

The study on Role of fintech in financial inclusion a way towards inclusivity

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Abstract

Financial inclusion is a critical pathway to fostering economic growth, which refers to providing affordable accessible, effective financing services to underserved populations, particularly in low-income and rural areas. Moving towards financial inclusivity through fintech requires a comprehensive approach that combines technological innovation, policy changes, and active engagement with underserved populations. The study highlights the role of fintech in advancing financial inclusion, which has emerged as a critical factor in bridging the gap between formal financial services and underserved populations, particularly in developing economies. This research explores how fintech innovations, including mobile banking, digital wallets, and blockchain technology, create a more inclusive financial ecosystem. Through data analysis, the study investigates the impact of fintech on marginalized groups such as rural communities. It highlights how these technologies facilitate access to savings, credit, insurance, and payment services and ensure equal access to fintech facilities in both rural and urban areas is essential for inclusive financial growth and challenges such as digital illiteracy, inadequate infrastructure, and limited internet connectivity in rural regions must be addressed to bridge this gap. Key findings include the reduction of transaction costs, expansion of credit availability through alternative lending platforms, and enhanced financial literacy due to fintech's user-centric approaches, challenges such as digital literacy gaps, regulatory complexities, and infrastructure deficits remain barriers to full inclusivity. The study concludes by offering insights into how fintech can further contribute to

inclusive economic growth, emphasizing the need for collaborative efforts between governments, fintech firms, and communities to maximize the social and economic impact of these technologies.

Keywords

FinTech, Financial inclusion, Mobile banking, Digital wallet, Blockchain, Digital identity, Unbanked, Underserved populations, Regulatory frameworks

Introduction

Fintech, short for financial technology, includes integrating technology in the design and delivery of financial services. In recent years fintech has emerged as a transformational force in the global economic landscape. By leveraging digital innovation, Fintech offers a wide array of services ranging from mobile banking and peer-to-peer lending to blockchain-based transactions. The significance of fintech inclusion is to provide affordable, accessible, and useful financial services to all individuals, particularly those underserved by traditional banking institutions. Financial exclusion remains a significant challenge, especially in developing economies, where millions of people lack basic financial services. Bank offers hampered by high cost and limited infrastructure, have failed to bridge this gap. Mobile payment platforms, micro-lending services, and digital wallets are enabling individuals in rural and marginalized communities to access financial tools for the first time, driving economic empowerment and reducing poverty.

This Paper explores the role of fintech in advancing financial inclusion and assesses how digital financials create opportunities for inclusive growth. By examining data from regions where fintech has been particularly successful. The paper highlights how technology-driven financial services are bridging the access gap and transforming the lives of the previously unbanked.

Review of lecture

In 2017, Badar Alam Iqbal and Shaista Sami evaluated the effect of financial inclusion on the expansion of the Indian economy over seven years. Multiple regression modeling was used to analyze secondary data, and the study's findings demonstrated that the bank branch and credit deposit ratio had a noteworthy and favorable impact on the country's GDP.

Ms. Divyani Datta (2023) concentrated on conceptualizing how fintech aided in the post-pandemic financial inclusion of India. The study's descriptive approach provided an imaginative picture, and it also mentioned how fintech may assist put the economy back on track by addressing its overall effects on the people as a whole.

Md. Qamruzzaman (2023): studied the impact of financial innovation on financial inclusion in as many as 22 Arab countries from the year 2004 to 2020 considering financial inclusion as the dependent variable and ATMs, number of commercial banks depositors as independent proxy variables. The study's findings revealed a significant relationship between the variables and outcomes on the adaptation and spread of financial innovation, which was considered a catalyst in spurring financial inclusion.

Ms. Divyani Datta (2023): focused on providing a conceptual understanding as to how fintech promoted financial inclusion post-pandemic in India. The study was descriptive in nature furnishing an imaginary overview and it also mentioned that fintech would be helpful in getting back to the economy on a track associated with its overall impact on the population who using it at large.

Dr. Reena Agrawal (2022): studied how fintech played a pivotal role in advancing financial inclusion and findings also revealed that fintech companies contributed to the enhancement of financial inclusion with a lot of innovation and technology.

Research Gap

Based on the literature review, several research gaps regarding rural awareness of financial inclusion and fintech in India emerge. First, there is a limited understanding of rural residents' awareness of specific fintech products and services, as highlighted by Iqbal and Sami (2017). Additionally, the impact of digital literacy on the adoption of fintech solutions in rural areas remains underexplored, suggesting a need for targeted research. Cultural perceptions also significantly influence fintech acceptance, yet this area requires further investigation. Moreover, gender disparities in financial inclusion, particularly the unique barriers faced by women in rural communities, need more focused attention. The influence of local economic conditions and infrastructure on financial service awareness also warrants examination. Lastly, there is a pressing need for longitudinal studies to assess the long-term impacts of fintech on financial behaviors and economic outcomes in rural India, providing valuable insights for enhancing financial inclusion efforts.

Methodology

The present study is descriptive based on secondary data which comprises journal articles, government reports, and websites about fintech and financial inclusion in India. Regarding data analysis, the appropriate tables and figures have been presented to fulfill the objectives of the study.

Objectives

To know the concept of financial inclusion.

To understand the different types of fintech used by different financial institutions

To know the challenges faced by Rural people acquiring fintech

To evaluate the impact of fintech on financial inclusion

Need for Study

The need for studying the role of fintech in financial inclusion arises from the persistent barriers faced by underserved populations in accessing essential financial services. Despite advancements in technology, many individuals and small businesses remain excluded from the formal financial system, limiting their economic opportunities. This study aims to explore how fintech innovations, such as mobile banking and digital payments, can bridge these gaps by providing affordable, accessible, and convenient financial solutions. Understanding the impact of fintech on financial inclusion is crucial for developing effective policies and strategies that promote economic empowerment, reduce poverty, and foster sustainable development for marginalized communities.

Research Design

This study employs a descriptive research design, relying solely on secondary data to understand how fintech can improve financial inclusion in rural India. Information will be collected from various sources, including academic articles, government reports, and reliable websites. The purpose is to analyze existing data to identify trends and challenges related to the use of fintech in these areas. Findings will be presented through tables and graphs for clear understanding. Ethical considerations include proper citation of all sources and transparency in the data analysis process. The study will also address potential limitations, such as missing or incomplete data, to ensure credibility. This approach aims to provide valuable insights for policymakers and stakeholders interested in promoting financial inclusion through fintech solutions.

Limitation

Reliance on Secondary Data: The study only uses existing data, which may not fully show the current situation of fintech and financial inclusion.

Data Quality and Availability: The quality and availability of this existing data can vary, which may affect how reliable the findings are.

Generalizability: Results might not apply to all rural areas in India because different regions have unique social and economic conditions.

Changing Landscape: The fast-changing nature of the fintech industry could make some findings outdated quickly.

Limited Focus on Personal Experiences: The research mainly looks at numbers and may miss personal stories and views from rural residents.

Bias in Previous Studies: Existing research might have biases that could influence the results.

Data Overlap: Using multiple sources may lead to repeating the same information, confusing.

Regional Differences: The study may not consider specific differences in how fintech is used across different regions

Interpretation & Findings

Concept of financial inclusion

Financial inclusion focuses on ensuring that individuals and businesses, particularly those who are underserved or excluded, have access to vital financial services such as banking, credit, insurance, and digital payment systems at affordable rates. The goal is to bring marginalized groups into the formal financial system, helping them to manage risks, build wealth, and actively participate in the economy.

Fintech offers lower costs, faster transactions, and greater convenience compared to traditional banking methods. Mobile banking apps and online payment platforms have simplified financial processes, making them accessible to a wider audience. Furthermore, fintech companies leverage data analytics and artificial intelligence to assess creditworthiness and offer tailored financial products to underserved populations.

Despite the benefits of fintech in promoting financial inclusion, challenges exist, such as cyber security risks, data privacy concerns, and regulatory barriers. Additionally, digital literacy and internet connectivity issues can hinder the adoption of fintech services in certain regions. Addressing these challenges will be crucial to ensuring that fintech can truly enhance financial inclusion for all.

Financial inclusion as a driver of economic development Challenges faced by marginalized populations in accessing financial services The emergence of fintech as a solution to enhance financial inclusion

The graph illustrates the various components of financial technology (fintech) and their levels of adoption within the market. Categories such as payments, lending, insurance, investment, blockchain, and personal finance management are represented on a scale from 1 to 10, highlighting their impact and acceptance. This representation offers valuable insights into which fintech innovations are most widely embraced and which are still emerging. Understanding these trends is essential for stakeholders, including policymakers and financial institutions, as they navigate the evolving fintech landscape and work to enhance financial inclusion and accessibility.

Table 1: showing Fintech category and level of adoption/impact

Fintech Category	Level of Adoption/Impact (1-10)
Payment	8
Lending	5
Insurance	6
Investment	7
Blockchain	3
Personal Finance Management	6

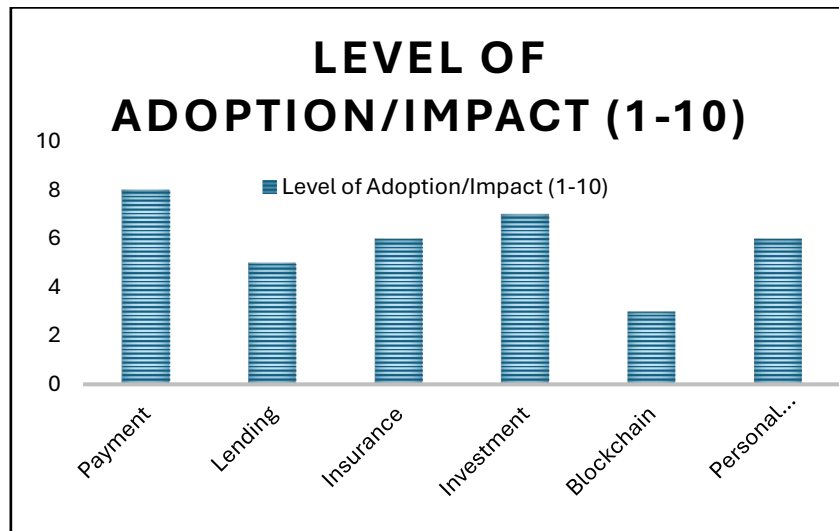


Fig. 1: Graph showing fintech adaptability

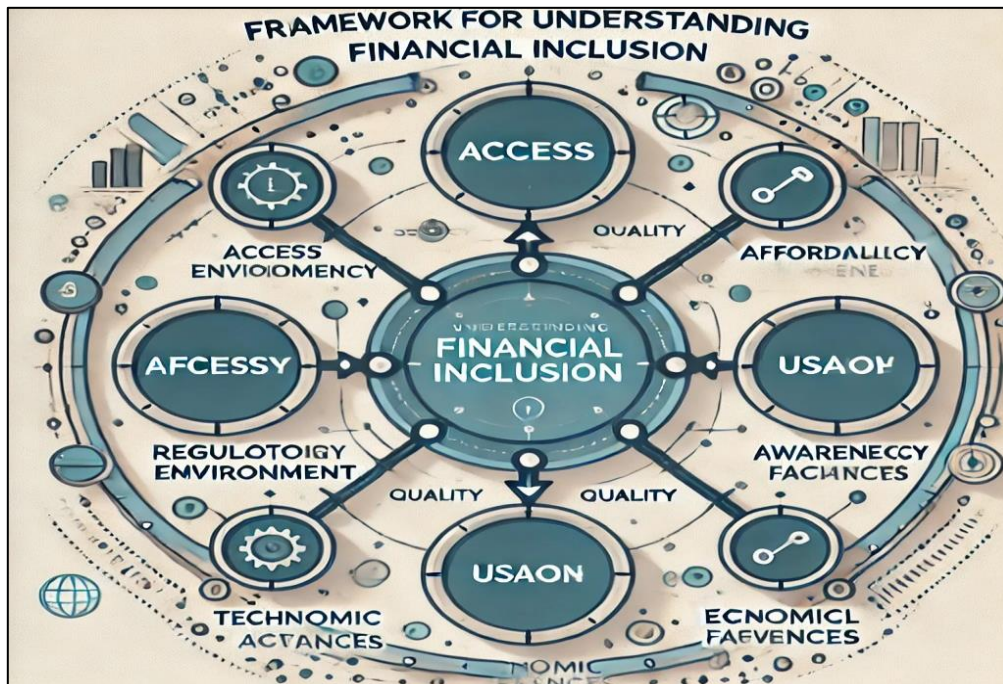


Fig. 2: Framework for understanding financial inclusion

The rise of financial technology (fintech) has transformed the delivery of financial services, creating diverse solutions for various financial institutions. These include digital banking, payment solutions, lending platforms, investment management, and regulatory compliance tools. Traditional banks, credit unions, insurance companies, and fintech startups adopt these innovations to enhance operational efficiency and improve customer experiences. Understanding the different types of fintech used by these institutions is essential for grasping how technology reshapes the financial sector, promotes financial inclusion, and provides consumers with greater access to innovative products and services. This evolution emphasizes the importance of collaboration in the financial ecosystem.

Types of fintech used in financial institution

Fintech Payment

Fintech payment solutions have fundamentally transformed the way individuals and businesses conduct transactions by enhancing speed, security, and convenience. Innovations such as mobile wallets, peer-to-peer payment platforms, and contactless payment technology allow users to make quick and seamless payments using smartphones or cards, eliminating the need for physical cash. E-commerce has also benefited from payment gateways like Stripe and Square, which facilitate secure online transactions and streamline the checkout process. Furthermore, the rise of cryptocurrency payments offers an alternative to traditional banking, enabling decentralized financial exchanges. With advantages like rapid processing times, cost-effectiveness, and robust security measures, fintech payment solutions are driving greater financial inclusion and reshaping the overall payment landscape, making financial transactions more accessible and user-friendly for everyone.

Fintech lending

platforms have gained traction in India, especially among underserved segments of the population who have limited access to traditional banking services. These platforms leverage technology and data

analytics to assess creditworthiness and provide quick loans to individuals and small businesses. Examples include platforms like Lendingkart, Capital Float, and KreditBee.

Blockchain and Cryptocurrency

While the regulatory environment around cryptocurrency in India has been uncertain, fintech start-ups are exploring blockchain technology for various applications beyond cryptocurrency, such as supply chain management, identity verification, and smart contracts.

Rebo-Advisor

Rebo-Advisor is a fintech platform to enhance financial inclusion, particularly for underserved populations in emerging markets. It provides personalized financial guidance using advanced algorithms, helping users access tailored financial products like loans and savings accounts. By offering educational resources, Rebo empowers individuals to make informed financial decisions. The platform addresses the gap in services for low-income users, promoting financial literacy and access. Challenges include regulatory compliance, technology accessibility, and data security. Future directions involve partnerships with local institutions and integrating advanced technologies to improve service delivery and user experience.

Reg-Tech (REGULATORY TECHNOLOGY)

Regulatory technology (Reg-Tech) enhances fintech inclusion by streamlining compliance processes, making it easier for financial institutions to adhere to regulations. It uses advanced technologies like AI and blockchain to automate reporting, monitor transactions, and ensure transparency. By reducing compliance costs and improving efficiency, Reg-Tech enables fintech firms to serve underserved populations while maintaining regulatory standards and fostering trust.

Insurance Technology (Insurtech)

Insurtech startups are leveraging technology to simplify the insurance buying process, improve underwriting efficiency, and enhance customer experience. Companies like Policybazaar, Coverfox, and Acko are disrupting the traditional insurance industry by offering comparison platforms, digital policies, and innovative insurance products.

Personal finance and Budgeting app

Personal finance and budgeting apps play a crucial role in fintech inclusion by providing users, particularly those from underserved communities, with tools to manage their finances effectively. These apps offer features such as expense tracking, budgeting templates, and financial goal-setting, empowering users to gain control over their financial health. By enhancing financial literacy and promoting savings habits, these apps help individuals make informed decisions, ultimately fostering economic stability and inclusion. Furthermore, many of these platforms are designed to be user-friendly, ensuring accessibility for individuals with varying levels of financial knowledge, thereby bridging the gap in financial services.

AI and Machine Learning

AI and machine learning enhance fintech inclusion by personalizing financial services and improving credit access for underserved populations. By analyzing data, these technologies help lenders assess risk and extend credit to individuals without traditional credit histories. Additionally, AI chatbots

provide real-time support, while automated fraud detection reduces costs, enabling fintech companies to serve low-income users better and promote financial inclusion.

Crowdfunding platform

Crowdfunding platforms foster fintech inclusion by providing alternative funding sources for individuals and small businesses, particularly those underserved by traditional banks. These platforms allow users to raise capital from a large pool of investors for various projects, ranging from startups to community initiatives. By democratizing access to funding, crowdfunding promotes entrepreneurship, empowers marginalized groups, and stimulates economic development, thus enhancing overall financial inclusion.

Category	Bank/Institution Name	FinTech Facilities
Public Sector Banks	State Bank of India (SBI)	YONO (Mobile Banking, Loans, Insurance, Investments), SBI Buddy (e-wallet), SBI Pay (UPI), SBI Card (Credit card services)
	PPunjab National Bank (PNB)	PNB One (Mobile Banking, Loans, UPI, Insurance), PNB MetLife (Insurance), PNB e-wallet
	Bank of Baroda (BoB)	Baroda M-Connect Plus (Mobile Banking), Baroda Pay (UPI), Baroda e-Trading, Baroda DigiNext
	Union Bank of India	Union Mobile, UPI, Union e-Trade (Investment Services), Wealth Management services
	Canara Bank	Canara Digital e-locker, Canara Swipe (Card-based payments), Canara e-infoBook (Mobile banking, Loans, UPI)
Private Sector Banks	HDFC Bank	PayZapp (Payments, Mobile Banking, UPI), SmartBuy (Online marketplace), OneAssist (Card Protection, Personal Services), Credit Cards
	ICICI Bank	iMobile (Mobile Banking, UPI, Loans), Pockets (e-wallet), InstaBIZ (Business Services), ICICI Direct (Trading), Insurance
	Axis Bank	Axis Mobile (Mobile Banking), Axis Pay (UPI), Freecharge (Payments, e-wallet), Credit Cards, Insurance
	Kotak Mahindra Bank	Kotak 811 (Digital Savings, Mobile Banking), KayPay (UPI, QR Payments), Kotak Investment Services, Loans

	Yes Bank	Yes Mobile, Yes Pay (Wallet & UPI), Yes Invest (Mutual Fund & Insurance Services)
Foreign Banks	Citibank	Citibank Mobile, Citibank Online (Wealth Management, Loans), Citi Pay (UPI), Credit Cards, Citi Rewards
	HSBC Bank	HSBCnet (Global Transaction Banking), UPI, HSBC Wealth Management, HSBC Mobile Banking
	Standard Chartered	SC Mobile, Breeze (Online Banking), SC Pay (UPI), Personal Loans, Wealth & Investment Services
Cooperative Banks	Saraswat Bank	Saraswat Mobile, e-Saraswat (Internet Banking), UPI, Loan Services, Digital Payment Solutions
	Punjab & Maharashtra Cooperative Bank (PMC)	PMC Mobile, UPI, Loan Services
	Bharati Sahakari Bank	BSB Mobile (Mobile Banking, UPI), Loan Services
NBFCs	Bajaj Finserv	Wallet (Bajaj Finserv EMI Card), UPI, Digital Loans, Insurance, Investments
	Muthoot Finance	Muthoot Finance App (Gold Loan, Personal Loan), UPI, Investment, Insurance
	Tata Capital	Tata Capital App (Loans, UPI, Investments), Insurance, Digital Payments
	Manappuram Finance	Manappuram Gold Loan App, UPI, Insurance, Micro-financing services

Challenges faced by rural people in acquiring fintech

Rural populations face significant challenges in accessing fintech services, hindering financial inclusion. Limited internet connectivity due to inadequate infrastructure and high data costs makes it difficult to utilize digital financial tools. Additionally, a lack of digital literacy creates barriers, as many individuals are unfamiliar with technology and may distrust online platforms. The scarcity of devices, coupled with affordability issues, further complicates access. Moreover, limited banking services in rural areas often lead to reliance on traditional cash-based transactions, preventing the adoption of innovative financial solutions that could improve economic stability and empower these communities.

Limited Internet Connectivity

Limited internet connectivity in rural areas poses a significant barrier to accessing fintech services. Poor infrastructure often results in unreliable or slow internet, making it difficult for residents to utilize online financial tools. High data costs can further discourage usage, leaving many rural individuals without access to essential digital banking services and hindering their ability to engage with financial innovations.

Lack of Digital Literacy

The lack of digital literacy in rural areas significantly impedes the adoption of fintech services. Many individuals may not possess the necessary skills to navigate online platforms, resulting in a reluctance to use digital financial tools. This gap in understanding can lead to mistrust in fintech solutions, as users may fear making mistakes or falling victim to fraud, ultimately limiting their financial empowerment and access to essential services.

Limited Access to Devices

Limited access to devices is a significant challenge for rural populations seeking to utilize fintech services. Many individuals may not own smartphones or computers necessary for accessing online financial platforms. The affordability of such devices can be a barrier, as rural households often prioritize basic needs over technology. This lack of access prevents individuals from benefiting from digital financial tools, restricting their ability to manage finances effectively and engage with the broader economy. Without appropriate devices, rural communities face increased difficulties in adopting innovative financial solutions that could enhance their financial inclusion.

Financial Exclusion

Financial exclusion is a critical challenge rural populations face, often resulting from limited access to banking services. Many rural areas lack physical bank branches, forcing residents to rely on informal financial systems or cash transactions. This exclusion restricts their ability to save, borrow, or invest, ultimately hindering economic growth. Furthermore, without access to formal financial services, rural individuals may miss opportunities for credit and financial education, perpetuating a cycle of poverty. The reliance on cash-based economies limits their engagement with fintech innovations, making it essential to address these barriers to enhance financial inclusion in rural communities.

Financial literacy

Financial literacy is essential for empowering individuals to make informed financial decisions. However, rural populations face challenges such as limited access to education, cultural barriers, inadequate resources, and distrust of financial institutions. To enhance financial literacy in these areas, community-based programs, collaboration with NGOs, and culturally relevant educational materials are vital for fostering informed financial decision-making and promoting economic growth.

To evaluate the impact of fintech on financial inclusion

Fintech has emerged as a powerful tool in advancing the development of rural underprivileged populations by offering innovative solutions that address the unique challenges they face. In areas with limited access to traditional banking, fintech enables financial inclusion through mobile banking, digital wallets, and microfinance platforms. These solutions provide rural individuals with access to loans, savings, insurance, and financial education, which are essential for economic empowerment. Additionally, fintech has significantly lowered the cost of financial transactions, making them more affordable for low-income groups. By bridging gaps in financial services, fintech is fostering growth and improving the livelihoods of rural communities.

Mobile Banking:

Rural areas often lack traditional banking infrastructure, but fintech solutions like mobile wallets and online banking provide a convenient way for rural people to access financial services without the need for physical banks.

Microfinance and Credit

Microfinance and credit through fintech platforms provide rural underprivileged individuals with access to small loans, helping them start or expand businesses, invest in agriculture, and manage personal finances. These platforms offer easier access to credit without requiring traditional collateral, empowering rural communities to improve their economic stability and growth.

Crop Insurance and Loans:

Crop insurance and loans provided by fintech platforms help rural farmers mitigate agricultural risks such as crop failure due to weather conditions. These services offer financial protection and timely access to funds, allowing farmers to invest in better inputs, sustain their livelihoods, and enhance productivity, ensuring economic resilience in rural areas.

Mobile Financial Education:

Mobile financial education provides rural populations with accessible tools to learn about budgeting, saving, investing, and managing credit through smartphones. Fintech apps offer user-friendly content tailored to varying literacy levels, empowering underprivileged individuals with the knowledge needed to make informed financial decisions, improve money management, and increase financial inclusion in underserved areas.

Empowerment through Knowledge:

Empowerment through knowledge refers to the ability of individuals to make informed financial decisions through increased access to financial education and resources. For rural underprivileged populations, fintech platforms provide crucial knowledge about managing money, accessing credit, and using digital financial tools. This empowerment fosters self-reliance, improves financial stability, and enhances opportunities for economic growth.

Affordable Transactions

Affordable transactions through fintech platforms allow rural underprivileged populations to perform financial activities, such as sending or receiving money, at minimal cost. Digital wallets and mobile payment systems eliminate the high fees associated with traditional banking, making services like remittances, bill payments, and small transactions accessible and affordable for low-income individuals, enhancing financial inclusion.

Women's Financial Inclusion

Women's financial inclusion through fintech aims to bridge the gender gap in access to financial services, particularly in rural areas. Fintech platforms offer women digital banking, savings, credit, and microfinance options tailored to their needs. These services empower women by giving them control over their finances, fostering entrepreneurship, and promoting economic independence, thereby improving the well-being of entire communities.

Interpretations

Government

Establishing fintech centers in rural areas can significantly boost job creation by providing new employment opportunities in various roles such as customer support, financial advisory, tech support, and operations management. These centers can hire local talent, reducing migration to urban areas and empowering rural youth with skills in digital finance and technology.

Moreover, by facilitating access to loans, savings, and investment options, these fintech centers can also support local entrepreneurs and small businesses, creating new enterprises. This, in turn, would

lead to further job generation, contributing to the overall economic growth and self-reliance of rural areas.

Suggestion for Future Research

While this study has focused on the role of fintech centers in rural areas, future research could explore the long-term socio-economic impacts of these centers on rural entrepreneurship and job creation. Expanding the geographic scope to include diverse rural regions would provide more generalized results. Additionally, using mixed methods, combining quantitative analysis with qualitative interviews would offer deeper insights into the lived experiences of rural users. Lastly, investigating emerging technologies, such as blockchain in rural financial services, may open new avenues for innovation in rural economic development."

Conclusion

The study highlights the significant impact fintech has had on bridging the gap between formal financial services and underserved populations, especially in developing economies. Through fintech innovations such as mobile banking, digital wallets, and blockchain, financial services have become more accessible, affordable, and user-friendly for marginalized groups, including those in rural and low-income areas. The paper emphasizes that fintech plays a crucial role in reducing transaction costs, expanding credit availability through alternative lending platforms, and improving financial literacy through user-centric approaches. These innovations allow previously unbanked populations to engage with the financial ecosystem, driving economic empowerment and reducing poverty. However, the study also points out that despite the progress made, several challenges remain in achieving full financial inclusion. These include digital literacy gaps, regulatory complexities, infrastructure deficits, and limited internet connectivity, particularly in rural regions. The paper calls for a comprehensive strategy that addresses these barriers by focusing on improving digital literacy, strengthening infrastructure, and implementing more inclusive regulatory frameworks. The study concludes by stressing the need for collaborative efforts between governments, fintech firms, financial institutions, and local communities to fully realize the potential of fintech in fostering inclusive economic growth. It suggests that fintech can further contribute to sustainable development if stakeholders work together to ensure that financial products are accessible to all segments of the population, particularly the most vulnerable.

In the future, the authors suggest further research on the socio-economic impacts of fintech in rural areas, including exploring emerging technologies like blockchain, to enhance financial inclusion and support local entrepreneurship. By addressing the remaining barriers and leveraging fintech innovations, the paper envisions a more inclusive financial system that empowers underserved populations and drives economic growth across both urban and rural areas.

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