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Innovating for Equity: How Technology Can Enhance Financial Inclusion for Bangladesh's Marginalized Communities

Authors:

Fahim Mosharrof Ratul
Mushfiqur Rahman
Sajid Amit

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Executive Summary

Bangladesh has emerged as a frontrunner in digital financial inclusion, propelled by the rapid proliferation of mobile financial services (MFS) and fintech innovations. As of 2023, the nation proudly stands fourth globally in mobile money account ownership, boasting an impressive 21.77 crore registered accounts. The sheer scale of this digital transformation is evident in the staggering 563 million transactions facilitated by MFS platforms in the fiscal year 2022-23, amounting to a whopping \$109 billion. The COVID-19 pandemic, while challenging, served as a catalyst for accelerated digital adoption, with a remarkable 300,000 new MFS accounts opened in April 2020 alone.

Despite these significant strides, Bangladesh's journey towards comprehensive financial inclusion faces several hurdles. A stark gender disparity persists, with only 20% of women holding MFS accounts compared to 45% of men. Limited financial literacy and digital skills, particularly in rural areas, continue to impede wider adoption. Cyber security concerns and regulatory complexities create additional barriers, while the lack of interoperability between platforms hinders seamless financial transactions. Moreover, the high dependency on traditional transactions, with 86% of MFS transactions being simple fund transfers, indicates a need for diversification of digital financial services.

The micro insurance sector in Bangladesh presents both challenges and opportunities. With only 6.5 million out of 160 million Bangladeshis covered by insurance, a staggering 90-94% of the population remains uninsured. Affordability, accessibility, and trust issues are key factors contributing to this protection gap. However, innovative companies like Waadaa Insurance are making significant inroads by leveraging partnerships and technology, successfully reaching over 12 million customers.

In the realm of digital credit, progress has been slower. Despite 60% of the population having MFS accounts, only 9.1% access formal credit. This disparity highlights the untapped potential in the digital credit market. Companies like AGAM and Mitro are at the forefront of addressing this gap, pioneering digital microcredit solutions tailored for underserved populations, with a particular focus on Ready-Made Garment (RMG) workers.

To overcome these challenges and capitalize on the opportunities, a multi-faceted approach is necessary. Policymakers and financial institutions must prioritize the promotion of digital and financial literacy, while simultaneously working to improve access to affordable internet and smartphones. Enhancing interoperability between financial platforms and simplifying regulatory frameworks for fintech startups will foster innovation and competition. Strengthening cyber security measures is crucial to building trust in digital financial services. The development of public digital infrastructure for credit scoring, coupled with the adoption of e-KYC systems and API-enabled platforms, will streamline processes and expand access. Encouraging public-private partnerships and increasing early-stage investment in fintechs will fuel the growth of the digital finance ecosystem. Finally, leveraging AI and machine learning for risk management and personalized services will enable more inclusive and efficient financial products.

1. Financial Inclusion and Fintech in Bangladesh

Bangladesh stands at the forefront of a financial transformation, propelled by the integration of fintech and mobile financial services (MFS). Over the past decade, advancements in digital finance have significantly broadened access to financial services, especially for marginalized groups such as rural communities and women. As digital finance reshapes the landscape, it is not only creating a more inclusive economy but also building resilience against economic disruptions and future-proofing the nation's financial ecosystem.

1.1 Growth of Mobile Financial Services and Fintech

Bangladesh has experienced a remarkable transformation in its financial landscape over the years, driven primarily by the rapid growth of fintech and mobile financial services (MFS). This digital revolution has significantly expanded financial inclusion, particularly benefiting underserved populations such as women and rural communities.

The MFS sector, spearheaded by platforms like bKash, Nagad, Rocket, and UPay, has become integral to Bangladesh's economy. As of 2023, the country ranks fourth globally in mobile money account ownership, boasting over 21.77 crore registered accounts. In the fiscal year 2022-23, MFS platforms facilitated more than 563 million transactions worth \$109 billion, demonstrating their crucial role in the nation's financial ecosystem [1].

The proliferation of mobile phones has been instrumental in this growth. Currently, with over 186 million connections nationwide, 60% of rural residents use some form of mobile financial services. The sector has evolved from basic fund transfers to offering digital credit, savings, and remittances. Between 2019 and 2023, daily average cash-ins grew by 149%, while merchant payments surged by an impressive 853% [1].

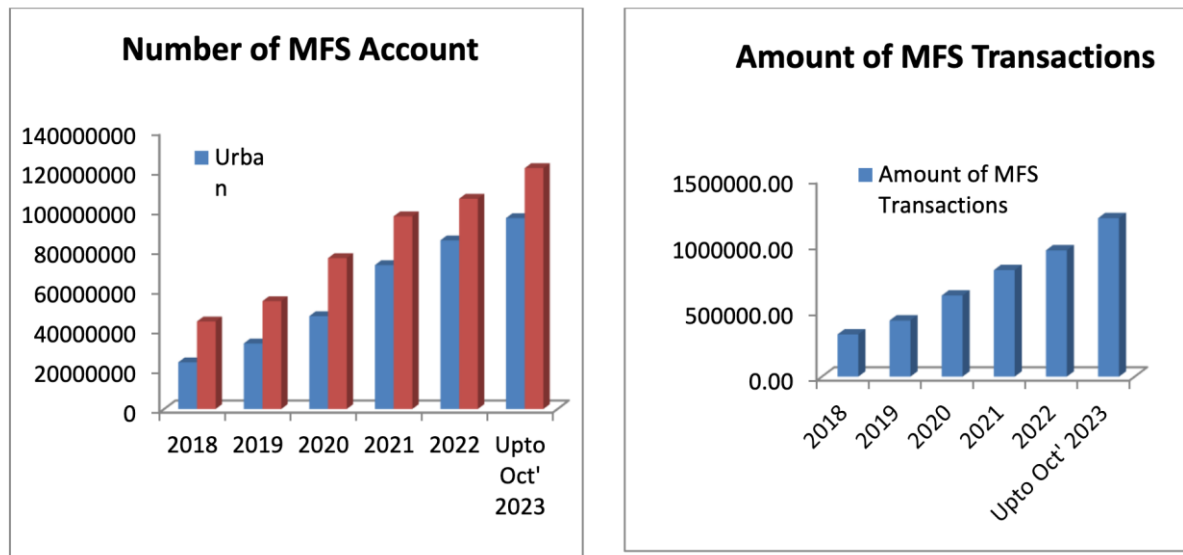


Figure 1: Growth of Number of MFS Accounts and MFS Transactions over 6 Years [1]

Bangladesh's fintech landscape is diverse and rapidly expanding, with at least 198 tracked startups and potentially over 500 in operation. These companies offer a wide range of services, including digital payments, remittances, alternative finance, and blockchain-based solutions.

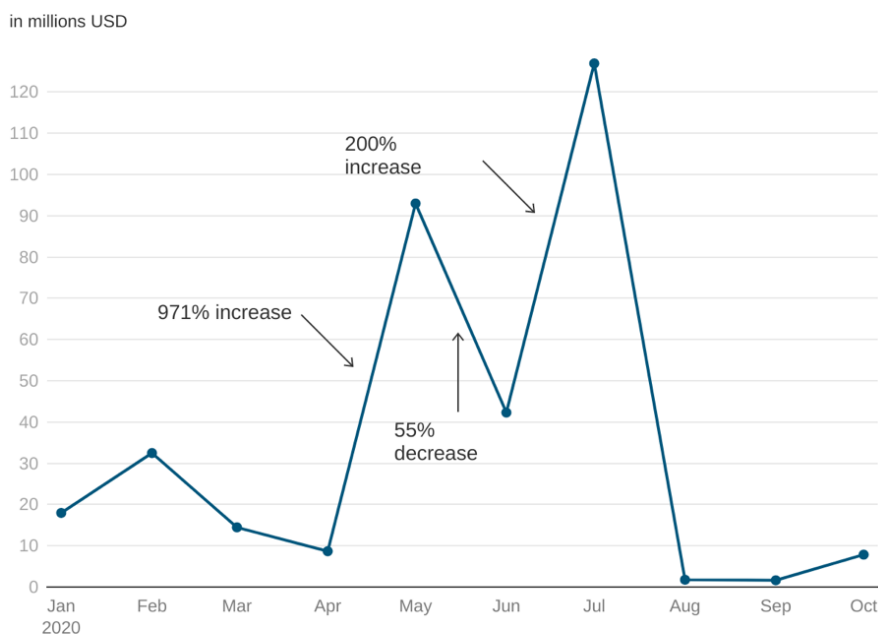
The digital lending sector is growing at an estimated 30% annually, while insurtech and agri-fintech platforms are making significant strides in serving niche markets.

1.2 Impact of COVID-19

The COVID-19 pandemic massively accelerated digital financial inclusion in Bangladesh. In April 2020 alone, approximately 300,000 new MFS accounts were opened, with two-thirds of new accounts between March and August 2020 being opened by women. This surge helped narrow the gender gap in financial inclusion.

Government initiatives played a crucial role during this period. A stimulus package for the garment industry mandated digital wage payments, resulting in 1.9 million workers opening digital accounts within two weeks. By July 2020, monthly mobile financial service payments exceeded BDT 1,000 crore. The central bank facilitated the opening of 2 million digital accounts for garment workers and over 1 million for social safety net recipients between March and May 2020, with USD 80 million delivered digitally to Bangladesh’s most vulnerable groups such as the rural population, including elderly, disabled, widowed and impoverished groups.

G2P payments in Bangladesh (January - October 2020)



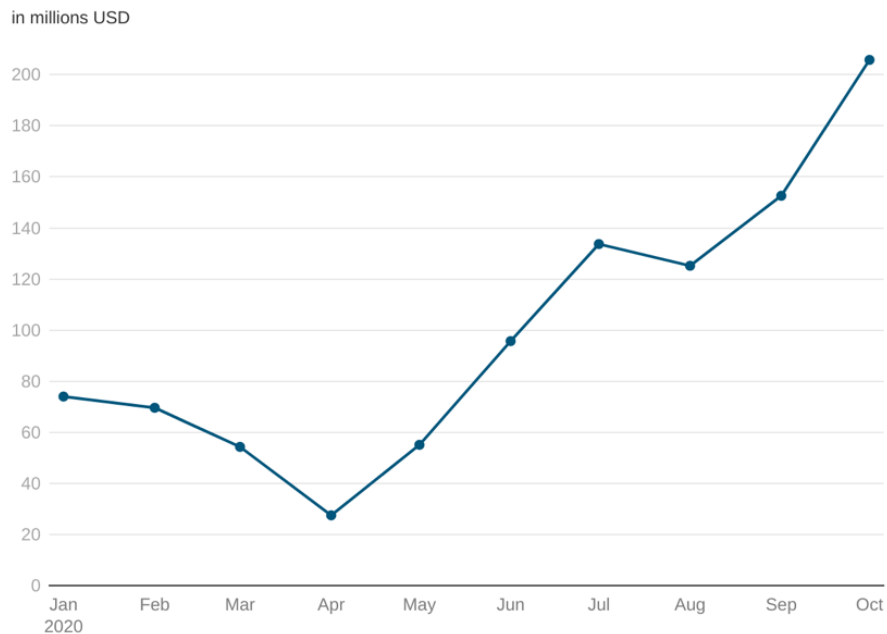
Source: MSC

Figure 2: Trend of Government Payouts during COVID-19 [2]

The benefits of this digital transformation were substantial:

- A 21-percentage point increase in regular savings among garment workers
- A 19-percentage point increase in financial confidence among women
- Improved food security for workers familiar with digital payments
- A 234% increase in utility payments from April to August 2020 compared to the previous year
- A 419% increase in monthly inward remittances due to a 2% cash incentive

Monthly merchant payments (January - October 2020)



Source: MSC

Figure 3: Number of Monthly Merchant Payments During COVID-19 [2]

These developments underscore Bangladesh's significant progress in digital finance and financial inclusion, setting a strong foundation for continued growth and innovation in the sector.

1.3 Challenges to Implementing Digital Financial Services

While digital finance has opened new doors, the journey is hampered by a complex landscape of interwoven challenges. From gender disparities and regulatory hurdles to cybersecurity and trust issues, a range of barriers stand in the way of inclusive, accessible financial services. In total, we face over 20 distinct challenges, each one a critical obstacle that must be addressed to build a robust, inclusive financial ecosystem.

Serial	Challenge	Cause	Effect
1	Gender Disparity in MFS Account Ownership	Social norms, restrictive household roles, limited digital literacy, lack of mobile phone ownership among women	Women's participation in the financial ecosystem is limited, with only 20% of women holding MFS accounts compared to 45% of men
2	Limited Financial Literacy and Digital Skills	Lack of formal financial education, particularly in rural areas and among women and older populations	Hesitancy in adopting MFS beyond basic fund transfers, limiting financial inclusion potential
3	Barriers to Rural Inclusion	Limited infrastructure, low	MFS potential for savings, loans, and insurance is

		financial literacy, lack of awareness	underutilized, and rural populations remain excluded from digital finance benefits
4	Cyber security Concerns	Lack of robust cybersecurity infrastructure and data protection in smaller fintech startups	Low trust in digital financial services, limiting adoption
5	Regulatory Complexities	Lengthy approval processes for fintech startups, rigid regulatory framework	Innovation is stifled, fintech startups struggle to introduce inclusive services
6	Lack of Interoperability Between Platforms	Fragmentation between MFS platforms and traditional banks	Users face friction in transferring funds across platforms, limiting the integration of digital finance into the broader financial system
7	Inadequate Early-Stage Investments	Limited venture capital for fintech startups	Fintech companies struggle to innovate and scale, particularly in serving low-income populations
8	Geographical Barriers	Lack of physical banking infrastructure, poor connectivity, and electricity access	Rural populations remain reliant on informal financial systems, and the full potential of MFS remains untapped
9	High Dependency on Traditional Transactions	Habit, low trust in digital systems, limited financial literacy	86% of MFS transactions remain simple fund transfers, with limited use for savings, loans, or insurance
10	Inadequate Integration with Financial Institutions	Limited integration of MFS with traditional banks and NBFIs	Users are unable to smoothly transition between digital and traditional financial services, hindering financial inclusion
11	Insufficient Merchant Acceptance of Digital Payments	Concerns about transaction fees, lack of infrastructure, unfamiliarity with technology	Limited availability of digital payment options, forcing reliance on cash
12	Trust and Digital Adoption	Security concerns, unfamiliarity with digital platforms, perception of error-proneness	Lack of trust in digital financial services, slowing adoption among underserved populations
13	Cloud Computing Restrictions	Bangladesh Bank's restrictions on cross-	Operational challenges for fintech firms, higher costs,

		border cloud data hosting	limited scalability, and slowed innovation
14	High Cost of Smartphones and Internet Access	High costs of devices and internet, especially for low-income populations	Digital financial services are limited in reach, particularly among marginalized communities
15	Legacy Systems in Traditional Banks	Outdated, inflexible legacy systems	Limited ability of banks to offer digital products and compete with fintech startups
16	Geographical Barriers	Lack of physical banking infrastructure, poor connectivity, and electricity access	Rural populations remain reliant on informal financial systems, and the full potential of MFS remains untapped
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20	Trust and Digital Adoption	Security concerns, unfamiliarity with digital platforms, perception of error-proneness	Lack of trust in digital financial services, slowing adoption among underserved populations

1.4 Technology Forward Policy Recommendations

To accelerate digital financial services (DFS) adoption and promote financial inclusion, policymakers and financial institutions should consider the following recommendations:

1. Promote Digital and Financial Literacy

Expand comprehensive digital and financial literacy programs, particularly targeting underserved populations such as women, rural residents, and low-income groups. These initiatives should focus on educating users about digital payments, savings, loans, and credit services. Additionally, collaborating with financial institutions and NGOs to create community-driven educational campaigns that address unique barriers faced by different demographics will also be beneficial.

2. Improve Access to Affordable Internet and Smartphones

Lower the costs associated with internet access and smartphone ownership through public-private partnerships. Subsidize smartphones for low-income groups and invest in telecom infrastructure to ensure affordable connectivity in rural areas. This will empower more people to access and use digital financial services, bridging the digital divide.

3. Enhance Interoperability Between Financial Platforms

Prioritize the interoperability of mobile financial services (MFS) with traditional banks to create a seamless digital financial ecosystem. Encourage the development of a common payment infrastructure, such as shared QR codes and instant payment systems. This will result in the improvement of user experience and support the integration of digital financial services with government subsidy programs, remittances, and formal banking products.

4. Simplify Regulatory Frameworks for Fintech Startups

Establish a regulatory sandbox where fintech firms can test their products and services in a controlled environment. This approach would reduce regulatory barriers, provide guidance on compliance, and enable faster development of innovative financial technologies targeting underserved populations.

5. Strengthen Cyber security Measures

Invest in advanced cyber security technologies to protect customer data and build trust in digital financial services. Enforce strict data protection laws and establish cyber security guidelines for financial institutions. Conduct public awareness campaigns to educate users on safe digital practices.

6. Develop Public Digital Infrastructure for Credit Scoring

Support the development of public digital infrastructure that utilizes alternative data (e.g., mobile usage, utility payments, employer data) to create more inclusive credit scoring models. This approach can help financial institutions better assess the creditworthiness of underserved populations who are currently excluded from traditional financial services and credit, reducing financial exclusion.

7. Encourage Public-Private Partnerships

Foster collaboration between fintech companies, traditional banks, and government institutions to accelerate the expansion of digital financial services. Provide incentives for developing shared digital infrastructure and innovative solutions addressing the needs of underserved populations.

8. Increase Early-Stage Investment in FinTech

Create favorable conditions for venture capital by offering tax benefits, grants, and investment funds specifically aimed at fintech companies. Encourage private sector investment in fintech through regulatory easing and financial support for research and development.

9. Introduce Market Development Funds (MDF)

Establish Market Development Funds to support fintech projects that enhance the acceptance and usage of digital payments, particularly for micro, small, and medium enterprises (MSMEs) and female entrepreneurs.

10. Introduce Digital Microcredit Schemes

Collaborate with financial institutions to introduce digital microcredit schemes that allow underserved populations to access small loans through mobile financial platforms. These loans should have low interest rates and flexible repayment terms to support income-generating activities, leading to poverty alleviation.

11. Leverage Artificial Intelligence (AI) and Machine Learning for Risk Management

Integrate AI/ML models for better credit risk assessment, alternative data parameters for credit underwriting, and fraud detection.

12. Adopt E-KYC (Electronic Know Your Customer)

Implement e-KYC systems across the sector, especially at traditional banks, incorporating tools like optical character recognition (OCR) and AI for fraud detection to enable seamless digital onboarding.

13. Develop API-Enabled Platforms

APIs of Bangladesh Bank, the largest MFS services, or a nationwide central database, can be integrated across the financial sector for easier data sharing that will result in greater interoperability, alternative assessment for creditworthiness and insurance premiums, and embedding financial services solutions into broader consumer platforms.

14. Adopt a Phygital Engagement Approach

Consider a "phygital" (physical + digital) approach to digital financial services including micro insurance and microcredit, especially for customers in rural areas with limited access to technology, using alternative channels like mobile recharge shops to build trust and drive adoption.

15. Encourage Digital Banks

Speed up the examining and licensing of digital-only banks to create the opportunity for more flexible, asset-light financial institutions that can be more agile in adapting to the specific needs of the marginalized communities in Bangladesh, encouraging competition and innovation.

2. Micro-Insurance in Bangladesh

2.1 Bangladeshi Micro insurance Landscape

Bangladesh's micro-insurance sector faces significant challenges in providing comprehensive coverage to its population of over 160 million. Despite its crucial role in protecting low-income individuals from financial shocks, micro-insurance schemes currently reach only 6.5 million lives, leaving a staggering 90-94% of the population uninsured. This protection gap is particularly pronounced among the poor and marginalized communities.

Affordability remains a primary obstacle, with many low-income individuals struggling to pay regular premiums. This issue is compounded by Bangladesh's heavy reliance on out-of-pocket health expenditure, which accounts for 71% of total national health spending. A striking 88% of this comes directly from individual payments, placing a severe financial burden on the poor during health emergencies.

The prevalence of catastrophic health expenses further highlights the inadequacy of current micro-insurance schemes. Approximately 7% of households incur health costs exceeding 40% of their non-food expenses, while 25% face expenses surpassing 15% of their budget. These statistics underscore the vulnerability of low-income individuals to severe financial shocks, even with existing micro-insurance coverage. Government health subsidies are unevenly distributed, with the poorest 20% of the population receiving only 16% of available subsidies. This imbalance exacerbates the financial protection gap for those most in need of support [3].

The micro-insurance market in Bangladesh comprises several key players, with the top three healthcare providers holding 115,000 policies covering over 550,000 people. In total, there are 13 health insurance schemes and 12 life insurance schemes operating in the country. However, their reach remains limited.

The protection gap in Bangladesh is stark, with over 90% of the population, particularly low-income individuals and small-scale farmers, lacking sufficient insurance coverage against risks such as health crises or natural disasters. This gap is driven by affordability issues, limited accessibility, and a lack of tailored insurance products that address the specific risks faced by marginalized populations.

Poverty impact (%) of out-of-pocket health expenditure for Bangladesh (15)

Poverty impact	Poverty-line	
	US\$ 1 per day	US\$ 2 per day
Pre-health payment poverty headcount	22.5	73.0
Post-health payment poverty headcount	26.3	76.5
Percentage point increase in poverty incidence due to OOP health payments	3.8	3.6
Pre-health payment poverty gap	4.5	27.8
Post-health payment poverty gap	5.3	30.5
Percentage point increase in poverty gap due to OOP health Payments	0.9	2.6

Poverty gap is the average amount by which resources fall short of the poverty-line as a percentage of that line; OOP=Out-of-pocket

Figure 4: Poverty impact (%) of out-of-pocket health expenditure for Bangladesh [3]

2.2 Challenges to Micro insurance

The current landscape of micro-insurance has eight (8) broad challenges:

Serial	Challenge	Cause	Impact
1	Affordability	Many low-income individuals cannot afford regular insurance premiums.	Limits access to essential insurance services, leaving many without protection and increasing their vulnerability to financial shocks.
2	Accessibility	Lack of infrastructure in rural areas and low awareness about insurance options.	Insurance services remain inaccessible in remote areas, preventing marginalized populations from benefitting from micro-insurance.
3	Trust Issues	Skepticism about claims settlement and delayed payouts.	Mistrust of insurance providers reduces participation in micro-insurance schemes, undermining efforts to expand coverage to low-income populations.
4	Catastrophic Health Costs	Micro-insurance only covers basic health services, leaving out high-cost events like surgery.	Low-income individuals remain vulnerable to catastrophic health costs, pushing them further into poverty when faced with major health emergencies.
5	Poor Distribution of Health Subsidies	Government health subsidies are not equitably distributed, with the poorest receiving a small share.	The poorest populations are less likely to benefit from public subsidies, exacerbating their financial challenges and limiting access to affordable healthcare.
6	Protection Gap	Affordability and limited accessibility, with traditional policies failing to meet specific needs.	Low-income individuals face financial shocks such as health crises and natural disasters, perpetuating cycles of poverty and financial instability.
7	Reliance on External Funding	Micro-insurance schemes depend on external donors to operate.	Programs struggle to achieve financial sustainability, with few schemes reaching full cost-recovery, limiting the long-term viability of micro-insurance in Bangladesh.
8	Inadequate Re-enrollment and Data Management	Low re-enrollment rates and lack of robust data management systems.	Without proper data on client behavior and claims, insurance providers cannot improve products or sustain services, reducing the effectiveness of micro-insurance schemes.

2.3 Comparative Analysis: Lessons from Peer Countries

The peer country micro-insurance case reveal the following insights:

Country	Strengths	Weaknesses	Lessons for Bangladesh
Bangladesh	MFI integration, strong NGO involvement, growth in agricultural micro-insurance	Limited product range, low penetration, regulatory challenges	Improve product diversity and regulatory frameworks. Leverage existing MFI networks to promote digital platforms like bKash for broader access and awareness.
India	Diverse products, government-driven schemes, supportive regulatory framework	Slow claims processing, limited awareness	Streamline claims processing through technology and simplify policy language for better awareness. Adopt India's regulatory framework to encourage private-sector participation.
Philippines	Comprehensive regulation, strong natural disaster coverage, high penetration	Premium affordability issues, dependency on donor funding	Develop a clear strategy for premium subsidies to improve affordability. Philippines' extensive awareness campaigns offer a model to increase uptake and reduce dependency on donor funding.
Kenya	Use of mobile technology, strong health and agricultural micro-insurance, public-private partnerships	Data gaps, low trust in providers	Integrate mobile platforms with micro-insurance services, learning from Kenya's success with mobile technology to increase accessibility, trust, and reduce data gaps.

Appendix.

Types of micro-insurance for health and representative providers in Bangladesh, with contrasting examples from India (9,10,14,17)

Type of product	Provider	Population covered	Economic profile of subscribers	Coverage	Premium
Microinsurance for health	Grameen Kalyan, Society for Social Services, BRAC, etc. ²	Bangladesh: 115,000 policy-holders, 560,000 lives covered; Limited number of districts	Women, microcredit members. Poor and ultra-poor households in area covered by micro-insurance services for health	Basic and preventative health services: consultation, immunization, and family-planning services Normal delivery 10–40% discount on medicines 50% discount on pathology tests Hospitalization up to Tk 1,000 (US\$ 14) SSS covers surgery (co-payment is Tk 3,000 (US\$ 44))	Varies by organization Tk 20–480 per year (US\$ 0.30–7.0 per year) Tk 10–20 (US\$ 0.15–0.30) co-payment in some schemes
Microinsurance for health	Yeshasvini ³	India: 1.45 million people covered in Karnataka	Low-income but not ultra-poor Cooperative members, work in agricultural sector Average income: Rs 1,500 (US\$ 34) per month, 60% male, 40% female	Covers 1,600 types of surgeries at network hospitals Maximum benefit per person per year—Rs 200,000 for an annual premium of Rs 120	Rs 120 (US\$ 2.75) per year per adult child – 50%
Integrated Insurance	VimoSEWA	India: 110,000 insured lives (2004) in Gujarat, expanding to other states	Near or below poverty-line, 100% work in the informal sector Only women can take out policies	Event: Maximum coverage Natural death: Rs 5,000 (US\$ 114) Health: Rs 2,000 (US\$ 45) Asset and loss: Rs 10,000 (US\$ 227) Accidental death: Rs 40,000 (US\$ 909) Spouse accidental death: Rs 15,000 (US\$ 5.70)	Rs 250 (US\$ 5.70) annual premium

* A full profile of 11 micro-insurance schemes for health operating in Bangladesh is available in the ILO publication (9), and details of the BRAC, Grameen Kalyan, and SSS micro-insurance schemes for health are available in the publication by Ahmed *et al.* (10);

† Full details of the Yeshavini MHI scheme are available in the publication by Radermacher *et al.* (13); SSS=Society for Social Services

Figure 5: Comparison between health Micro insurance services in Bangladesh and India [3]

2.4 The Case of Waadaa Insurance

Waadaa Insurance, founded in 2021, is a pioneering force in Bangladesh's insurance sector. Its approach is rooted in addressing a significant shift in the market. Prior to 2016, health insurance in Bangladesh primarily catered to corporate clients. However, Waadaa recognized an emerging trend focusing on previously excluded, niche communities. This insight proved invaluable, as what was initially perceived as a niche market revealed itself to be a vast, untapped mass market.

In our interview with Rashed Nawaz at Waadaa Insure, he signified that the company's success is built on strategic partnerships and technological innovation. Collaborations with industry giants like Telenor and Tonic Cash, as well as regulatory bodies such as Bangladesh Bank, the Microfinance Regulatory Authority (MRA), and PKSF, have been instrumental in Waadaa's growth. A particularly fruitful partnership with BRAC BIMA has also enabled it to reach an impressive customer base of over 12 million people.

The company's partnership model, especially with Microfinance Institutions (MFIs), has been a game-changer. While MFIs handle ground-level operations, Waadaa digitizes the data, automating backend processes. This Alternate Distribution Model (ADC) has allowed Waadaa to gain valuable KYC data and access a broader customer base through partnerships like the one with Grameenphone.

Waadaa offers two integrated platforms: a customer app and a sales force app. One of their recent innovations is a mobile handheld insurance product, available for purchase when buying phones from online retailers. The company's real innovation lies in the front-end interface with real-time notifications and the backend technology supporting their partnerships.

They have also reshaped the perception of insurance by pairing it with health tech services. For instance, Project Sarathi offers hospitalization coverage, 24/7 telemedicine, and unlimited family doctor consultations, which have been particularly attractive to Ready-Made Garment (RMG) workers. However, they face a major hurdle in this initiative due to the absence of any official policy on telehealth and telemedicine services in Bangladesh.

Regarding challenges, Rashed Nawaz identified the lack of transparency in traditional insurance as a major issue, which they address through their apps. Product development is another challenge, as existing traditional insurance products in Bangladesh are difficult to scale due to their go-to-market strategy involving sales representatives acquiring one customer at a time. While regulators have become supportive partners, he believed they should impose mandatory insurance for certain employee thresholds in factories, benefiting both factories and workers.

Nawaz also pointed out challenges in following IDRA guidelines, such as the lack of birth certificates among many people, making death settlement claims difficult due to lack of person verification. Fraudulence and bill tampering are additional issues they face.

In terms of regulatory recommendations, he suggested implementing a sandbox guideline to facilitate their operations and potentially introducing some level of compulsion for vulnerable groups, such as the 50+ community. He also proposed regulations requiring insurance for specific groups, with either individual or joint contributions, which they believe would be beneficial for the industry and society at large.

Finally, he mentioned that Waadaa, inspired by the US unicorn Lemonade, envisions implementing artificial intelligence and machine learning for its services in the future to offer fast, fully digital experiences through its app, where customers can buy policies and file claims without human interaction. AI-based bots will handle everything from underwriting to claims processing, making it much faster and more efficient than traditional providers.

2.5 Innovation in Insurance

2.5.1 Artificial Intelligence and Machine Learning

No longer a novel concept, artificial Intelligence (AI) has already become a game-changer in the insurance sector with global leaders such as the United States, United Kingdom, France, Germany, India, and Singapore having demonstrated remarkable success in leveraging AI to improve pricing models, operational efficiency, and product innovation.

AI's impact on rate making, a critical process in insurance operations, is particularly significant and offers the following critical benefits:

- **Real-Time Data Analysis:** AI systems process vast amounts of data in real time, allowing insurers to stay current with market trends and customer behaviors. This enables the setting of competitive and fair premium rates that reflect current realities.
- **Error Reduction:** By automating data processing, AI significantly reduces human errors, ensuring higher accuracy and data integrity in rate calculations.
- **Enhanced Profitability and Risk Management:** AI's ability to analyze claims frequency, policyholder demographics, and other relevant factors allows for optimized profitability and improved risk management.
- **Personalization and Customer Satisfaction:** AI-driven analytics enable insurers to offer personalized, value-based pricing, increasing competitiveness and enhancing customer satisfaction through tailored insurance solutions.

Thus, implementing AI is promising to Bangladesh's micro insurance landscape due to:

- **Personalized Pricing Models:** AI can analyze vast datasets encompassing demographic, socioeconomic, and behavioral data to create sophisticated predictive models. These models enable micro-insurers to offer personalized pricing that accurately reflects individual risk profiles while remaining affordable for low-income populations.
- **Dynamic Pricing Strategies:** The agility of AI systems allows for dynamic pricing models that can adapt to rapidly changing market conditions and risk factors, crucial in the volatile economic environments often faced by micro insurance customers.
- **Predictive Models for Risk Assessment:** Machine learning algorithms can predict the likelihood of future claims with greater accuracy, particularly valuable in understanding and mitigating risks in underserved communities.
- **Automation and Operational Efficiency:** AI can automate numerous time-consuming tasks in the insurance process, from data cleaning and feature selection to model evaluation. This

automation translates to significant time and cost savings, potentially lowering operational costs and making micro insurance more viable and accessible.

2.5.2 Parametric Insurance

While AI forms the backbone of technological innovation in micro insurance, parametric insurance represents another groundbreaking approach particularly suited to micro insurance needs:

- **Event-Based Payouts:** Unlike traditional insurance that pays based on assessed losses, parametric insurance disburses funds upon the occurrence of a predefined event (e.g., a cyclone reaching a certain wind speed or rainfall exceeding a specific threshold).
- **Rapid Disbursement:** This model enables swift payouts as claims are paid to the entire population in question when certain parameters are met, crucial for low-income policyholders who may lack the financial resilience to weather prolonged claim processes.
- **Reduced Administrative Burden:** By eliminating the need for lengthy claims assessments, parametric insurance significantly reduces administrative costs, making it more feasible for micro insurance providers.

Global Success Stories in Parametric Insurance:

- a) **Mexico's Natural Disaster Protection:** Mexico has implemented parametric insurance to safeguard against earthquakes, ensuring quick fund disbursement to affected areas without the delays associated with traditional damage assessment.
- b) **Caribbean Catastrophe Risk Insurance Facility:** This multi-country risk pool provides parametric coverage against hurricanes and earthquakes, offering rapid financial support to Caribbean nations in the aftermath of natural disasters.

Bangladesh can adopt the strategies above and tailor them to best fit the needs of marginalized communities in it. Micro insurance services can be integrated to existing mobile financial services for premium payment and claim disbursements, and handheld technology can be utilized to fast-track claim reporting, settlement, and tracking. This must be combined with novel schemes such as disaster risk insurance, livestock coverage, and protection for informal workers.

3. Digital Credit in Bangladesh

3.1 Digital Credit Landscape in Bangladesh

As of 2022, despite rapid digitalization in Bangladesh, access to formal credit remains limited. Only 9.1% of the population accesses formal credit, even though 60% of adults have mobile financial service (MFS) accounts and are supported by 1.1 million agents. This contrasts with the 36.8% of people who borrow from informal sources such as family, acquaintances, and local cooperatives, highlighting the gap in formal lending.

While Bangladesh boasts 126 million internet subscriptions (92% mobile-based), 95% of MFS transactions involve basic services like cash-in, cash-out, or peer-to-peer (P2P) payments, with only 5% dedicated to other use cases, such as utility bill payments and salary disbursements.

Several digital credit initiatives aim to close this gap. In 2020, City Bank piloted a "Nano Loan" product in collaboration with bKash, targeting LMI consumers. By 2021, Prime Bank introduced a similar loan for blue-collar workers. Despite these efforts, the credit-to-deposit ratio in agent banking remains low at 2.52%, even though agent banking deposits totaled USD 2.59 billion as of November 2021 [4].

Bangladesh Bank has introduced a BDT 200 billion (USD 2.36 billion) stimulus package to support lending to cottage, micro, small, and medium enterprises (CMSMEs), which make up 80% of the market. The central bank is also pushing for the adoption of digital onboarding and eKYC to simplify the loan application process, potentially reducing the number of application pages from 14+ to two.

With increasing digital readiness and initiatives like neo banks, Bangladesh has a foundation for expanding digital credit. However, success will require careful regulation to ensure consumer protection and prevent predatory lending practices. The question now is not whether digital credit will expand, but how quickly it can meet the demands of LMI populations and CMSMEs [4].

3.2 Case of AGAM: Revolutionizing Digital Microcredit

AGAM International, founded by Shabnam Wazed, is a UK-based fintech company focused on delivering innovative financial solutions to underserved and unbanked populations. In our interview, she mentioned that AGAM's mission is to enhance lives by enabling financial institutions to offer accessible and inclusive credit products through technology. The company's fintech solutions are tailored to support various markets, with Bangladesh being a primary focus due to its emerging economy and large unbanked population.

The company's technology is deployed in three formats, leveraging AI to streamline underwriting processes, improve credit scoring, and facilitate lending for marginalized groups. AGAM's commitment to financial inclusion is reflected in its partnerships and products, specifically targeting Ready-Made Garment (RMG) workers and other underserved communities.

AGAM's products are highly scalable, particularly within the RMG sector. One of AGAM's flagship offerings is the Prime Agrim nano-loan, developed in collaboration with Prime Bank. This product allows RMG workers to access credit against their salaries within minutes. The

appeal for companies is clear: the integration of AGAM's technology with factory payroll systems ensures seamless loan disbursements tied to pay dates, reducing the administrative burden on both employers and employees.

In addition to nano-loans, AGAM offers an Earned Wage Access (EWA) product, designed for workers with monthly salaries above 25,000 BDT. This product allows workers to withdraw part of their earned wages before payday. The combination of nano-loans and EWA loans demonstrates AGAM's versatility in addressing the short-term financial needs of the RMG workforce. AGAM's progressive credit scoring system, which factors in questionnaire responses, educational modules, and repayment behavior, has enabled the average loan size to grow from 1,950 BDT to 3,700 BDT, with EWA loans typically range from 11,000 BDT to 18,000 BDT.

Workers with accounts at partner banks can access AGAM's products by applying for nano-loans through the AGAM app and entering a few basic details, such as their bank account number. The rest of the process is streamlined, making it user-friendly for individuals who may not be familiar with traditional banking procedures. AGAM's integration with factory payroll systems further simplifies the process, ensuring that loans are disbursed automatically based on workers' pay cycles.

AGAM follows the Know Your Customer (KYC) procedures mandated by its partner banks, but the company has identified areas for improvement in this process. In our interview, Shabnam Wazed specifically called for greater clarity regarding the use of birth certificates as a second form of identification for low-income groups. Many individuals in Bangladesh have invalid National ID (NID) cards, which complicates the process of opening accounts or applying for loans. This discrepancy often leads to confusion, eroding trust in the banking system and pushing individuals toward informal lenders.

She also mentioned the opportunity for Bangladesh to learn from India's centralized data infrastructure, which has facilitated greater financial inclusion and suggested that Bangladesh could benefit from a similar system, wherein smartphone users store their financial data in a central, secure platform (similar to Apple Wallet). This would improve access to finance for underserved individuals by creating a reliable, unified data source for both the government and financial institutions.

A primary challenge in the disbursement of nano-loans for AGAM has been the requirement for workers to have accounts with partner banks. For Earned Wage Access (EWA) loans, AGAM has broadened its reach to include non-partner banks, overcoming some of these barriers. Nonetheless, infrastructural gaps and the lack of APIs have posed significant challenges, especially in cases where payroll systems need to be modified for loan disbursement.

The process of testing and implementing the digital infrastructure has been rigorous, requiring close collaboration with the central bank and tax authorities to ensure compliance with regulatory standards. Despite the complexities, AGAM has built a robust system that meets regulatory requirements and ensures accurate and efficient loan disbursement.

3.3 Case of Mitro: Transforming Financial Access for RMG Workers

Mitro Fintech, led by CEO Kishwar Hashemee, is a pioneering fintech company focused on addressing the unique financial needs of Ready-Made Garment (RMG) workers in Bangladesh. Unlike traditional banks, Mitro recognizes the temporary nature of employment in the RMG sector and the distinct life goals of its workers. Hashemee illuminated the company's core mission in our interview that is to create innovative, technology-driven financial solutions that cater specifically to the aspirations of these workers, which include homeownership, entrepreneurship, and short-term financial needs like Qurbani livestock purchases.

One of the key challenges identified by Mitro is the reluctance of RMG workers to engage with traditional banking services. Many workers see their jobs as temporary and are not inclined to open long-term accounts at one partner bank of a factory. Additionally, workers, especially women, are often hesitant to take out loans due to being more stringent about their financial decisions and seeing loans as a last resort. And since many women are secondary earners in their households, their incentive to borrow is even lower.

Hashemee noted that many banks in Bangladesh are reluctant to offer micro-loans to RMG workers because they believe servicing lower ticket sizes will increase their cost per loan since they approach customer acquisition from a traditional agent-to-customer mindset where their customer acquisition cost directly scales with each additional customer they service. However, Mitro's analysis shows that by leveraging digital technology, the marginal cost of each additional loan disbursed can be brought down to near zero, hence the cost of disbursement turns out to actually be lower for smaller loans, meaning that servicing these loans can result in a net profit increase. The reluctance of banks to engage in this market stems from a lack of data and an unwillingness to experiment with newer lending models.

Mitro advocates for the use of technology to reduce underwriting and disbursement costs, thereby protecting profit margins. Hashemee recommends that banks embrace technology and think of themselves as licensing businesses, where various aspects of banking services can be digitized in collaboration with fintech partners. This approach would allow banks to scale their micro-loan offerings without increasing operational costs.

Finally, Hashemee called for the development of a comprehensive fintech policy that allows fintech companies to experiment with innovative products in a regulated environment. Such policies would enable fintechs to prove their viability and scale effectively. He also recommended that banks become more comfortable with experimenting and adopting new technologies, as this will be key to reducing costs and expanding financial services to underserved populations.

Conclusion

Bangladesh stands at a critical juncture in its digital financial inclusion journey. While significant progress has been made, particularly in mobile financial services, the road ahead demands innovative solutions to persistent challenges. The country must navigate the complexities of bridging the urban-rural divide, enhancing digital literacy, and building trust in digital financial systems.

The success stories of companies like Waadaa Insurance, AGAM, and Mitro demonstrate the potential of tailored, technology-driven solutions for underserved populations. These pioneers are not just filling market gaps; they are reshaping Bangladesh's financial landscape. Their approaches offer valuable lessons in leveraging partnerships, utilizing alternative data, and creating user-friendly interfaces that cater to the specific needs of marginalized communities.

To fully realize its digital financial inclusion potential, Bangladesh must embrace a holistic approach. This involves fostering a regulatory environment that encourages innovation while ensuring consumer protection, investing in digital infrastructure to improve connectivity nationwide, and promoting financial education to empower citizens to make informed decisions.

The integration of advanced technologies such as AI and machine learning, coupled with the adoption of parametric insurance and alternative credit scoring models, presents exciting opportunities. These innovations can significantly expand access to financial services, particularly for those traditionally excluded from the formal financial system.

As Bangladesh moves forward, it has the opportunity to become a model for other developing nations in digital financial inclusion. The key lies in balancing innovation with inclusivity, ensuring that technological advancements benefit all segments of society. By addressing current challenges head-on and embracing forward-thinking strategies, Bangladesh can create a robust, inclusive digital financial ecosystem that not only serves its population but also contributes to broader economic growth and social development.

The journey towards comprehensive digital financial inclusion is complex, but the potential rewards are immense. As Bangladesh continues to innovate and adapt, it is poised to transform its financial landscape, empowering millions and setting a new standard for inclusive economic growth in the digital age.

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