

Leveraging Digital Infrastructure for Inclusive Microinsurance in India

Abstract:

This paper explores the transformative role of digitalization in enhancing the accessibility and inclusivity of microinsurance in India, particularly for underserved and unserved populations. By analysing the integration of digital financial services (DFS), mobile banking platforms, and innovations like the Unified Payments Interface (UPI), the study assesses how these tools reduce transaction costs, build trust, and streamline insurance distribution. Drawing parallels with Kenya's success in mobile-money-based microinsurance, the research highlights India's readiness, backed by widespread bank account ownership, mobile phone usage, and expanding internet access. Using data from the 79th NSSO Round (2022–2023), the study evaluates the current digital infrastructure and identifies challenges such as digital literacy, rural connectivity, and trust deficits. The findings underscore the potential of FinTech and government-led financial inclusion initiatives like PMJDY to scale microinsurance coverage, lower distribution costs, and foster economic resilience among low-income communities. Ultimately, the paper argues that digitalization is not just a technological shift, but a crucial enabler of inclusive social protection in India.

Introduction:

Microinsurance represents a pivotal innovation in India's insurance sector, addressing the vulnerabilities of underserved and low-income populations by mitigating income loss from unforeseen calamities. These affordable financial products, specifically designed with low premiums, serve as crucial safety nets for those typically excluded from traditional insurance markets. As a critical tool for poverty alleviation in developing economies like India, microinsurance enhances livelihoods while advancing social inclusion and supporting United Nations Sustainable Development Goals (SDGs), particularly in poverty reduction, healthcare, and gender equality.

Digitalisation, recognised as a transformative force in financial inclusion (World Bank 2024), reduces transaction costs and fosters trust - two essential factors for serving low-income populations. The synergy between digital financial services (DFS), fintech, and microinsurance holds significant potential to expand coverage for India's underserved communities who often face barriers like geographic isolation, financial illiteracy, and limited access to formal banking channels. This digital revolution represents what the World Bank terms "the transformative opportunity of our time," particularly for reaching populations that have historically been considered unbankable or uninsurable.

One such country that has unlocked the potential of digitalization to enhance the financial inclusion of the country through microinsurance is Kenya. Mobile money services have played a significant role in uplifting Kenyan population by providing them financial services through collaboration between Commercial Bank of Kenya (CBK) and Mobile Network Operator (MNO). In mobile-money based payment system, the mobile money agents have played a significant role by registering new clients and receiving client's deposits, these agents included airtime sellers, shops, petrol stations, supermarkets, post offices, commercial banks and other

financial institutions, chemists and other retail outlets. All the e-money managed by mobile-money application was backed by real money in a trust account held in a commercial bank, to buy e-money the client would pay the agent in cash and the agent transfers e-money to the client. Similarly, to sell e-money or to withdraw cash, the client would transfer e-money to the agent and the agent would give cash to the client. Using the SIM Toolkit, the clients could also transfer e-money to each other and in turn a short message service (SMS) would inform clients of the transaction's success.

Using this mobile-money application many microinsurance policies were launched. One of the microinsurance policies was focused on protecting small farmers while South Africa was recovering from the worst droughts in decades. It was a low-cost mobile phone based "pay as you plant" insurance which was focused on the farmers in Kenya who planted on land as less as an acre by protecting any loss in their investments in high-yielding seeds, fertilizers, as well as other farm inputs. It provided a shield to the farmers against financial losses due to droughts or excess rain. In this, farmers used to pay 5% extra on the purchase of any farm input to their agro dealers, these agro dealers were trained to scan a special bar code using their camera phone at the time of the purchase. This process automatically registered them for the insurance and a text message was sent through SMS on the farmer's mobile phone confirming the insurance policy. These farmers also received updates about any extreme weather condition directly transmitted from the weather stations to their respective phones.

After the unprecedented rise of mobile phones and mobile money in Kenya, an e-wallet that focused specifically on healthcare was launched in 2016. It is a mobile health wallet that allows users to send, save and receive funds to get healthcare services using mobile phones. The values stored in the e-wallet can hold different forms: health savings, health insurance cover or free health. It has helped insurers digitise and deliver personalised and better value products to their members and the connected healthcare providers.

The payment technology of Kenya is efficient, transparent and effective, it has been useful in various financial markets such as insurance, capital markets and pensions and government's social protection programme. This platform has also been useful for government to identify socially vulnerable section of the society and target for social protection for poor households and physically disadvantaged people for financial transfers.

The convergence of microinsurance needs and digital capabilities creates an unprecedented opportunity for financial inclusion. In this context, this study seeks to explore the role of digitalisation in enhancing the penetration of microinsurance in India, with a focus on how digital financial infrastructure can improve accessibility for underserved populations. Specifically, the research examines the current state of digital platforms including mobile banking applications, the Unified Payments Interface (UPI) etc. and assesses their collective impact on expanding microinsurance coverage. Furthermore, it identifies critical challenges hindering digital adoption. By analysing these barriers alongside emerging opportunities, the study aims to provide insights into how digital transformation can be strategically leveraged to scale microinsurance across India.

Methodology:

For our analysis we have used unit level data collected on 79th NSSO Round. This survey took place within the time frame of January 2022- June 2023. The data collected in this round is based on Comprehensive Annual Modular Survey. We have used STATA as our statistical tool.

Data analysis and findings:

In the context of India, currently many Indian banks are providing mobile banking services that enables customers to start and perform banking tasks on their phones. The mobile banking services are provided to customers in numerous ways like, mobile banking over mobile applications, mobile banking over SMS and, Mobile banking over Unstructured Supplementary Service Data (USSD). It allows its customers to access account information, make financial transactions via NEFT/IMPS/RTGS/UPI, make investments and other services like ATM locators, branch locators, lodging complaint/ tracking applications, etc. Some banks have also included services like loan approval and linking of insurance policy in their mobile banking apps apart from normal financial transactions.

Government schemes like Pradhan Mantri Jan-Dhan Yojana (PMJDY) have ensured the financial inclusion of all the households in the country by providing various financial services like availability of basic savings account, access to need based credit, remittances facility, insurance and pension to the weak and underserved sections of the society. This plan envisages universal access to banking facilities with at least one basic banking account for every household, financial literacy, access to credit, insurance and pension facilities. This scheme also addresses the potential of mobile transactions through telecom operators and the barrier of technological issues like poor connectivity. As of today, 55.44 crores beneficiaries are banked so far with INR 258,514.36 crore balance in the accounts of the beneficiaries.

One innovation that has revolutionized the process of making digital payments in India is the introduction of Unified Payment Interface (UPI). Launched in 2016 by National Payments Corporation of India (NPCI), UPI integrates multiple bank accounts into a single mobile application. This system enables seamless fund transfers, merchant payments, and peer-to-peer transactions, offering users flexibility through scheduled payment requests. UPI has not only made financial transactions fast, secure, and effortless, but it has also empowered individuals, small businesses, and merchants, driving the country's shift towards a cashless economy and hence contributing towards inclusive growth and economic progress. As of May 2025, a total of 18,677.46 million transactions have been made valued at INR 25,14,297.01 crores as compared to the same period previous year, a total of 14,035.84 million transactions were made valued at INR 20,44,937.05 crores. This marks a 33.07% increase in the volume of UPI transactions with a 22.95% increase in transaction value in a span of one year. As of May 2025, there are 673 banks live on UPI with 36 Third-party applications supported by various Payment Service Provider Banks. As more individuals and businesses embrace the convenience and security of digital transactions, the increasing volume and value of transactions underscore UPI's pivotal role in advancing the country's shift towards a cashless economy.

India holds all necessary infrastructure that enables a mobile based microinsurance distribution. With government schemes like PMJDY, the financial inclusion of people all over the country has enhanced and Digital Financial Services (DFS) like Unified Payment Interface (UPI)

satisfies the necessary condition of such a distribution model. The cost of internet and the cost of smart phone has seen a historical low through the years and it holds a potential for making microinsurance in India more inclusive by making the last-mile access feasible for the distributors.

In India, almost 93% of people owns an account either with a bank and/or with other financial institutions or with mobile money service providers. Out of which in rural sector, 92.34% of people own a bank account with bank and/or with other financial institutions, 0.14% of people own an account with mobile money service providers and 7.52% of people owns a bank account with both bank/ other financial institutions and mobile money service providers. In urban sector, 78.60% of people own a bank account with bank and/or with other financial institutions, 0.38% of people own an account with mobile money service providers and 21.03% of people owns a bank account with both bank/ other financial institutions and mobile money service providers.

People owning account in bank/ other financial institutions/ mobile money service provider			
	Rural	Urban	All over India
Yes	92.96%	92.79%	92.91%
No	7.04%	7.21%	7.09%

Type of account held			
Type	Rural	Urban	All over India
Bank and/or other financial institutions	92.34%	78.60%	88.15%
Mobile Money Service	0.14%	0.38%	0.21%
Both Bank/ financial institutions and mobile money service	7.52%	21.03%	11.63%

The financial inclusivity in India stays high with 93% of the Indian population owning a bank account. Even in rural areas, this percentage stays high with 92.96% of the people owning a bank account. Government schemes like Pradhan Mantri Jan Dhan Yojana (PMJDY) have also contributed to this growth in financial inclusion. Today, there are microinsurance schemes like PMSBY, PMJJBY, APY that are being offered to the underserved population through the means of these accounts.

The next requirement is that people should be using a mobile, as without the existence of a mobile connected to a stable internet connection makes it impossible for customers to avail financial services using banking applications or any third-party application providing financial services.

In India, about 80.06% of population use mobile. In rural sector of India, out of the total rural population, about 77.06% of people use mobile and in urban sector of India, out of the total urban population, 87.28% of the people use mobile. Although the ownership is not entirely exclusive with 37.91% of the Indian population owning an exclusive phone while 62.09% of population owning phone on a shared basis. In rural sector 31.3% of rural population owns an exclusive phone while 68.7% of people own a phone on a shared basis. In urban sector, 51.75% of people owns an exclusive phone while 48.25% of people owns phone on a shared basis. In India 69.72% of people use a smart phone while 30.28% of people use non-smart phones. In terms of access to technology, 71.60% of people in India use 4G technology, 63.33% of 4G users belong to the rural sector while 36.67% of 4G users belong to the urban sector. Most people, almost 23.30%, uses 2G where 79.56% of its users are from rural sector while 20.44% of its users are from urban sector. Users of 5G amounts to 0.17%, users of 3G amounts to 2.24% and other technology users amount to 2.15%.

Mobile Use in India across Sector			
Sector	Yes	No	Total
rural	77.06	22.94	100
urban	87.28	12.72	100
All India	80.06	19.94	100

OWNERSHIP OF PHONE			
Sector	Exclusive Ownership	Shared Ownership	Not used
rural	31.3	68.7	2.62
urban	51.75	48.25	1.31
All India	37.91	62.09	2.2

Type of Technology used in India			
Technology	Across India	Rural	Urban
5G	0.17%	13.94%	86.06%
4G	71.60%	63.33%	36.67%
3G	2.24%	80.96%	19.04%
2G	23.30%	79.56%	20.44%
Others	2.15%	71.86%	28.14%

Technological access plays a vital role in connecting people to banks and other financial institutions through the mode of banking applications and third-party applications. The above data shows that India is well equipped with technology, both in rural and urban sector. Through the time the cost of internet has also reduced effectively resulting in an increase in the usage of internet for various purpose across nation. As per the data provided by the National Payment Corporation of India, in 2014 the average wireless data usage per subscriber per month stood at 89.43 MB with average revenue realization per GB for mobile data at INR 269 when compared to the year 2023, the average wireless data usage per subscriber per month stood at 20.27 GB with average revenue realization per GB for wireless data usage at INR 8.74. India

has seen an increase in data usage from 89.43 MB to 20.27 GB with a 96.8% decrease in cost within a span of 8 years.

In India 30.95% of people use internet for entertainment purposes while 1.36% of people use internet for information gaining purpose. A majority of 38.25% of people use internet for both, entertainment as well as information purposes. As the usage of internet is increasing nationwide, the potential for the use of internet for accessing digital financial services and digital payment services also increases.

Internet use with Electronic Gadget			
Use	Rural	Urban	All over India
For entertainment purpose	31.27%	30.27%	30.95%
For information purpose	1.42%	1.36%	1.36%
For both entertainment and information	32.78%	49.87%	38.25%
Not using	34.53%	18.63%	29.44%

One digital payment service provider which has revolutionized the way people transfer funds is the Unified Payment Interface (UPI). UPI enables seamless fund transfers, merchant payments, and peer-to-peer transactions, offering users flexibility through scheduled payment requests. As of May 2025, a total of 18,677.46 million transactions have been made valued at INR 25,14,297.01 crores as compared to the same period previous year, a total of 14,035.84 million transactions were made valued at INR 20,44,937.05 crores. This marks a 33.07% increase in the volume of UPI transactions with a 22.95% increase in transaction value in a span of one year. As of May 2025, there are 673 banks live on UPI with 36 Third-party applications supported by various Payment Service Provider Banks.

As per the data collected by NSSO in 2022-23, a total of 31.79% of people are making use of the digital payment services. In rural sector about 24.95% of the rural population are using digital payment services while in urban sector 43.48% of the urban population are using digital payment services. Meanwhile, among the people who own an account with any bank and/or with other financial institutions or with mobile money service providers, a total of 26.08% of people make digital transactions. In rural sector, this proportion amounts to 21.13% of the total rural population while in urban sector, this proportion amounts to 35.85% of the total urban population.

People using electronic Gadgets to make digital payments			
	Rural	Urban	All over India
Yes	24.95%	43.48%	31.79%
No	75.05%	56.52%	68.21%

Digital Transactions made by people who own an account			
	Rural	Urban	All over India
Yes	21.13	35.84	26.08
No	78.87	64.16	73.92

Conclusion:

To implement a mobile based microinsurance distribution model in India, there are several aspects that needs to be acknowledged. The financial inclusion of people in India plays a key role as basic financial services are the stepping stones towards such a distribution model. The foremost requirement for the implementation of this model begins with the proportion of people owning an account, with a bigger proportion of people owning a bank account, the need for an epicentre for fund consolidation, which is based on public trust is eliminated. Along with this, people should be using a mobile with access to technology that facilitates their connectivity with banks through a banking app or through a third- party applications, which ultimately provides financial services to the customers. With a major proportion of the population availing for these financial services.

For an individual, owning an account in a bank and/or in other financial institution or with mobile money service providers is crucial as it acts as a central point for income and savings and hence allowing them to consolidate funds in one secure place. It allows easy access to other financial services like loans, insurance, investments, etc. which acts as a gateway to financial inclusion. Since the funds in the account are protected and regulated by governing bodies like Reserve Bank of India, it builds the trust of people who understands the importance of deposits rather than informal cash holdings.

India has come a long way from the time when people barely had access to electricity or when prepaid airtime used to be sold at corner stores or at the umbrella-cart service stops. With almost 99.66% of the India having access to electricity, technological innovation has helped in improving the access of the underserved population to the basic banking facilities. Mobile has made the process of enrolment, policy administration, payments of premiums and claims processing easy. The use of the application-based banking service can also translate into signification decrease in distribution cost as well as the post distribution cost. Hence, in the reference to the above data, we can say that there exists a potential for microinsurance to increase its penetration and ultimately the financial inclusivity of the underserved population using digital financial services (DFS) and FinTech such as digital payment services.

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