, the internet, and digital financial resources in rural and remote areas. The study revealed that mobile banking in rural India has been growing at an impressive rate of 277.68%. The expansion of private companies has increased awareness and usage of smartphones and internet-based financial services, thereby increasing access and utilization.

Haider H. (2018) highlighted that digital finance systems are more accessible and cost-effective than traditional banking systems, allowing low-income and underserved populations in developing nations to save and borrow within formal financial systems. Digital finance also improves the safety of funds, protecting individuals who might otherwise keep cash at home while traveling. The digital finance ecosystem involves multiple stakeholders, including network carriers, financial institutions, fintech providers, regulatory bodies, merchants, and consumers.

Ozili (2018) discussed the dual impact of digital finance on financial inclusion and financial stability. The study found that fintech companies positively affect financial inclusion by extending services to low-income individuals who value the convenience of digital platforms. However, the paper also outlined several challenges digital finance faces in promoting financial inclusion and maintaining stability.

Dr. Tabitha Durai and G. Stella (2019) explored the effects of digital finance on financial inclusion and concluded that digital financial services — including mobile banking, mobile wallets, internet banking, credit cards, and debit cards — have a positive impact on financial inclusion by increasing access to formal financial systems

Research Gap

Despite the fact that numerous studies have examined the role of digital finance and online banking in expanding financial inclusion in a variety of international and national contexts, there are still significant gaps. The macroeconomic benefits of technological adoption, operational efficiency, and overall economic benefits make up the majority of the existing research. However, the specific impact of digital finance on marginalized rural communities, particularly in semi-urban and remote areas like Karnataka's Malnad region, has received little empirical investigation. Moreover, while studies highlight the convenience and accessibility of digital services, few have investigated barriers related to digital literacy, trust, and socio-cultural factors that influence adoption among low-income rural populations. In addition, the intersection of gender, age, and educational background when evaluating the efficacy of digital financial inclusion initiatives is frequently overlooked in research. There is also a lack of comprehensive studies examining the comparative effectiveness of different digital delivery channels — such as mobile banking, internet banking, and point-of-sale (POS) systems — in achieving meaningful financial inclusion outcomes in rural India. Addressing these gaps can provide valuable insights for policymakers, banks, and fintech companies to design targeted strategies for achieving inclusive financial growth.

Conclusion

The review of literature clearly indicates that digital finance and online banking have emerged as powerful tools for promoting financial inclusion by improving accessibility, reducing costs, and enhancing service efficiency. Global and Indian studies confirm that digital platforms — including mobile banking, internet banking, ATMs, and POS systems — have significantly expanded the reach of formal financial services, particularly among previously underserved and low-income groups.

Nevertheless, the success of digital financial inclusion is not uniform and faces several challenges, such as lack of digital literacy, infrastructural deficiencies, affordability issues, and trust barriers among rural and semi-urban communities.

To achieve the goal of comprehensive financial inclusion, it is essential to bridge these gaps by developing user-friendly, secure, and culturally adaptable digital financial products, along with strengthening financial literacy initiatives. Targeted interventions addressing regional disparities, such as in the Malnad region of Karnataka, will further help integrate marginalized populations into the formal financial ecosystem, ultimately contributing to equitable economic growth and poverty alleviation.

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