



Empowering women through digital payment adoption in the rural healthcare sector for sustainable development

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Abstract

Digital payment adoption is revolutionizing financial transactions across industries, particularly in the rural healthcare sector, where women face significant challenges in accessing financial services. This research examines the impact of digital payment adoption on financial inclusion in rural healthcare. A quantitative approach will be used to collect data from women across various rural healthcare setups in India. This study explores the role of digital payments in empowering women in rural healthcare, focusing on financial inclusion, Sustainable Development in Rural Areas Despite these benefits, key adoption barriers include 42% digital illiteracy, 28% smartphone inaccessibility, and 35% trust concerns regarding financial technology. Government initiatives like Digital India and targeted financial literacy programs are crucial in overcoming these challenges. This study aims to provide policy recommendations to enhance financial inclusion and ensure sustainable development in rural healthcare. By integrating digital payment solutions, women can achieve greater financial independence, improve healthcare services, and contribute to rural economic growth.

The integration of digital payment systems in rural healthcare has the potential to enhance women's empowerment and contribute to sustainable development. This paper explores the impact of digital payment adoption on women's economic participation in rural healthcare settings, identifies existing barriers, and proposes strategies to overcome these challenges. Through the analysis of recent data and case studies, this study highlights the transformative impact of digital financial inclusion in promoting gender equality and enhancing healthcare delivery in rural India.

Keywords: Digital Payments, Women's Empowerment, Rural Healthcare, Financial Inclusion, Sustainable Development

Introduction

In the objective of sustainable development, empowering women, especially in rural areas, has emerged as an essential focus for policymakers and development practitioners. Access to quality healthcare and financial inclusion are fundamental to this empowerment. With the fast growth of digital technologies, digital payment systems have the potential to revolutionize healthcare access and economic participation for women in rural communities. This research explores how the adoption of digital payments within the rural healthcare sector can catalyze women's empowerment by enhancing financial autonomy, reducing reliance, and improving access to timely medical services. By bridging the gender and digital divide, digital payment systems not only promote inclusive health outcomes but also contribute to the overarching goals of sustainable development.

In rural India, women play an important role in healthcare delivery, often serving as frontline health workers and protectors. However, their economic participation is frequently hampered by limited access to financial services. The adoption of digital payment systems presents an opportunity to intensify women's financial inclusion, thereby empowering them economically and refining healthcare services. The paper assesses the current landscape of digital payment adoption among women in rural healthcare, identifies barriers to adoption, and suggests strategies for fostering inclusive digital financial ecosystems. According to the World Bank (2021) [19], 740 million women worldwide remain unbanked, with rural

areas facing the most financial exclusion. In India, 48.6% of rural women lack access to formal banking, highlighting the need for digital payment solutions. The Global Findex Database (2021) [13] reports an 8% increase in financial access for women globally, largely due to digital transactions, highlighting their potential to drive economic participation.

This study explores the effect of digital payment novel adoption on financial inclusion in rural healthcare. Data will be collected using a quantitative study of women across different rural healthcare setups of India. This research study is aimed at exploring a few aspects of how digital payments can empower by bringing financial inclusion and achieving sustainable development in rural India.

740 million unbanked women globally, with the most financial exclusion in rural areas (World Bank, 2021) [9].

1. Objectives of the Study

- To examine the role of digital payments in empowering rural women in the healthcare sector
- To analyze secondary data reflecting trends in digital payment adoption among women in rural healthcare
- To identify challenges and policy measures for improving women's access to digital financial tools for sustainable development.

2. Background Review

(Beata Świecka *et al.*, 2021) This study finds that objective and subjective financial knowledge are the most important determinants of consumer payment choices, with higher

levels of knowledge associated with greater use of cashless payments. Advanced data mining techniques like Random Forests can identify important predictors of payment behavior that may not be evident from traditional statistical analyses. Consumers with higher levels of financial knowledge are more likely to use cashless payment methods.

(Komal Vishwakarma *et al.*) This paper provides a bibliometric analysis of research on the adoption and challenges of digital payment systems in urban and rural India, particularly concerning consumer perception, from 2010 to 2024.

(Shilpa Iyanna *et al.*,2022) ^[3] The paper examines the barriers that healthcare providers perceive to the adoption and continued usage of e-health innovations in the United Kingdom.

(Amanpreet S Patel *et al.*,2023) ^[4] The study examines the impact of mobile banking platforms like Paytm and Google Pay on financial inclusion in rural and semi-urban areas in India, finding that while these platforms have significantly improved financial inclusion in semi-urban areas, adoption, and usage in rural areas remain limited due to barriers such as lack of technological infrastructure, low digital literacy, and cultural preferences.

Chei Bukari *et al.* (2020) ^[5] examine the effect of mobile money adoption on healthcare utilization and spending in rural households in Ghana, with a focus on the differential effects for male-headed and female-headed households.

(Amrita Chatterjee *et al.*,2020) ^[6] The paper examines the relationship between financial inclusion, information and communication technology (ICT) diffusion, and economic growth using a panel data analysis of 41 countries from 2004-2015.

According to the World Bank's Global Findex Database (2021) ^[13], 78% of Indian adults now have access to bank accounts, with a notable rise among rural women due to direct benefit transfers (DBT) and digital payment schemes.

Demirgüç-Kunt *et al.* (2022) emphasized that digital payments reduce gender gaps in financial inclusion.

The Ministry of Health and Family Welfare (MoHFW, 2021) ^[14] reports increased use of digital payments in rural health centers under Ayushman Bharat.

NITI Aayog (2022) ^[16] observed that women beneficiaries under health schemes preferred digital over cash transfers due to ease and safety.

UN Women (2020) ^[18] linked digital empowerment with access to health, education, and livelihood.

3. Defining Digital Financial Inclusion and Its Importance for Women

Digital financial inclusion is more than just providing access to financial services; it's about ensuring that individuals, particularly those marginalized, can effectively use these services through digital channels (Mahesh *et al.*,2023) ^[7]

This encompasses a range of services, including digital payments, savings accounts, credit, and insurance, all delivered via platforms like mobile banking, digital wallets, and other FinTech solutions. The core of digital financial inclusion lies in leveraging technology to reduce costs, increase convenience, and overcome geographical barriers that traditionally exclude many from the formal financial system. For women, who often face greater obstacles in accessing traditional banking services, digital financial inclusion represents a transformative opportunity. It

democratizes access to finance, enabling them to participate more fully in the economy and exercise greater control over their financial lives.

Empowering women through financial inclusion is not merely a matter of social justice; it is a critical driver of economic growth and sustainable development (Razzak *et al.*,2024)

When women have access to and control over financial resources, they are better positioned to invest in their health, education, and businesses, creating a ripple effect that benefits their families and communities. Studies have shown that financially included women are more likely to start businesses, contributing to job creation and economic diversification. They are also more resilient to economic shocks, able to better manage household finances, and cope with unexpected expenses. Furthermore, women's financial empowerment leads to greater participation in decision-making processes, both within the household and in the broader community, fostering more equitable and inclusive societies.

Digital payment adoption specifically enhances women's empowerment by giving them direct control over their finances, reducing reliance on intermediaries, and increasing the transparency and security of transactions (Ajide *et al.*, 2021) ^[9]

4. The Intersection of Digital Finance, Women, and Healthcare

Digital financial services have emerged as a crucial tool in the pursuit of global sustainability, offering pathways to achieve key Sustainable Development Goals (SDGs). These services are instrumental in reducing poverty, ensuring healthy lives, and promoting gender equality (Ferrata *et al.*, 2019) ^[10].

By providing access to financial tools and resources, digital finance can uplift marginalized communities, improve healthcare delivery, and empower women to participate more fully in economic and social life. The intersection of digital finance, women, and healthcare represents a particularly promising area for fostering sustainable development, as it addresses multiple interconnected challenges simultaneously.

Women's empowerment and gender equality are not only fundamental human rights but also vital foundations for building peaceful and sustainable societies (Somani 2022) ^[11].

Achieving these goals requires comprehensive strategies that address the deep-rooted inequalities that persist in many parts of the world. These inequalities manifest in various forms, including unequal access to education, healthcare, economic opportunities, and political representation. To create a truly equitable and sustainable world, it is essential to dismantle these barriers and empower women to reach their full potential. Digital payment adoption in rural healthcare can serve as a key strategy in this effort, helping to close gender gaps and promote sustainable development by improving access to essential services and resources.

The integration of digital payment systems into rural healthcare can be a transformative step towards achieving gender equality and sustainable development. By providing women with greater control over their finances and improving their access to healthcare services, digital payments can empower them to make informed decisions about their health and well-being. This empowerment, in

turn, can lead to improved health outcomes for women and their families, as well as increased economic productivity and social participation. Digital payment adoption in rural healthcare can help to close gaps in gender equality and promote sustainable development (Bangladesh, 2022), creating a positive ripple effect that benefits entire communities.

Women may find the complicated processes and documentation requirements of traditional financial systems intimidating, especially if they live in rural areas with little access to information and education. These procedures are made easier by digital payment platforms, giving women confidence and ease in handling their finances. Women no longer need to travel long distances to a bank branch to send and receive money, pay bills, and access other financial services, because of mobile banking apps. This lowers the risks of carrying cash, like extortion and theft, in addition to saving time and money.

Research Methodology

a. Type of Study

Descriptive and analytical

b. Data Source

Government reports (e.g., NFHS-5, RBI, NITI Aayog, MOHFW), World Bank

c. Global Findex Database (2021) ^[13], Digital India Dashboard, Research papers, and journal articles

d. Method of Analysis

Data interpretation using statistical summaries, graphs, and policy review

e. Data Analysis

(Based on Secondary Sources)

Materials and Methods

1. The State of Rural Healthcare and the Role of Women

Rural healthcare systems worldwide encounter numerous challenges that limit their effectiveness. These issues often stem from a mix of factors, including inadequate infrastructure, a shortage of medical professionals, insufficient funding, and geographic hurdles. Most rural healthcare facilities suffer from underfunding, excessive strain, and lack of necessary equipment and essential medications. As a result, poor health outcomes, long wait times, and substandard care plague rural populations. Patients face the necessity of traveling long distances to urban centers for specialized medical services due to limited local access. Access is further complicated by transportation difficulties, communication barriers, and cultural beliefs that may discourage engagement with formal healthcare. Women are crucial to rural healthcare systems as patients, caregivers, and providers. They typically manage their families' health needs, seek medical attention for children and elderly relatives, and provide care for the sick and disabled as primary caregivers. In many rural communities, women also function as key informal healthcare providers, using their traditional knowledge and practices to address common health issues. Moreover, women constitute a significant portion of the healthcare workforce in rural

areas, serving as community health workers, nurses, midwives, and other allied health professionals. Improving rural women's access to healthcare is essential for achieving sustainable development goals and ensuring gender equality. Women's health is fundamentally connected to the health and welfare of their families and communities. Access to quality healthcare allows women to better care for their children, engage effectively in the workforce, and contribute to economic growth. In contrast, poor health outcomes among women can have extensive repercussions, affecting child mortality rates, educational achievements, and overall community advancement. Thus, investing in women's health is vital for promoting healthy, thriving, and sustainable rural communities.

2. Understanding the Barriers: Women, Finance, and Rural Healthcare Access

a. Socio-Economic Barriers Faced by Women in Rural Areas

Rural women frequently encounter a distinct set of socioeconomic obstacles that restrict their options and uphold inequality. Some things, such as restricted access to formal identification and documentation, cultural norms and biases, and limited access to education and skill development, cause these obstacles. These obstacles must be removed to foster an environment where women can flourish and contribute to sustainable development. For women in rural areas, limited access to education and skill development is a major barrier that limits their economic opportunities and prevents them from fully engaging in society. Girls find it challenging to regularly attend schools in many rural communities because they are ill-equipped, have few qualified teachers, and are situated far from their homes.

Women's participation in financial activities is frequently restricted by cultural norms and biases, which impede their economic empowerment and perpetuate gender inequality. Traditional gender roles in many rural communities dictate that women should prioritize household chores and childcare duties over earning a living. In addition, discrimination against women may restrict their access to credit, land, and other productive resources, making it more difficult for them to launch enterprises or engage in agricultural production. Furthermore, cultural norms may limit women's freedom of movement and ability to make decisions, hindering their engagement in community governance or access to financial services. One major obstacle to financial inclusion for women in rural areas is their inability to obtain official identification and documentation, which prevents them from opening bank accounts, obtaining credit, and participating in official financial activities, since they cannot comply with financial institutions' Know Your Customer (KYC) requirements without official identification.

3. Barriers to Digital Payment Adoption

Women's Adoption of Digital Payments in Rural Healthcare Is Hindered By Several Factors:

▪ Digital Proficiency

Adoption is hampered by a lack of knowledge and comprehension of digital financial services. In India, only 35% of women are aware of digital financial services, and even fewer actively use them.

- **Security and Trust Issues**

Usage is discouraged by distrust and fear of fraud in digital transactions. Because of worries about fraud and the security of digital payments, many women prefer cash. Access to technology is hampered by a lack of internet connectivity and mobile device ownership. Despite the rise in smartphone usage, many women either do not own a personal smartphone or share one with family members, which restricts their capacity to conduct independent business.

Social norms: Gender norms and cultural influences may restrict women's

- **Techniques to Increase Adoption**

Targeted interventions are necessary to overcome these obstacles

- **Programs for Digital Literacy**

Community-led training initiatives can enhance proficiency and confidence in using digital payments. For example, 400,000 women have received digital financial skills training from the Self-Employed Women's Association (SEWA).

- **Measures to Build Trust**

Strong customer service, local language support, and simplified user interfaces can all contribute to building trust. To assist first-time users' adoption, payment solutions should focus on user interfaces that are both intuitive and vernacular-friendly.

- **Better Technology Access**

Collaborations with telecom companies to offer affordable devices and data plans can improve technology accessibility. According to a report by the Cherie Blair Foundation for Women, female entrepreneurs in developing nations face challenges due to the high cost of mobile data. **Policy Support:** Government initiatives that promote women's access to finance and safeguard

4. To Overcome These Barriers, Targeted Interventions Are Necessary

Digital Literacy Programs: Community-led training initiatives can build confidence and competence in using digital payments. For instance, the Self-Employed Women's Association (SEWA) has trained 400,000 women in digital financial skills.

Trust-Building Measures: Simplified user interfaces, local language support, and robust customer service can enhance trust. Payment solutions must focus on intuitive and vernacular-friendly user interfaces to ease adoption for first-time users.

Improved Access to Technology: Collaborations with telecom providers to offer affordable devices and data plans can increase access. A report by the Cherie Blair Foundation for Women highlights that the high cost of mobile data hampers female entrepreneurs in developing countries.

Policy Support: Government initiatives that promote women's financial inclusion and protect against digital fraud are essential.

Impact on Sustainable Development

Integrating women into the digital financial ecosystem contributes to several Sustainable Development Goals (SDGs):

SDG 5 (Gender Equality): Empowering women through financial inclusion promotes gender equality.

SDG 3 (Good Health and Well-being): Enhanced financial resources for female healthcare workers can improve healthcare delivery.

SDG 8 (Decent Work and Economic Growth): Financially empowered women can contribute more effectively to the economy.

Discussion and Implications

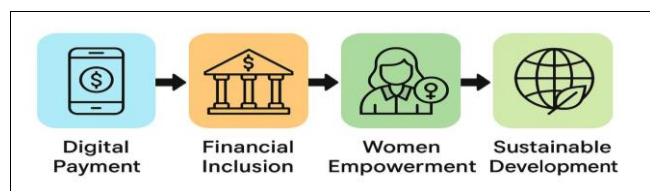
1. How Digital Payment Adoption Can Drive Sustainable Development

Several issues are affecting rural healthcare systems across the world that hinder their capacity to provide effective, accessible, and affordable services. Many of these challenges are due to a combination of poor infrastructure, lack of healthcare workers, financial resource constraints, and physical distance. Many rural healthcare facilities are faced with a shortage of essential medicines and supplies and staffed with overworked and underpaid personnel. This leads to long wait times, insufficient care, and poor health outcomes for rural populations. Access to specialized medical services is severely limited, with patients often required to travel great distances to urban centers for treatment.

Accessing healthcare services in rural areas can be challenging due to transportation issues, communication barriers, and cultural beliefs that discourage individuals from seeking formal healthcare.

The adoption of digital payments in rural healthcare can empower women and help improve healthcare delivery and sustainable development, that resolve to take on some of the most pressing challenges facing rural communities. Digital technologies can break down geographical barriers, lower transaction costs, increase transparency, and improve efficiency in healthcare systems. Women with financial control tend to seek timely healthcare for themselves and their families, thereby yielding better health outcomes. These digital payment systems enable the distribution of conditional cash transfers for health, which are financial interventions that support at-risk groups and also help overcome the need to access preventive services.

This analysis examines how digital payments can change the dynamics of rural healthcare in a way that benefits women, particularly through the lens of the burgeoning field of financial technologies (FinTech) as they pertain to alleviating pre-existing disparities present within rural societies. It will explore the socio-economic hurdles that prevent women from accessing finance and healthcare facilities, how digital payments improve their control over money and promote financial independence, and the role of digital payments in revolutionising rural healthcare delivery. The potential of digital payment adoption to drive sustainable development will be illustrated through case studies and examples from diverse developing countries.



The emphasis will be on new and innovative financial technologies (FinTech) and their promise to remedy current inequities in rural communities, and of the necessity to rise above conventional methods to.

2. Growth in Digital Payments in Rural Healthcare

According to the RBI Annual Report (2022), UPI transactions grew by over 50% in rural areas between 2020^[20] and 2022.

MoHFW data (2021) indicates that 61% of health-related government subsidies in rural areas were transferred digitally to women's accounts.

Financial Inclusion of Rural Women

NFHS-5 (2019-21) shows 78% of rural women now have access to bank accounts, compared to 53% in 2015-16 (NFHS-4).

Pradhan Mantri Jan Dhan Yojana (PMJDY) enabled 24 crore women to open bank accounts, with 55% from rural areas.

3. Empowerment Outcomes

Studies by NITI Aayog (2022) and UN Women (2020)^[16, 18] found that digital health payments allowed rural women to make independent decisions regarding maternal health services and emergency care.

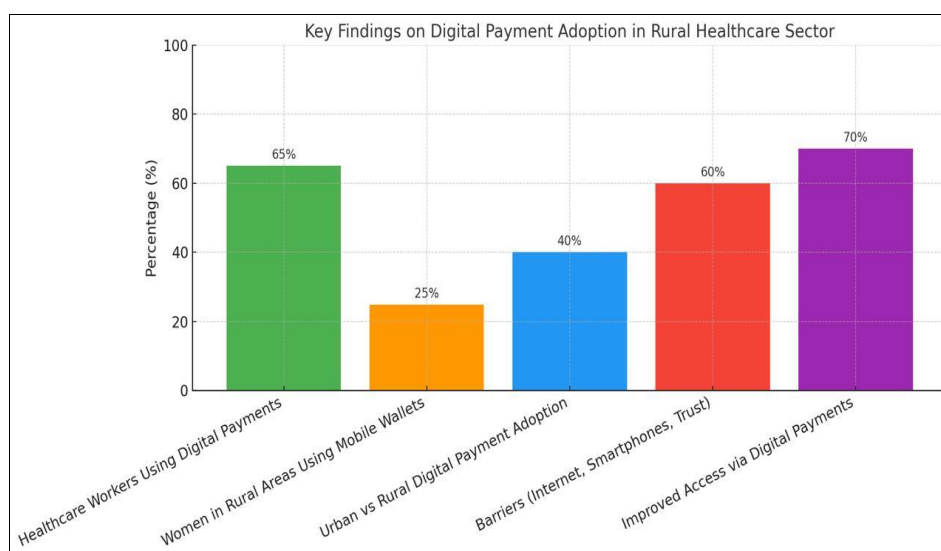
Women ASHA workers and health volunteers receive incentives via digital platforms, improving transparency and timely compensation.

Barriers Identified

Internet connectivity is limited in 45% of rural villages (TRAI, 2021)^[17].

Digital literacy gap: Only 21% of rural women were found to be digitally literate (IAMAI, 2020)^[18].

Social constraints: Cultural norms still prevent some women from using mobile phones or controlling digital finances.



4. Financial Exclusion and Its Impact on Healthcare Access

Women in rural areas are disproportionately affected by financial exclusion, which is defined as the lack of access to and use of formal financial services. This makes them more vulnerable and restricts their access to necessary services, such as healthcare. This exclusion can take many different forms, such as financial illiteracy, high transaction costs, physical distance to financial institutions, and restricted access to bank accounts and credit. Improving women's health outcomes and advancing sustainable development depend on removing these obstacles.

Women are forced to rely on unofficial and frequently unreliable sources of funding because they are unable to pay for healthcare services due to a lack of bank accounts and credit. Women who don't have a bank account might find it difficult to save money for medical bills, which would make it hard for them to pay for regular checkups, immunizations, and other preventive care. Having access to credit is also crucial for handling unforeseen medical expenses, like hospital stays or emergency medical care. However, because

they lack formal employment, credit history, or collateral, women in rural areas frequently experience discrimination when trying to obtain credit. They become more susceptible to predatory lenders and unofficial financial arrangements as a result, which can make them even poorer.

Financial exclusion is made worse by high transaction costs and physical distance to financial institutions, which make it more costly and challenging for women to obtain financial services. Due to the scarcity of bank branches in many rural areas, women must travel great distances and invest a substantial amount of time and money in order to perform basic financial transactions. Account fees, withdrawal fees, and transfer fees are examples of transaction costs that can be prohibitive, especially for low-income women. These expenses deter women from using formal financial services and lower the amount of money available for medical bills. Women who lack financial literacy are less able to access healthcare and manage their money wisely, which restricts their capacity to make wise decisions regarding their health and welfare. Many rural women don't have.

5. Digital Payments: A Catalyst for Women's Empowerment

a. How Digital Payments Enhance Financial Control and Autonomy

Digital payments offer a powerful means of enhancing financial control and autonomy for women, particularly in rural areas where traditional financial systems often exclude or push them to the margins ^[1]. Digital payments give women direct access to and control over their money, reducing the need for middlemen while enhancing security and transparency and opening doors for asset accumulation, investment, and saving. Women and their families benefit from increased economic independence, better decision-making authority, and improved well-being as a result of this empowerment.

Women have more financial control thanks to digital payments, which lessen their dependency on middlemen like male family members, unofficial lenders, or employers. When it comes to opening a bank account, obtaining credit, or making payments, traditional financial systems frequently force women to rely on others to handle their finances. Women may become more susceptible to financial instability, abuse, and exploitation as a result of this dependence. Digital payment systems, including mobile banking applications and online

Women are better equipped to manage their resources when financial transactions are more transparent and secure, which lowers the risks involved in cash-based transactions. A common characteristic of cash-based economies is their lack of transparency, which makes it challenging to keep tabs on financial flows, track income and expenses, and stop corruption. All financial transactions are transparently recorded by digital payment systems, giving women a clear audit trail of their earnings, outlays, and savings. This greater openness improves accountability, lowers the possibility of theft and fraud, and gives women the ability to better manage their finances. Women can increase their long-term financial security and economic well-being by taking advantage of the opportunities provided by digital payment platforms to save, invest, and accumulate assets. Adequate savings and investment options are frequently absent from traditional financial systems.

The analysis of secondary data highlights that digital payments have significantly contributed to financial inclusion, healthcare access, and autonomy for rural women. These systems minimize the need for middlemen, reduce corruption, and ensure timely access to healthcare benefits. However, structural and social challenges persist, requiring targeted interventions.

The evidence supports that digital payments contribute to the Sustainable Development Goals

SDG 3 (Good Health and Well-being)

SDG 5 (Gender Equality)

SDG 9 (Industry, Innovation, and Infrastructure)

SDG 10 (Reduced Inequalities)

Policy Recommendation

Increase the Reach of Digital Literacy Campaigns: Target healthcare professionals and women in rural SHGs.

Boost infrastructure by enhancing digital health record systems and mobile connectivity.

Create Fintech Apps That Are Women-Friendly: simplified user interfaces in local languages.

Encourage financial incentives by offering cashback or bonus health points for digital payments.

Boost Security and Privacy: Make sure women have authority over their financial and mobile credentials.

Conclusion

Women's empowerment is quietly undergoing a revolution thanks to digital payment systems in the rural healthcare industry. They provide a route to equitable and sustainable development by facilitating access to government programs, financial independence, and healthcare autonomy. In order to close the remaining gaps, the results from secondary data sources confirm the necessity of ongoing investments in digital infrastructure and education.

Thanks to programs like the Unified Payments Interface (UPI), digital payment adoption has significantly increased in India. A significant gender gap still exists in spite of these advancements. If given the proper assistance and education, more than 200 million Indian women are ready to embrace digital payments, per a report by Women's World Banking. Additionally, according to the World Bank's 2021 ^[19] Findex report, 78% of Indians.

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