

**BETTER THAN CASH
ALLIANCE**



**Cabinet
Division**
Government of the People's
Republic of Bangladesh



National Digital Payments Roadmap | Bangladesh 2022-2025



March 2022

AUTHORS

Project Leadership:

Keyzom Ngodup Massally, Nabila Khurshed, Camilo Tellez-Merchan

Technical Partner (PwC):

Azizur Rahman, Vikas Singh, Raina Karim

Strategic Direction from a2i:

Anir Chowdhury, Dewan Md. Humayun Kabir

Photos

© Better than Cash Alliance/Amit Rudro

**BETTER THAN CASH
ALLIANCE**



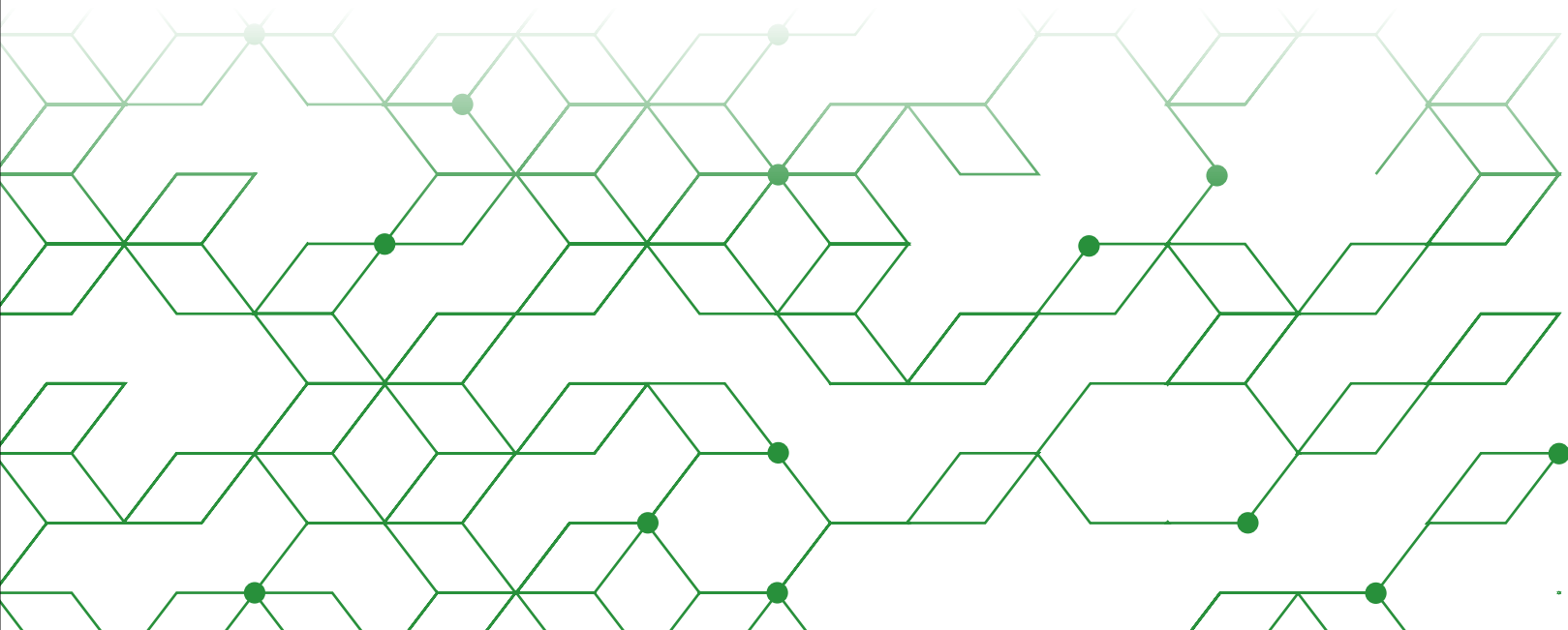
**Cabinet
Division**
Government of the People's
Republic of Bangladesh



**ICT
DIVISION**
FUTURE IS HERE



National Digital Payments Roadmap | Bangladesh 2022-2025





Contents

1. Executive summary	9
1.1. Transition of digital payments ecosystem	11
1.2. Priority sector highlights	11
1.3. Priority areas of the Roadmap	12
1.4. Solutions to drive responsible adoption and growth of digital payments	13
1.4.1. Data to support solutions and product design for individuals, particularly women	13
1.4.2. Ensuring user capacity and access	14
1.4.3. Treating users' fairly by ensuring access to credit to those without a formal credit history	15
1.4.4. Ensure funds are protected and accessible	16
1.4.5. Providing user choice through interoperability	17
1.4.6. Champion value chain accountability	17
1.4.7. Ensuring recourse is clear, quick and responsive	18
1.5. Solutions for wider adoption of digital payments in retail	18
2. Drivers for the Roadmap	21
2.1. Aligning with stakeholder inputs	22
2.2. Facilitating an enabling environment for digital payments	24
2.3. Ensuring responsible digital payments for stakeholders	27
3. Design components for the Roadmap	30
3.1. Design principles	31
3.2. Priority areas for solutions	34
3.2.1. Cost distribution structure	35
3.2.2. New use cases and business models	35
3.2.3. Payment solutions and infrastructure	36
3.2.4. Data privacy, protection, and trust	37
3.2.5. Demand–supply gap	37
3.2.6. Building financial and digital capability	38
4. Solutions for the Roadmap	40
4.1. Vision of the Roadmap	41
4.2. Data to support solutions and product design for individuals, particularly women	42
4.2.1. National digital payments dashboard with sex-disaggregated data	42
4.2.2. Consumer perception surveys	46
4.2.3. Fintech regulatory sandbox	48

4.3. Ensuring user capacity and access	51
4.3.1. Digital ID-based payment solutions	51
4.3.2. National Financial Literacy Strategy	54
4.4. Treating users' fairly by ensuring access to credit to those without a formal credit history	56
4.4.1. Alternative data and credit scoring for new-to-credit (NTC) users	56
4.4.2. Agriculture credit scoring solution	58
4.4.3. MSME invoice-discounting platform	60
4.5. Ensure funds are protected and accessible	62
4.5.1. Central consent-based framework	62
4.5.2. Cross-border remittance platform	64
4.5.3. Consent-based direct debit payments (R2P)	68
4.6. Providing user choice through interoperability	70
4.6.1. Open banking Application Programming Interfaces (API) platform	70
4.6.2. Real-time payment (RTP) systems	73
4.6.3. Payment interoperability	76
4.7. Champion value chain accountability	78
4.7.1. Government subsidy for direct-to-citizen cash-based payments	78
4.7.2. Optimisation of retail payment costs through global and local payment schemes	80
4.7.3. Public, private, and mixed cost incentivisation strategies	81
4.8. Ensuring recourse is clear, quick and responsive	83
4.8.1. AI/ML-based fraud detection system	83
4.9. Solutions for wider adoption of digital payments in retail	85
4.9.1. Software Point of Sale (SoftPOS) solutions for merchant payments	85
4.9.2. Buy Now Pay Later (BNPL) scheme for e-commerce	87
4.9.3. MSME lending solution for merchants	89
4.9.4. Integration of digital payment providers with telemedicine and online consultancy websites and applications and enabling push- and pull-based transactions using the RTP platform	91
5. Vision of the National Digital Payments Roadmap	93
5.1. Critical success factors for the Roadmap	103
5.2. Potential impact of the Roadmap	103
5.2.1. Empowering the economy	104
5.2.2. Achieving SDGs	104
5.2.3. Women's financial inclusion	106
6. Bibliography	107

List of figures

Figure 1: Design principles of the Roadmap	13
Figure 2: Drivers for the Roadmap	21
Figure 3: UN Principles for Responsible Digital Payments	28
Figure 4: Design principles for the Roadmap	31
Figure 5: Emerging focus areas for the Roadmap. CSME = cottage, small, and medium enterprises	39
Figure 6: Indicator parameters of customer surveys	46
Figure 7: Fintech ecosystem in Bangladesh	48
Figure 8: Benefits of regulatory sandbox	49
Figure 9: Institutions that will govern and monitor the Strategy	54
Figure 10: Potential participants in the open banking initiative in Bangladesh	71
Figure 11: Benefits of RTP systems	73
Figure 12: Core features of RTP systems	74
Figure 13: Payment interoperability approach	77
Figure 14: Stakeholder initiatives and their objectives	82
Figure 15: National Digital Payments Roadmap for Bangladesh	96

List of tables

Table 1:	Inputs received from stakeholder groups	22
Table 2:	Inputs received from priority sector stakeholders	23
Table 3:	The three core initiatives relevant to overall Roadmap solutions	25
Table 4:	Initiatives that may have a bearing on the Roadmap solutions	26
Table 5:	Roles and responsibility of digital payment stakeholder groups	29
Table 6:	Insights into cost distribution	35
Table 7:	Insights into new cases and business models	35
Table 8:	Insights into payment system infrastructure	36
Table 9:	Insights into data privacy and trust	37
Table 10:	Insights into the demand–supply gap	38
Table 11:	Insights into building capacity	38
Table 12:	Direct and indirect data points to be considered when designing a dashboard data mart	43
Table 13:	Risks and mitigation measures for the digital payment dashboard solution	45
Table 14:	Risks and mitigation measures for the digital ID-based payments solution	53
Table 15:	Risks and mitigation measures for use of alternative data and credit scoring	58
Table 16:	Risks and mitigation measures for the MSMSE invoice-discounting platform solution	62
Table 17:	Risks and mitigation measures for the central consent-based framework	64
Table 18:	Risks and mitigation measures for cross-border remittances	67
Table 19:	Risks and mitigation measures for consent-based direct debit payments	70
Table 20:	Risks and mitigation measures for open banking API platform	73
Table 21:	Risk and mitigation measures for a RTP system solution	76
Table 22:	Risk and mitigation measures for payment interoperability	78
Table 23:	Options for different cost distribution solutions	79
Table 24:	Options for growing and sustaining digital payments	81
Table 25:	Initiatives across public and private sectors that promote digital payments	82
Table 26:	Risks and mitigation measures for AI/ML-based fraud detection systems	85
Table 27:	Risks and mitigation measures for SoftPOS solutions	87
Table 28:	Risks and mitigation measures for the BNPL scheme	88
Table 29:	Risks and mitigation measures for MSME lending solutions	90
Table 30:	Risk and mitigation measures for integrating digital payments with online health applications	92
Table 31:	Timeline and considerations for implementation of the Roadmap	96

1

EXECUTIVE SUMMARY





1. Executive summary

Investment in the digital infrastructure of the country has been a priority for the Government of Bangladesh in the past decade, ever since the vision for Digital Bangladesh was launched.¹ Digital payments are critical to the government's vision and ensuring these are scaled responsibly is now critical. The National Digital Payments Roadmap ('the Roadmap') provides a high-level plan to expand the adoption of responsible digital payments in a way that is agile, inclusive, and helps achieve the Sustainable Development Goals (SDGs).² It is designed to accelerate collaboration between the public and private stakeholders and present a framework for using new approaches and technologies to transform the payment ecosystem. The Roadmap builds on the UN Principles for Responsible Digital Payments³ ('UN Principles') and recommends drivers for foundational elements: environment, infrastructure, processes, policies, and actions. The solutions are mapped to the national vision and aligned with the capabilities of the ecosystem participants.

Much of the shift towards digital payments in recent years can be attributed to the digitisation of government payment streams,⁴ adoption of digital payments across income groups and geographies, financial literacy and communication initiatives, and policy and regulatory reforms designed to develop the digital infrastructure.

1.1 Transition of digital payments ecosystem

Over the last five years, Bangladesh has witnessed a steep rise in financial inclusion; the SDG Cell at the Bangladesh Bureau of Statistics suggests that 79 percent of adults are financially included,⁵ with one in five financial transactions happening digitally.

- Government payments: The government made 26 percent of its payments by volume and 58 percent by value, digitally.
- Business payments: 23 percent of payments by volume and 6 percent by value were made digitally across business payment use cases.
- Person payments: 19 percent of payments by volume and 18 percent by value were made digitally across person-based use cases.

Government leadership on digitisation has meant that government salaries, benefits, and subsidies have shifted toward digitisation in the past few years. The government has digitised 100 percent of its wage payments to employees – up from 36 percent in 2016. Such streams saw the steepest rise in electronic payment adoption due to the digitisation of social safety net payments and wage payments for ready-made garment (RMG) workers.

The government has begun digitising the payment of import and excise duties from 2021, where 12 percent of import and excise duty payments has already been digitised. In 2016, only 8 percent of all utility payments were paid digitally. In 2021, 18 percent of business-to-business (B2B) utility bill payments and 15 percent of person-to-government utility bill payments were paid digitally through channels such as mobile wallets and the ekPay platform.

Domestic person-to-person (P2P) payments have seen a sharp increase in growth, with the volume of P2P payments using mobile financial services (MFS) increasing by 69 percent from FY2018–19 to FY2019–20. Domestic P2P payments further increased by 24 percent from December 2020 to May 2021. Only 11 percent of international remittances used formal channels in 2016, but this number changed to 24 percent in 2021, reflecting a growth in the use of formal channels.

While cash remains popular, digital P2P payments have shown a considerable uptake during and after the COVID-19-imposed lockdowns as more people use their mobile devices for payments.

1.2 Priority sector highlights

The COVID-19 pandemic has affected the RMG sector on multiple fronts, causing a decline in exports, losses in the informal segment, and a rapid adoption of digital wage disbursements by factories. Salary disbursements through MFS accounts increased by 250 percent⁶ in volume and 330 percent⁷ in value in July 2020, compared to April 2020. This was thanks, in a large part, to the government's stimulus package. However, the rate of increase dipped to 54 percent after the government's initiative ended in August 2020, mainly because there was no added incentive to continue paying digitally. Digital wage payments give workers more control over their earnings and increase their access to other financial services.

Credit disbursement by banks in the agricultural sector is growing; 27 percent of farmers' small-value bank accounts now receive subsidies digitally. The disbursement of agricultural credit has grown from Bangladeshi Taka (BDT) 210 billion in 2016–17 to BDT 227.5 billion in 2019–20. Loan disbursement through formal channels — banks and microfinance institutions (MFIs) — is increasing gradually. The COVID-19 pandemic disrupted the supply chain in agriculture, decreased credit disbursements, and caused labour shortages. The government has supported the sector through stimulus packages, labour market assistance, and capacity-building measures.

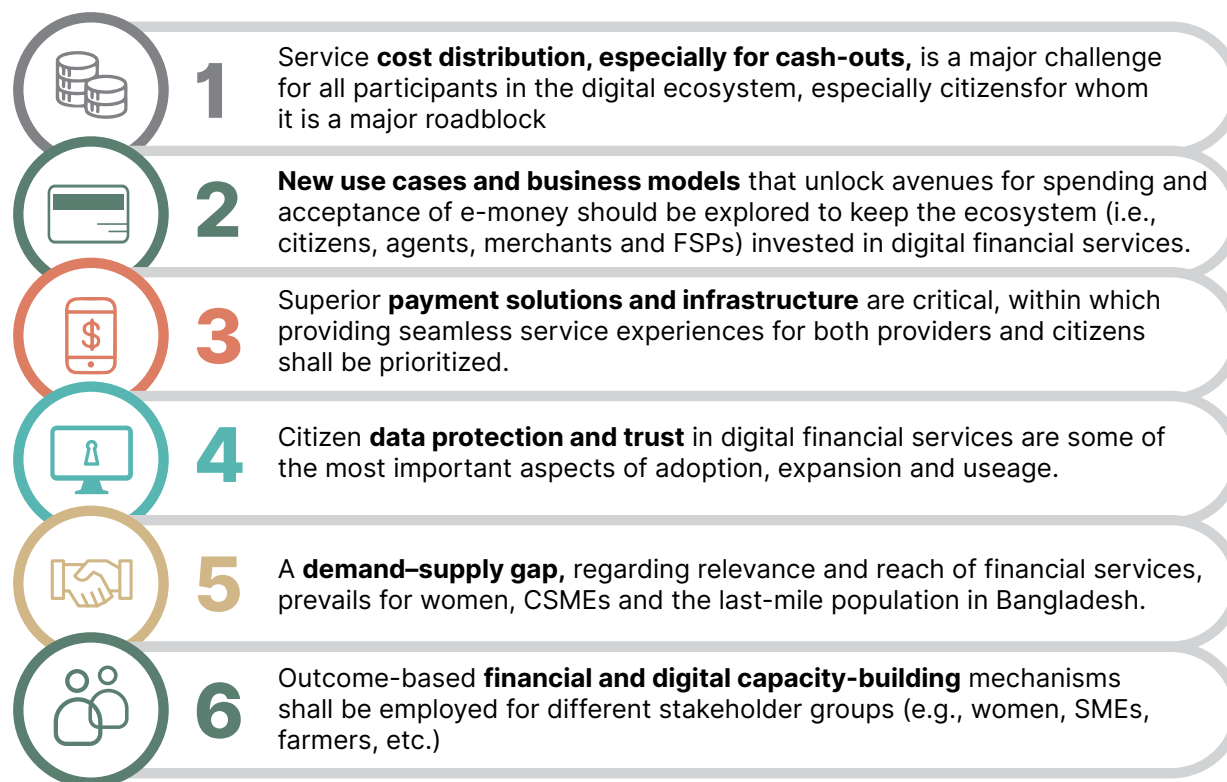
In the education sector, the pandemic disrupted in-person classes and led to the emergence of distance learning and online classes. Closure of educational institutions and restrictions on movement affected 36 million students between the pre-primary and tertiary levels. In primary education, 100 percent of stipends and 9.6 percent⁸ of private school fee payments are made digitally. In FY2020–21, 5.2 million students from grades 6 to 12 received BDT 2.5 billion (US\$29.41 million) through their MFS accounts. Digital payments are a critical instrument in digitisation of government services and payments in the education sector.

The retail sector showed resilience during the pandemic, with an uptake in the use of digital platforms for B2B transactions^{9,10} and at merchant outlets. Merchant payments using digital accounts increased by 4.5¹¹ times in volume and 15¹² times in value from April 2020 to December 2020. E-commerce has been gaining acceptance in Bangladesh over the last five years. COVID-19 has fuelled the use of digital payments in e-commerce — 20 percent¹³ of orders are now paid digitally.

1.3 Priority areas of the Roadmap

Digital payments have become the preferred payment option for many user segments, and some use cases have seen massive shift towards digital, from utility bills and business loans to remittances and insurance purchases. The priority areas of the Roadmap have been identified through consultation with various stakeholders and internal assessment of the digital payment landscape.

The solutions presented here have been derived from an analysis of the 2022 Country Diagnostic, conducted by the Better Than Cash Alliance, which evaluates the state of digital payments. The UN Principles have also guided the overall process of solution design, with an emphasis on the following (see Figure 1):

Figure 1: Design principles of the Roadmap

1.4 Solutions to drive responsible adoption and growth of digital payments

1.4.1. Data to support solutions and product design for individuals, particularly women

- National digital payments dashboard with sex-disaggregated data:** As the pace of digital payment adoption increases, a dashboard ensures accuracy in collection, storage, and analysis of data through a single source. Customarily, data related to digital payments are kept in silos spread across entities. Raw data are generally unstructured and unstandardised, having come from multiple sources. This is an initial hiccup but established the importance of creating a centralised database in the long run. A country-wide digital payment roadmap is a collaborative exercise with a nodal agency in place. Once the data sources are identified and reporting agencies are created, the data published on the dashboard will become the product of several design considerations. To ensure policies are not gender-blind, tracking of sex-disaggregated data is essential. Data segregated by sex will also help financial services providers and innovators design solutions that specifically cater to women.

- **Consumer perception surveys:** Consumer surveys can help evaluate the opportunities and challenges faced by digital payment users and non-users. These can help users in gaining know-how of digital payment awareness, adoption, gender-disaggregated data, and usage among individuals and enterprise consumers. These surveys highlight the challenges that governments, financial service providers (FSPs), and regulators should prioritise.
- **Financial technology (fintech) regulatory sandbox:** Fintech companies can test new business models, products, and services in a regulatory sandbox — safe testing grounds in a controlled environment — without a fear of immediate consequences. A sandbox can act as a layer between financial institutions and innovation initiatives, which facilitates collaboration between fintech companies and incumbents. It may relieve financial institutions of the hassle of dealing with multiple data requests — often the first step in solution development — as the sandbox serves as a ready reservoir of process-related information. However, regulatory sandboxes are not always necessary nor sufficient to promote financial inclusion, and similar results may be achieved through innovation offices and other tools.¹⁴

1.4.2. Ensuring user capacity and access

- **Digital identification (ID)-based solutions:** Digital IDs address the challenges caused by limited smartphone¹⁵ and internet penetration¹⁶ in Bangladesh. Digital ID-based payments can be enabled through biometrics for user convenience. Only businesses might require an additional peripheral device. Given the evolving device and biometric standards, smartphones will likely become the go-to option. This will make acquisition easier, cost-effective, and faster, eventually making digital transactions ubiquitous.

This solution fosters inclusion of women in the formal financial system by addressing conventional challenges like the users' hesitancy to share their mobile numbers with agents. Digital ID allows them to complete transactions with the help of biometrics alone.

- **National Financial Literacy Strategy:** This aims to extend financial literacy, encourage active savings behaviour, and foster awareness of the benefits of credit. The manifold objectives of the Strategy are as follows:
 - Instil savings, money management, financial protection habits among consumers
 - Include digital and financial literacy as part of school curricula
 - Raise awareness of financial instruments, access channels, and their usage
 - Provide protection from frauds and scams
 - Instil a financial planning habit.

The National Financial Literacy Strategy is an inclusive initiative that provides guidance and measures for financial literacy among priority groups, particularly women. Additionally, in line with the UN Principles, it advocates for grievance handling and recourse mechanisms that are accessible, convenient, and straightforward for users.

1.4.3. Treating users' fairly by ensuring access to credit to those without a formal credit history

- **Alternative data and credit scoring for new-to-credit users:** Alternative credit scoring refers to the use of data from traditional and non-traditional sources of consumer behaviour for credit risk assessment. Traditionally, credit bureaus have been the only source of holistic consumer credit information, which lending institutions use to assess risk and reduce bad debt and market risk. Telecommunication companies (Telcos) and utilities are the most common sources of alternative data. Others include e-commerce, travel, payments, government transactions, and asset holdings. The credit assessment is done by applying artificial intelligence (AI) or machine learning (ML) to the data from these sources. This helps lenders to reach the underbanked population. However, there is a need for national level collaboration to ensure AI for digital payments is done responsibly and in a way that considers power asymmetries and privileges vulnerable populations.

The agriculture alternative credit scoring system will ensure fair use of algorithms and inputs and assumptions made in areas such as profiling and recommendation engines to identify biases. This is reflected in another solution within the Roadmap, wherein users provide initial consent to share and process their personal and financial data for credit assessment.

- **Agriculture credit scoring solution:** On the agriculture credit scoring solution, data collection and user-farmer relationship management can be undertaken by players — MFIs, fintech firms — and data analysis can be championed by financial institutions, such as MFS providers and banks, or an aggregator. Financial institutions would gain higher-visibility credit scores or well-defined reference points for farmers. Last-mile players could assist in collecting data, later aggregated by financial institutions. Their business model will evolve along with transactions and the associated data of the farmers.

Data fed into the scoring model in the agriculture credit scoring solution will ensure holistic and realistic assessment of the repayment capacity of the smallholder farmer (SHF). It will ensure that farmers' data are used with their explicit consent and only for the specific purpose. This is reflected in the agriculture credit scoring solution, wherein farmer data are sourced from a secured database and the financial institution seeks farmers' consent to share and process their data.

- **Micro, small and medium enterprise (MSME) invoice-discounting platform:** The platform will be a collaborative effort to facilitate the discounting of invoices for MSMEs from corporate buyers through a range of lenders. This can be a transparent and robust system to provide much-needed working capital to MSMEs. The process will be swift and simple for MSMEs and corporate buyers. Consolidated data and analysis can produce more informed financing decisions for MSMEs and build an additional revenue stream for lenders. This solution can be deployed through platform-as-a-service for other entities that can contribute to the growth of MSMEs.

The MSME invoice-discounting platform can minimise erroneous transactions and enable tracking of defaulted payments to lenders. It can also ease access to credit for small and informal entrepreneurs, including women-owned MSMEs. Today, only 4 percent of the MSME loans are disbursed to women;¹⁷ tracking and using sex-disaggregated data will help service providers design targeted programmes. Accountability and recourse mechanisms through agreements binding on all participants is also critical to the success of this platform.

1.4.4. Ensure funds are protected and accessible

- **Central consent-based framework:** A central consent-based framework acts as a gateway between the account holder, financial information providers (FIPs), and financial information users (FIUs). It enables FIPs to obtain an account holder's consent for sharing their data with FIUs and controls how the two share it between themselves. It ensures transparency of personal data usage by making the audit trail available to regulators and end-users while securing the personal information.

A comprehensive law governing data privacy for both customers as well as service providers may soon be required given the growing number of digital transactions and new users. Bangladesh can start establishing data privacy regulations in line with the global best practices.

- **Cross-border remittance platform:** The government has offered a 2 percent¹⁸ cash incentive on inflows to make the formal remittance channel more attractive, and the use of formal channels to send and receive remittance have grown as a result. In 2020, Bangladesh received US\$21.9 billion in remittances.¹⁹

The cross-border remittance platform will help build trust in digital payments by enabling clear and accountable guidelines for the prevention of fraud, theft, and mistaken payments. The countries party to the cross-border payments platform can convene to formulate bilateral guidelines, or conform to established global resolution guidelines, such as the Society for Worldwide Interbank Financial Telecommunications. It enables a real-time payment (RTP) infrastructure for cross-border payments to minimise losses and service interruptions. Cross-border payments through informal and conventional channels take a long time, which can be reduced using RTP corridors. This enables quicker reconciliation and settling of disputes.

- **Consent-based direct debit payments (request to pay; R2P):** The R2P (pull transactions) is a messaging framework that facilitates users' requests to complete real-time direct account-to-account payments. R2P allows a biller or payee to send an electronic request for payment to the debtor account directly. The payer receives it through an electronic interface, such as a mobile app (bank or MFS), reflecting the requested amount and due date. On the payer side, the platform will have options to pay in full or part, send messages, and to request an extension.

The consent-based direct debit payment (R2P) enables product features and user interfaces that minimise misdirected transactions. This is reflected in its consent mechanism, wherein the user has the authority to approve or reject the payment request. The R2P solution ensures easier tracking of user feedback, making reconciliation easier, through unique payment references tagged to transactions rather than usernames. This helps in tracking and resolving disputed transactions.

1.4.5. Providing user choice through interoperability

- **Open banking Application Programming Interfaces (API) platform:** An open banking API platform can help digital payments deliver to their potential. Payments, credit, and corporate banking can be enabled for cross-sector participants. Products and services can be upgraded for target entities, including RMG workers, teachers, students, small businesses, SHFs, and input retailers.

The open banking API platform allows financial institutions to collaborate and add third-party capabilities to their core business offerings, creating innovative business models and focused products. Interoperability is also a critical foundation for open banking standards and platforms.

- **RTP systems:** RTP systems offer instant payment transfers, extensive data exchange, real-time messaging, instant confirmations for both payees and payers, and round-the-clock availability. RTP payments can assist organisations and individuals increase cash flow while also providing operational efficiencies, user engagement, data transparency, and accuracy.
- **Payment interoperability:** The interoperability framework and the proposed Interoperable Digital Transaction Platform must adhere to the payment-specific solutions provided in the Roadmap. Participants must have know-how of the conformity of the proposed solutions with the interoperability framework and national standards. This will result in increased acceptance of digital payments, improved user experience, and lower service provider costs. It will also increase market competitiveness, which will benefit users in the long run. The Bangladesh Bank should also encourage licensed banks to participate in Automated Teller Machine- and Point of Sale (PoS)-based interoperable transactions through the National Payment Switch Bangladesh.

1.4.6. Champion value chain accountability

- **Government subsidy options for direct-to-citizen cash-based payments:** Government subsidies are a major use case for digital payments. MFS, bank agents, and other third-party service providers play an important role in service delivery, ensuring that beneficiaries receive their subsidy conveniently and with low associated costs. Incentivising the value chain participants is imperative for an increase in adoption of digital payments.

- **Optimisation of retail payment costs through global or local schemes:** Transaction costs will be optimised through underlying global or regional payment schemes, provided the basic financial market infrastructure is established. Two scenarios relevant for a country in its digital payment adoption journey are assessed:
 - (1) growing digital payments adoption
 - (2) sustaining digital payments.
- **Public, private, and mixed cost incentivisation strategies:** Costs accompanying merchant payments can be optimised with direct or indirect initiatives driven by either public or private sector entities. The government and market players can cooperate in providing incentives or value-added services to merchants. A well-executed cost distribution structure will enable the participants to leverage partnership agreements, ensure commitment to the initiatives, and forge agreements on cost to ensure a fair handling of users. This will support transparency through disclosure of pricing information in a simple way.

1.4.7. Ensuring recourse is clear, quick and responsive

- **AI/ ML-based fraud detection:** Deployed by financial institutions, an AI/ML-based fraud detection system can analyse and derive patterns from all available data to detect fraudulent transactions in real time. The solution propagates fair usage of algorithms in user profiling and recommendation engines to identify biases. The AI/ML-based fraud detection systems process each data set on a case-by-case basis and build on the learnings from previous similar transactions. This minimises errors in identification of false positives and false negatives.

1.5. Solutions for wider adoption of digital payments in retail

- **Software Point of Sale (SoftPOS) solutions for merchant payments:** A software-only application, SoftPOS helps to receive contactless payments — from cards or near-field communication wallets — using one's smartphone without the need for any hardware. SoftPOS is responsible for 90 percent of the acceptance functionality from individual smartphones to the cloud. Encrypted messages are exchanged between the acceptance device and the cloud. This gives excessive security, lowers improvement and maintenance costs, and offers scalable distribution channels by permitting instant connectivity.

The opportunity to 'pay-as-you-go' permits small corporations to compete with medium and large retailers whilst remaining lean and nimble. With the SoftPOS designed specifically for merchants, they can accept payments using their mobile devices in a secure manner at low overhead and maintenance costs.

- **Buy Now Pay Later (BNPL) scheme for e-commerce:** Offered by banks, fintech firms, e-commerce firms at merchant POS terminals, and e-commerce websites, BNPL schemes have become widespread. As the name suggests, under BNPL, there is no need for an upfront payment. The payment can be spread across interest-free monthly instalments for ease of users. Schemes like BNPL increase the attractiveness of digital payments in the e-commerce sector in Bangladesh, where 80 percent of transactions are still cash-on-delivery. However, BNPL may cause increases in consumer debt and should be only promoted when adhering to responsible practices.
- **MSME lending for merchants:** Micro-credit for MSMEs and small merchants enables them to access loans from FSPs without a formal credit history. The FSP uses a business-specific financial history (e.g., order fulfilment, payment cycle) or other data to make its credit decision.

This solution will stimulate gender-focused innovative financial products and expand access to credit for a growing cohort of women entrepreneurs, particularly those in social commerce, especially through Facebook. The platform will ensure fair credit assessment for merchants and a platform that connects lending institutions to eligible merchants.

- **Integration of digital payment providers with telemedicine and online consultancy websites/applications:** During the COVID-19 pandemic, as patients hesitated to visit hospitals or clinics, alternative modes of healthcare delivery surged. Telemedicine apps and websites in Bangladesh witnessed a tremendous growth in traffic. Digital payments are becoming popular in the healthcare sector as virtual healthcare expands, and more patients expect the same seamless checkout experience as in e-commerce. Telemedicine and tele consultancy websites and applications should therefore be integrated with payment gateways, FSPs (banks, MFS providers), and aggregated digital payment platforms – such as ekPay – so users can pay through their bank or MFS accounts or cards.

The Roadmap is designed to chart the way to a vibrant and inclusive digital payments ecosystem that is both pervasive, responsible, transformational, capable of supporting and complementing the Digital Bangladesh vision, providing its citizens with financial tools tailored to suit their needs, and propelling the country into the next frontier of digitisation.

A man with a beard and a white cap is holding a smartphone. He is wearing a dark jacket over a light-colored shirt. The background shows shelves stocked with various items, suggesting a shop or warehouse setting. The image has a green overlay and a hexagonal pattern in the top right corner.

2

DRIVERS FOR THE ROADMAP



2. Drivers for the Roadmap

The design of the National Digital Payments Roadmap ('the Roadmap') and its foundation is a function of inputs from public and private stakeholders and from a systemic understanding of the ecosystem. These include (see Figure 2):

- **Inputs from government, corporate, and priority sector stakeholders**, which provide insights into the feasibility of Roadmap components.
- Initiatives from the government, regulatory bodies, and private entities, **forming an enabling environment** in which to evaluate the overlapping programmes.
- **Guidelines and principles**, which provide the parameters to define the landscape and assist in achieving impact and in aligning with strategic priorities.
- **Alignment of infrastructural landscape** to make the Roadmap realistic and agile.

These inputs will help build a realistic and time-bound Roadmap for Bangladesh, if they are accepted by the ecosystem participants and implemented with a clear vision. This process will also help to determine which components of the ecosystem need to be developed to achieve the desired end-state.

Figure 2: Drivers for the Roadmap



2.1 Aligning with stakeholder inputs

More than 60 stakeholders, including from the government and enterprises – and spread across priority sectors of ready-made garments (RMGs), education, agriculture, retail and e-commerce, and healthcare – were consulted across **seven sector-specific workshops**. They highlighted the state and adoption of digital payments in the country, explained the barriers, and provided guidance on the potential solutions (see Table 1).

Table 1: Inputs received from stakeholder groups

Stakeholder Group				
	Government	Banks	Mobile financial services (MFS)	Microfinance institution (MFI), financial technology (fintech), card networks and Telco
Inputs	 • Collaboration with market players can increase the proliferation of government initiatives. • Focus should be on reducing the need for cash-outs. • Products for small merchants, especially women-led merchants need to be created. • A model for incentivising digital payments should be created.	 • Banks want to expand the reach of their services through innovation and new business models. • Complex 1-to-1 integration with entities and platforms is a challenge. • Adoption of products and services can be increased through seamless data sharing where required. • Debit and credit cards incur high transaction charges because of interchange (IC) fees and therefore have low penetration.	 • Free cash-outs will give rise to parallel agent-based over-the-counter (OTC) transactions, impacting MFS revenues. • MFS providers depend on agents for their reach and revenues; the costs of cash-in via the agent network is borne by MFS providers (~0.9%).. • Only need-based products can change consumer behaviour toward digital payments. • Democratizing access to micro-credit for small retailers using MFS is essential. • Payment interoperability is foreseen, based on active input and participation from all stakeholders.	 • Women hesitate to adopt digital financial services (DFS) due to social and cultural factors. • Users need to trust digital payments. • Adoption of digital payments is a direct function of expanding their reach. • The government can prime the market and ensure fair competition. • Micro-credit risk assessment in the informal sector is crucial. • Building social, digital, and financial awareness through all participants is essential.

The priority sector value chains are transforming in structure and execution. Public sector initiatives now reach society as a whole, with the digitisation of government systems and development of the digital infrastructure. This not only impacts government-to-person (G2P) benefit payments, but also facilitates penetration of digital payments by service providers. Table 2 below highlights the inputs received from priority sector stakeholders:

Table 2: Inputs received from priority sector stakeholders

Priority Sector	 RMG	 Retail and e-commerce	 Education	 Agriculture
Inputs	• A holistic approach for service cost distribution throughout the value chain is required. • Products from financial institutions (FIs) required to create a digital payment ecosystem for workers. • An apex industrial sector body for oversight and top-down authority is required. • Capacity building is needed throughout the RMG ecosystem. • Informal and small factories face cash flow and tax compliance issues and are not eligible for government benefits.	• The cost of making digital payments to distributors is not feasible, as small and medium-sized enterprises (SMEs) operate on narrow margins. • Logistics partners charge 1–2% to handle cash, making cash-on-delivery (COD) equally expensive for e-commerce. • Small retailers access loans through informal channels at exorbitant rates (30–40%) because of a lack of documentation and formal credit history. • Many e-commerce users still prefer COD. • Government and financial service providers (FSPs) must focus on the growing f-commerce; the Bangladesh Bank introduced escrow account services for e-commerce to enhance transparency and trust.	• FSPs should focus on tuition fees and government subsidy payments as a major source of revenue. • Government and International Development Organisations (IDOs) should explore more effective government subsidy delivery mechanisms for students.	• Formal credit from FIs goes to large farmers whereas smallholder farmers (SHFs) must rely on informal and expensive credit sources. • Customised, sector-specific financial products are needed for agriculture. • The business model in the agriculture sector relies on availability of credit. • An identity mechanism for farmers is required to build a centralised database and enable easy access to credit and other financial services through formal channels. • Youth and women engagement in the agriculture space requires development, including an awareness of their needs and appropriate capacity building.

These inputs will make the Roadmap relevant and acceptable to the government, enterprises, and priority sector stakeholders.

One of the most important inputs from stakeholders was the need to implement a 'National Payments System Act' in Bangladesh. Most South Asian countries have a Payments System Act, such as the Payments and Settlement System Act 2007 in India, the Payment Systems and Electronic Fund Transfers Act 2007 in Pakistan, the Payment and Settlement Systems Act. No. 28 of 2005 in Sri Lanka, and the Payment Services Act 2019 in Singapore. A legal and regulatory framework for payment systems and service providers should be implemented in Bangladesh immediately.

2.2. Facilitating an enabling environment for digital payments

The government and private sector are undertaking multiple initiatives to increase the proliferation of digital payments in the country. Public and private sector collaboration can help to create an enabling environment for service providers and ensure viability of products and services for individuals and enterprises.

Based on stakeholder input, it is imperative to understand the initiatives that can be incorporated into the Roadmap. To be achievable, the Roadmap should utilise the foundation of public and private sector initiatives and align with the government's vision. The three core initiatives relevant to the overall solutions of the Roadmap are presented in Table 3 below.

“



“My inclination to pay digitally has increased dramatically during the pandemic and the consequent lockdowns. However, I avoid pre-payments on e-commerce orders because one of the companies shut down due to government orders, without delivering my products.”

Bindu Gomes

33, schoolteacher from Dhaka

”

Table 3: The three core initiatives relevant to overall Roadmap solutions

	Digital Bangladesh, 2021	National Financial Inclusion Strategy, 2019	E-KYC Guidelines, 2020/21
Policy highlights	This initiative aims to promote the use of technology in multiple sectors, reduce poverty, and achieve the Sustainable Development Goals (SDGs). It is one of the levers for moving Bangladesh towards a 'developed economy' status. The main objective is to design and enable digital solutions for the country and help bridge the widening digital divide between urban and rural and rich and poor.	The goal of the National Financial Inclusion Strategy of Bangladesh (NFIS-B) is to enhance financial inclusion in Bangladesh to empower the marginalised population and increase social cohesiveness. It lays the foundation for a digital ecosystem by connecting the 'first and last mile' by increasing digital G2P payments, setting up Union Digital Centres and increasing banking, access in rural areas, thereby catering to the needs of the population. The NFIS sets out initiatives. The Roadmap aligns with these initiatives.	These guidelines are for user on-boarding wherein user identity is checked using biometrics on the national identification (NID) card. Electronic Know Your Customer (E-KYC) has been divided into two types based on users' risk exposure: (1) simplified e-KYC and (2) regular e-KYC. A pilot project with 18 banks and 1 non-banking financial institution (NBFI) showed that e-KYC can reduce the on-boarding time from 4–5 days to 5–6 minutes and the cost of user on-boarding and KYC by a factor of 5–10. This produces business growth (in terms of user numbers) of around 25% compared to traditional on-boarding and KYC mechanisms.

Other initiatives that may have a bearing on the Roadmap, as detailed in the subsequent sections, are presented in Table 4.

Table 4: Initiatives that may have a bearing on the Roadmap solutions

Guideline of QR-Code Based Payment, 2021 (Bangla QR)	ID System for Enhancing Access to Services (IDEA) Project, 2011	MSF and Micro-merchant Account Opening Guidelines, 2020:	National Digital Commerce Policy, 2018 & Payment System Oversight Framework
Payment and Settlement System Regulation 2013/14	MFS Regulations 2018	National ICT Policy, 2002, 2009 & 2018:	Escrow policy
 Envisioned alignment with National Financial Inclusion Strategy (NFIS-B)			

The objective of the Roadmap is to build on the steps taken by the government, to enable the adoption and usage of digital payments, and to help achieve the SDGs. The Roadmap will complement the NFIS-B and address the broader digital payments adoption agenda, including the following:

- **Adoption and expansion of digital payments:** The objective of the Roadmap is to ensure responsible introduction, adoption and expansion of digital payments in Bangladesh. The subsequent sections of this report have proposals for evaluating gaps and addressing them. Some of the interventions are listed in the NFIS-B, and the Roadmap aims to complement these. For instance, the Microfinance Credit Information Bureau (MF-CIB) is an important initiative and an infrastructural component for many of the credit-based solutions proposed in the Roadmap.
- **Focus on SDG advancement:** Digital payments contribute to the achievement of SDGs and improve socioeconomic conditions. This is one of the agenda items that the Roadmap aims to address while complementing and aligning with NFIS-B initiatives.
- **Assess the foundational infrastructure:** Bangladesh has seen exponential growth in digital payments usage, fuelled by an evolving payment system infrastructure, market collaboration, and changes in user behaviour. The Roadmap identifies the infrastructure required for a quicker adoption of digital payments in the country.
- **Additional horizontal and vertical solutions:** Although the NFIS-B sets the tone for progress towards a cashless economy, the Roadmap builds on that vision by proposing solutions cutting across the vertical (e.g., payment solutions) and horizontal (e.g., use cases, cross-cutting strategies, data privacy).
- **User, agent, and merchant perspectives:** As part of the initiative, 130 in-depth interviews (IDIs) were conducted to capture the preferences and gaps in adoption of digital payments. The respondents were consumers, merchants, and agents across urban, peri-urban, and rural areas. As RMG is a primary contributor to digital payments and the overall economy in Bangladesh, IDIs were conducted with workers from both formal factory areas (Dhaka) as well as informal areas (Keraniganj and Savar).
- **Roadmap for implementation:** A harmonised action plan is an outcome required by the government, enterprises, and priority sector stakeholders. The Roadmap will list the potential interventions identified by the 60+ stakeholders across 7 workshops, with a proposed sequence of solution implementation.

As evident from the high-level objectives, the Roadmap complements the NFIS-B and the overarching strategic goals of the government. Broadly, both documents emphasise the importance of adopting technology to achieve the SDGs; making payments secure, transparent, and efficient; and advancing socioeconomic development.

One important programme for the Roadmap is the Interoperable Digital Transaction Platform (IDTP), which establishes payments interoperability for MFS providers, payment platforms, and banks. It is governed and operated by the Bangladesh Bank. Inputs from private payment service providers (PSPs) are also gathered and incorporated in the system design. This enables multiple use cases and unlocks the small-value retail payments revolution, aided by the growing e-commerce sector. The scope and landscape of the National Payment Switch Bangladesh (NPSB) and IDTP have been matters of debate. Regulators need to present a roadmap to stakeholders so they are prepared once the IDTP goes live. If the NPSB is going to remain after the launch of the IDTP, it needs to be promoted for a strong brand recognition. Market players usually play a role in aligning with user needs via private sector initiatives in multiple geographies. Bangladesh is no different, with banks, MFS providers, MFIs, card networks, telecom network providers, and fintech firms focusing on their user base to provide quality, cost-efficient, and convenient services. Some players have entered into partnerships to provide complete services.

2.3. Ensuring responsible digital payments for stakeholders

The government increasingly relies on digital modes for G2P payments, especially to the underserved and vulnerable segments. The fintech industry is experiencing rapid innovation. Artificial intelligence (AI), machine learning (ML), and big data platforms are reshaping the industry. However, these innovations are perceived to increase risk levels. Many governments across the world have launched digital transfer programmes, but many have underserved users – either because of distrust or because of unfamiliarity with digital payments – with women being disproportionately excluded. Lack of sex-disaggregated data is often the main reason why strategies and policies have been designed to serve men and women unequally.

The United Nations Principles for Responsible Digital Payments ('UN Principles') set out the key tenets of equitable access, reach, and fairness in delivering financial services to underserved and low-income groups (see Figure 3). The UN Principles define the framework for an inclusive and responsible digital payments ecosystem. The key principles of responsible payments embedded in the systems, functions, and guidelines governing the digital payments ecosystem can help to develop a system that transfers value to those who need it the most and to drive inclusive and holistic economic growth.



"My sons don't want to go and collect my husband's social security stipend, but ever since stipend payment has been digitised, we don't have to travel anywhere or request anyone to help us."

Shefali Dhar,
64, micro-merchant and spouse
of a disability stipend beneficiary
in rural Manikganj

Figure 3: UN Principles for Responsible Digital Payments

01	Treat user fairly Fair treatment of the users by service providers for increasing trust in digital payments	02	Ensure funds are protected Reliable and secure access of funds to the customers	03	Prioritize women Equal access to DFS for women through social inclusion and relevant products and services
04	Safeguard client data Safeguarding client data and enablement of consent-based client data sharing	05	Design for individuals Product and services design based on user needs	06	Be transparent, particularly on pricing Transparency in pricing information disclosure
07	Provide user choice through interoperability Interoperability of services across providers	08	Make resource clear, quick and responsive Optimal grievance redressal and resolution on customer complaints	09	Champion value chain accountability Control and supervision of DFS value chain providers and enablers

Stakeholders should work together to digitise payments. A framework for prioritising digitisation of payments is necessary to guide governments, international organisations, and enterprises. Table 5 below specifies the roles and responsibilities of each stakeholder group in digitising payments.

Table 5: Roles and responsibility of digital payment stakeholder groups

Governments Lead by example: embed the digitalisation of government and national payments in legislation. Act as the mentor: work with trusted community networks to create awareness and educate users in making payments responsibly. Build transparency on recourse platforms: mandate intercessory powers to regulators and provision guidelines to ensure transparency of the redress process. Collaborate for interoperability: ensure seamless movement of user funds across	platforms, providers, networks, and payments streams. Ensure unbiased technologies: collaborate to regulate the responsible use of new technologies, such as AI, to prohibit systemic biases against specific population segments. Promote accountability along the value chain: recognise that all actors are responsible for a safe and secure payment process. Collect gender-disaggregated data: collaborate with market players to collect gender-disaggregated data to devise a strategy to drive adoption and usage of digital payments by women.
International Organisations Harness the power of collaboration: convene and bridge competitive, national, and policy boundaries to draw all the actors together to ensure optimal and inclusive development of the payment ecosystem. Ensure user-centred design and gender inclusiveness: share insights on user-centric design and its impact (including on empowering women) from other geographies with similar or comparable contexts to enable FSPs and governments to design their service propositions.	Ensure emerging technologies are impartial: report on the impact of new technologies (AI, ML, and big data) and share methods to enable optimal use and avoid discriminatory bias. Modernise recourse and make it fair: provide technical assistance to partners through insights gained by examining successful redress systems that can be contextualised and implemented. Case for digital financial equity and interoperability: quantify the impact of successful digital payments on end users, communities, and economies through IDOs. Ensure interoperability is at the heart of successful digital payment deployment.
Enterprises Use insights to reach the next billion users: share enterprise insights (e.g., on the supply chain, access to working capital, user preferences) with the ecosystem to support digital payments adoption; large enterprises are best placed to accelerate outreach. Win user confidence in digital payments: acknowledge the greater relative risk assumed by low-income users and empower them to ensure that user funds are always safe and accessible. Design for excluded users: explore the market to understand the design and marketing decisions that meet user needs and provide a competitive edge.	Advocate for and collect gender-disaggregated data: advocate for gender-disaggregated data in their partnership with FSPs and include women's voices at every stage to help build more relevant products. Shared accountability across the supply chain: provide incentives for supply chain participants, including value-added services, to encourage user-focused behaviour and close working with FSPs to improve accountability. Sustainable partnerships to empower women: explore innovative solutions to address women's unequal access to connectivity, identity, and digital and financial capability; prospective users may find access to additional services through digital payments compelling.

The UN Principles provide a broad guideline for creating a responsible and comprehensive payment ecosystem. Multiple priority areas relevant to the country context or a specific priority sector could emerge from stakeholders. Structuring the overall design process requires a framework that will aid discussions, analysis, and prioritisation of solutions.



3

**DESIGN
COMPONENTS FOR
THE ROADMAP**



3. Design components for the Roadmap

3.1. Design principles

The Roadmap will emphasise infrastructure development, acknowledge the ecosystem that facilitates innovation and competition, and align with the needs of individuals and enterprises (see Figure 4). The parameters on which the design principles are based include (1) national vision and strategic priorities for the Roadmap, (2) assessment of the current digital payments ecosystem in Bangladesh, (3) inputs from multiple stakeholders, and (4) strategic alignment with the global guiding principles.

Figure 4: Design principles for the Roadmap



The principles originate from inputs, concerns, and priorities expressed by the government, regulators, users, businesses, service providers, think tanks, and other public and private entities. Creating an inclusive framework for assessing relevance and constructing guidelines for design is imperative for a robust, relevant, and future-oriented roadmap.

1. Focus on providing choice and convenience to the user

The focus here is on developing interoperability for all major payment infrastructure and service provider systems to provide ease of use and choice to the user.

2. Harnessing the power of innovation

The focus of this principle is on developing innovative digital services that meet a specific target group's requirement (users, businesses, government) through an ecosystem that supports innovation and promotes competition.

3. Further inclusion of population segments

The focus of this principle is on promoting access to digital payments and expand their usage by all urban and rural groups. As suggested by multiple stakeholders, increasing use cases and lowering costs can increase the uptake of digital payments.

4. Build trust and reliability

The focus of this principle is on enhancing user trust in digital payments and ensuring stability of systems by adopting international and globally accepted security and privacy standards at both the country and organisational levels.

5. Encourage information exchange

The focus of this principle is on developing a platform that facilitates seamless data exchange to improve the relevance of digital payments, including through financial innovation, data-driven policy, and informed supervision under stringent data governance and privacy practices. Many private entities in Bangladesh foresee greater and more efficient collaboration to offer more relevant products.

These principles will provide the guiding conditions for the Roadmap based on stakeholder priorities, benchmarked with global standards.

These design principles are based on globally accepted guidelines for digital payments adoption, such as the Group of Twenty (G20) High Level Principles for Digital Financial Inclusion ('G20 Principles').

The G20 Principles are aimed at making payments transparent, safe, and effective, while removing biases and increasing women's economic participation. An effective way to implement the G20 Principles is through appropriate national strategies and action plans. They can also be implemented through other country-level

“



“One of my daughters is a beneficiary of the government's primary education stipend programme. The school administration had advised me to create an MFS wallet to receive the stipend. Not having to travel to receive the stipend saves the time. I can also send money to my older daughter when she is travelling for her university admission tests. She can access funds through her smartphone without having to visit an agent.”

Chaina Ghosh

50, primary education stipend beneficiary and micro-merchant, Manikganj

”

actions that consider the national context and circumstances. Although the G20 Principles can provide guidance on the Roadmap's design framework, they will have to be adapted to the vision and context of digital payments in Bangladesh. A snapshot of initiatives taken in the country, in line with the G20 principles, is provided below.

- **Promote a digital approach to financial inclusion** – A 2019 study by the Centre for Global Development in Bangladesh²² found from interviews with mothers from 100 households in 34 villages that 80 percent of mothers were happy that education subsidies changed from cash to digital; they no longer needed to travel and wait for cash disbursements and could withdraw money securely and at their convenience.
- **Expand the digital financial services infrastructure ecosystem** – Several studies indicate that digitising wage payments helped RMG sector workers reduce their costs and improve their ability to manage financial emergencies.²³ Wage digitisation can also reduce the costs incurred by factory owners.
- **Balance innovation and risk to achieve digital financial inclusion** – The Bangladesh Financial Intelligence Unit introduced Electronic Know Your Customer (e-KYC) in January 2020 to provide financial services at users' doorsteps in an easy, fast, and cost-effective manner. Two classifications were made based on the risk exposure of the user: (1) simplified e-KYC and (2) regular e-KYC.
- **Strengthen digital and financial literacy and awareness** – In the proposed NFIS-B, the Bangladesh Bank advised all stakeholders to do the following:
 - Formulate a financial literacy policy/strategy separately for financial sector regulators.
 - Formulate a consumer protection framework and grievance redressal system separately for financial sector regulators.
 - Provide an annual programme on financial literacy for regulated FSPs, monitored by the regulator.
 - Work with the Ministry of Education to incorporate financial literacy at all levels of education: primary, secondary, and tertiary.
 - Assess the feasibility of a consumer protection mechanism similar to the 'Deposit Insurance Scheme' for banks.
- **Provide an enabling and proportionate legal and regulatory framework for digital financial inclusion** – In the proposed NFIS-B, the Bangladesh Bank has advised all stakeholders to do the following:
 - Coordinate with ministries, regulatory bodies, and government agencies to implement the NFIS-B.
 - Establish evidence-based policy making.
 - Reinforce coordination of efforts against illegal financial services and eliminate adverse impacts of shadow banking.
 - Explore ways to introduce a 'regulatory sandbox'.
 - Encourage regulatory bodies to devise incentive structures that will induce FSPs to penetrate low-income markets.
 - Strengthen the capacity of regulatory agencies in data-driven policy analysis and emerging technologies, such as fintech, regtech, supotech, insurtech, artificial intelligence, distributed ledger technology, machine learning, augmented reality, and cyber security.

- **Establish responsible digital financial practices to protect consumers** – Amader Kotha was established in 2014 as a national helpline to help RMG workers resolve wage, safety, and other concerns related to digital payments. It has served 1.5 million workers with a 99 percent²⁴ resolution rate. In 2020, the government mandated digital wage payments in response to the COVID-19 pandemic and expanded the scope of this helpline to cover factory wages as well.
- **Facilitate user identification (ID) for digital financial services** – World Food Programme technology created a shared database of humanitarian cash assistance programmes to collect disbursements from multiple agencies as a lumpsum, using quick-response (QR) technology to facilitate single transactions. These are blockchain-enabled QR codes, scannable not only by organisations disbursing relief but also by retailers selling food and other necessities, that enable an interoperable user experience at the point of service. As of September 2020, blockchain-enabled solutions had served 500,000 of the 855,000 Rohingya refugees in Cox's Bazar, Bangladesh.
- **Track digital financial inclusion progress** – In the proposed NFIS-B, the Bangladesh Bank has proposed a monitoring and evaluation framework to cover the following:
 - Progress report of this strategy to the Minister of Finance through the Financial Institution Division (FID), Ministry of Finance every quarter.
 - Progress report of this strategy to the Governor of Bangladesh every month.
 - Progress report of this strategy to the Cabinet bi-annually.

The focus areas in the section below complement the design principles for a better understanding and contextualisation of the Roadmap solutions.

3.2. Priority areas for solutions

Digital technologies have the power to provide affordable and convenient ways to enable ubiquitous, transparent, and responsible digital payments, and to unlock multiple use cases, such as paying for school fees, bill payments, obtaining small business loans, sending remittances, or buying insurance. Apart from the inputs of stakeholders, which were translated into focus areas for solutions, two cross-cutting aspects were identified as priorities for the Roadmap: (1) the inclusion of women in the formal financial ecosystem and revenue-generating activities and (2) the impact of the COVID-19 pandemic on the economy and digital payments uptake in the country.

Ensuring that men and women have equal access to formal financial services and to consequent adoption of digital payments is one of the focus areas of the roadmap.

COVID-19 has accelerated the uptake of digital payments. Governments around the world have introduced or expanded Social Security Network transfers. In Bangladesh, the government, global brands, and donor agencies have committed to removing obstacles to ensure the digital payment of wages in RMG factories. The use of digital payments surged with the onset of the pandemic due to the associated restrictions. At the peak of the pandemic in July 2020, 85 percent of wage payments were digital.

Stakeholders from the government, companies, and priority sectors discussed the challenges and opportunities of the COVID-19 pandemic as well as the measures to mitigate the

associated risks. Inputs collected from stakeholders supported in identifying the key focus areas for the Roadmap. The focus areas mentioned below highlight the priorities and solutions as part of the digital payment Roadmap.

3.2.1. Cost distribution structure

Digital payments service cost distribution is a challenge for everyone. Most RMG workers who were interviewed in the seven stakeholder workshops said the cost of cash-outs from MFS wallets is a major deterrent to the adoption of digital payment services. So too are card transaction fees, which incur a commission of 2–3 percent in the country (see Table 6).

Table 6: Insights into cost distribution

 Objective: to understand and optimise the transaction cost implications for users, service providers, and other parties	• There is an option of ceiling rates by the government and negotiated rates with corporations for cash-outs. • Fintech firms and start-ups could bridge the supply–demand gap and collect data to develop targeted products for focus user groups. • Stakeholders should educate users and promote their digital payment offerings through marketing, incentives, and reward programmes.
---	---

3.2.2. New use cases and business models

Digital payments will evolve with improvements in the technological infrastructure, penetration of digital devices, telecom connectivity, internet usage, and with changing user needs. New use cases keep users invested and help bring underserved segments into the formal financial system. The stakeholders said cross-border remittances, rent payments, school fees, and utility bills are use cases that could be prioritised for solutions (see Table 7).

Table 7: Insights into new cases and business models

 Objective: to identify new use cases and innovate financial services, fintech, and agent business models	• Collaboration between payroll and G2P payments through to market players and shared platforms could be enhanced. • Banks could explore options with fintech agents through open banking platforms and could collaborate with retailers, small merchants and start-ups. • Promising sector-specific products, like bundling services, using shorter credit cycles for recurring needs, and customising credit products based on user needs, should be developed.
--	---

3.2.3. Payment solutions and infrastructure

Developing the payment system infrastructure and technological capabilities of digital payment services is pivotal for service quality and seamless experience. Bangladesh has provided payments infrastructure in the forms of Bangladesh Electronic Funds Transfer Network, Bangladesh Automated Cheque Processing System, Bangladesh Real Time Gross Settlement, and NPSB. IDTP, a small-value and real-time payment (RTP) system, offers the much-needed groundwork for public-private or privately owned solutions for digital payments.

The shared infrastructure should be governed by a consortium of FSPs with a stake in the independent entity that will run the new and shared payments infrastructure, such as IDTP. The independent body will be represented by stakeholders and should, under the supervision of the Bangladesh Bank, bring together industry, government, and consumer representatives. The independent body's board should be responsible for governance of the payments infrastructure as well as other tasks, such as clearing and settlement. All public and private FSPs, including fintechs, can participate in the proposed body. The new body can raise funds by allowing participants to become shareholders. Hence, the body will be jointly owned by banks, MFS providers, fintech firms, and consumer representatives.

Infrastructure governance has an impact on cooperation and competition. Non-proprietary, transparent, and open standards can help shift competition to more classic variables, such as pricing, distribution channels, brand, customer service, and core payment value propositions. PSPs should compete directly for retail payment instruments and services to end-users, but they should also cooperate in shared payment infrastructure and its ownership. Competition should be promoted for features and ease of access but not for infrastructure and platforms (see Table 8).

Table 8: Insights into payment system infrastructure



Objective:
to prioritise the
implementation of
payment solutions
(shared infrastructure,
market solutions
or collaborative
initiatives)

- Shared platforms, such as ekPay and IDTP, are crucial for the uptake of digital payments, as they enhance the user experience and provide wide-ranging services.

3.2.4.Data privacy, protection, and trust

Protecting user data is crucial for building trust and getting users to become active with digital payment services. Complaints and redress mechanisms need to be revisited, and solutions need to be evaluated. Innovative solutions should also be considered, such as complaint handling and redress mechanisms, through a dedicated service desk in companies or factories of RMG workers (see Table 9).

Table 9: Insights into data privacy and trust



Objective:
to highlight the importance of data privacy and building user trust

- Local agents (CSA from the same village) for FSPs and effective dispute resolution mechanisms, with guidelines for and oversight by the regulator can increase trust.
- Innovative solutions, such as Easy Merchant, personal retail accounts, open banking APIs, and e-KYC, can help to develop business models and address user pain-points. The open banking infrastructure needs to be assessed carefully for segments where financial literacy is low. The post office network can be leveraged to integrate digital payment providers.
- Measures such as a non-disclosure agreement (NDA) among operators, penalties for NDA breaches, monetising synthetic or anonymised data, and ensuring informed user consent must be explored.

3.2.5. Demand–supply gap

The Alliance’s ‘Post-COVID-19 Digital Payments Diagnostic’ for Bangladesh showed that existing digital solutions and products may not fully meet the needs of all customer segments, such as women, rural populations, and small businesses. This must be addressed in a systemic way that involves all participants.

Targeted solutions can help bring underserved segments into the formal financial system.

Traditional market players might not wish to address these segments due to low returns, but they can provide backend processing and enable new entrants, such as fintech firms, to handle user relationships. This will help everyone play to their strengths (see Table 10).

Table 10: Insights into the demand–supply gap



Objective: to plug the gaps in relevance and reach of financial services through innovative solutions

- Focus on providing relevant products that service the core needs of users, including gender-specific needs, such as funds transfer and micro-credit.
- Women agents and relevant products can help increase uptake and overcome social barriers.
- Banks-leveraged agents can open accounts as well as piloted products and features on alternative channels (internet bank apps); the innovation offices and regulatory sandboxes can also facilitate innovation.

3.2.6. Building financial and digital capability

Training, awareness, and recourse mechanisms are needed to spread awareness about digital payments among students, farmers, women, and SMEs, especially those involved in e-commerce and f-commerce (see Table 11). These initiatives can be replicated at the national level. High-priority segments should include students and SMEs involved in e-commerce and social commerce (through Facebook and similar), who could help others (e.g., family members, friends, and suppliers) adopt digital payment.

Table 11: Insights into building capacity



Objective: to facilitate fact-based and stakeholder-specific solutions that advance digital, financial, and social capability building in the population

- Storytelling techniques, flipcharts, and videos in familiar settings are effective for consumers, especially women, and need to be made more popular.
- A National Financial Literacy Strategy, of the kind already underway in the country, is required to establish holistic financial awareness.
- Syndicated consumer perception surveys are needed to assess the opportunities and challenges and to help evolve corrective action.
- It is important to determine financial literacy and capability and to identify user needs and expectations using data segmented by gender, age, and location.

These focus areas are based on inputs and observations from stakeholders while considering the objectives of the Roadmap (see Figure 5).

Figure 5: Emerging focus areas for the Roadmap. CSME = cottage, small, and medium enterprises

- 
1 Service **cost distribution, especially for cash-outs**, is a major challenge for all participants in the digital ecosystem, especially citizens for whom it is a major roadblock
- 
2 **New use cases and business models** that unlock avenues for spending and acceptance of e-money should be explored to keep the ecosystem (i.e., citizens, agents, merchants and FSPs) invested in digital financial services.
- 
3 Superior **payment solutions and infrastructure** are critical, within which providing seamless service experiences for both providers and citizens shall be prioritized.
- 
4 Citizen **data protection and trust** in digital financial services are some of the most important aspects of adoption, expansion and useage.
- 
5 A **demand–supply gap**, regarding relevance and reach of financial services, prevails for women, CSMEs and the last-mile population in Bangladesh.
- 
6 Outcome-based **financial and digital capacity-building** mechanisms shall be employed for different stakeholder groups (e.g., women, SMEs, farmers, etc.)

Considering the insights indicating potential solutions, it is imperative to understand the feasibility of these solutions in the country context. The interventions will have to be implemented in a phased manner, keeping in mind the existing and future maturity of the digital ecosystem, regulatory readiness, size of the market, and awareness among people.

4

SOLUTIONS FOR THE ROADMAP





4. Solutions for the Roadmap

The previous section detailed the design principles and focus areas of the solutions. These elements form the basis of the solutions proposed in the Roadmap, which are explained below. Issues, such as the policy framework and digital infrastructure, are also discussed. These discussions will make a case for implementation of the Roadmap in Bangladesh and help decision makers understand and prioritise the Roadmap solutions.

4.1. Vision of the Roadmap

Development of an open, inclusive and user-centric ecosystem that meets the needs of users, government and enterprises while promoting the expansion and usage of DFS.

The components proposed in the sections below are the result of interactions with 60+ stakeholders across government, FSPs, MFS providers, fintechs, IDOs as well as the priority sectors of RMG, agriculture, education, and retail (including e-commerce). Inputs also came from think tanks and development agencies.

The recommendations below are intended as guidance and are flexible in terms of the 'how' and the 'who' of implementation. Decision makers can consult other stakeholders and either build new solutions or enhance the existing ones to address national priorities and shorten the time-to-market.

4.2. Data to support solutions and product design for individuals, particularly women

4.2.1 National digital payments dashboard with sex-disaggregated data

The national dashboard for digital payments will keep track of the expansion and adoption of core digital payments, including channels, access points, instruments, and acceptance infrastructure, from public and private entities. It is a nodal platform that tracks and monitors the growth of digital payments in the country. Such a platform is usually managed by the central bank or payments regulatory authority, which aggregates digital payment data.

Solution details

As the adoption of digital payments grows, all data must be made available to the public through a single source for consistency and accuracy. Although data are abundant, those relevant to digital payments are spread across disconnected institutions. Raw data are usually unstructured and unstandardised, creating the need for a centralised 'data mart' that stores inputs from various sources. This centralised dashboard is closely integrated with the payment system oversight framework, and involves:

- **Data consolidation** – The Dashboard consolidates digital payment data from banks, FIs, central banks, and national payment authority, on any payments made via channels, such as faster payments and NID-linked systems.
- **Tracking digital payments infrastructure** – The platform tracks the deployment of digital payment acceptance infrastructures, such as POS devices, Automated Teller Machines (ATMs), and agent locations.
- **Data analysis** – These data are then analysed on the platform, and trend analysis is performed to monitor the growth or decline on an aggregated and granular basis (e.g., province/state-wise, institution-wise). Table 12 presents the potential data points to be considered in the design of a dashboard data mart.

Table 12: Direct and indirect data points to be considered when designing a dashboard data mart

Direct data points	Indirect data points
These data points are directly reported by the departments of Government of Bangladesh	These data points play an important but indirect role in the proliferation of digital payments.
These are indicators of digital payments in Bangladesh. Potential sources for this data include the Ministry of Finance, Bangladesh Bank, a2i, banks, MFS providers, MFIs, card networks, mobile operators, and PSOs (e.g., number of payment transactions, POS deployment, Bangla QR adoption, utility bill payments).	These may not be directly related to digital payments, but can be correlated. Potential sources include the government, technology companies, corporations, non-governmental organisations, think tanks, and independent research agencies (e.g., number of NID enrolments, number of merchants, number of beneficiaries, offline areas of Bangladesh).

Once the dashboard data mart is designed, the following mechanisms can be utilised to update the data points for the dashboard:

- **Digital integration with other datasets** – This includes data updates on providers by integrating the central platform with datasets that aggregate data on different components from various stakeholders. Such datasets may include public sector information systems across regions and datasets aggregated under specific laws, by specific industries, and by private sector initiatives.
- **Crowdsourcing** – This includes sourcing information from individuals who have used the providers' services or those of other ecosystem participants by giving them monetary or non-monetary incentives. Such a method may provide an independent view of the ecosystem in terms of instruments, channels, incentives, experience, and many other parameters.
- **Periodic surveys** – These include periodic sample surveys for data updates and validation. This could also be done for data collection on behalf of future initiatives. Such surveys can be employed for periodic checks or compliance-related activities when the providers do not use any other method to update their datasets.
- **Data sharing by regulated FSPs** – All regulated FSPs and other stakeholders should regularly share data for holistic collection and publishing.
- **Self-update by providers** – This includes updating the datasets of providers and other stakeholders. It includes either standard software shared by administrative authorities (public sector) or private aggregators. It may include updating datasets through a log-in account of central servers managed by administrative authorities (public sector) or private aggregators.

Gender-disaggregated data collection to proactively track gender dynamics

Prioritisation of women is crucial for financial equity in the country. All stakeholders consulted for the Roadmap cited women's digital financial inclusion as a top priority. However, all indicators suggest that women are unserved or underserved compared to men when it comes to usage of financial services. There is anecdotal evidence of what drives and hinders adoption of financial services by women, but evidence and data-driven policies and product and user-experiences are ripe for innovation.

Embedding a gender lens in data collection for the digital payment dashboard will show the true gender dynamics. Following are a few suggestions for gender-specific data collection:

- Ensure the basic data collected are gender-disaggregated by sex (e.g., account ownership, volume of transactions, frequency of use, peak times of use, complaints).
- Gather data points that capture short- to-medium-term changes in women's access and stickiness to digital services (e.g., the number of women downloading or registering for an app).
- Collect user-facing quantitative and qualitative data (e.g., loyalty, satisfaction) to understand whether women want access to specific services.
- Collect provider-facing data (e.g., account usage, transaction volumes, attrition) to understand the performance of products and services across different segments of women users.
- Use data insights to promote easier access and usage by women.
- Analyse collected data on women along with feedback to iterate on products and improve relevance. Greater user and transaction data on women help to reduce biases in algorithms.

The advantages of the digital payments dashboard are enumerated below.

Advantages

- Accurate reporting, monitoring, and analysis of all digital payment transactions ('Single Source of Truth').
- Tracking the growth of digital payment transactions.
- Effective planning of digital payment promotional activities.
- The platform receives data feeds every day from institutions and reports them on a T+1 basis.
- It can allow multiple levels of access for general users and select stakeholders.
- The platform can provide multiple views of the data at both an aggregated and detailed level.
- It can generate reports for various levels of analysis for general and stakeholder use.

Similar solutions in other geographies

DigiDhan in India (www.digipay.gov.in), designed and developed by the National Informatics Centre, is a dashboard for reporting, monitoring, and analysing all digital payments in India. It is also a dashboard developed for the support of infrastructure through the deployment of physical/mobile/BHIM Aadhaar Point of Sale (POS) devices. The dashboard consolidates the data of 16 digital payment modes (such as Unified Payments Interface, Unstructured Supplementary Service Data, Immediate Payment Service, debit cards, credit cards, and internet banking) from the Reserve Bank of India, National Payments Corporation of India; 111 banks;²⁵ and 100 smart cities, states, and ministries. It presents the data in the form of business intelligence (BI) reports and visuals.

The DigiDhan dashboard:

- Presents BI analysis to stakeholders to enable digital payment transaction analyses.
- Reports POS deployment statistics, along with Aadhaar and mobile seeding accounts statistics.
- Has the DigiDhan Mitra chatbot to handle user queries in real time for fast resolution; the chatbot supports multiple languages, responds to user queries through text or a visual like bar graphs and charts, and performs voice recognition in English and Hindi.

Table 13 below presents the risks and mitigation measures for the digital payment dashboard.

Table 13: Risks and mitigation measures for the digital payment dashboard solution

	Risk	Mitigation
1	Lack of data	Data source agencies to be on-boarded should be shown the benefits of the dashboard. A centralised data mart team should help these agencies identify source data points and the mechanism to capture them.
2	Data points spread across silos	The data mart design team should capture unstructured data points across sources and define their relationship to convert data points into information.
3	Unwillingness to share data points	A national data-sharing policy is needed to define the roles and responsibilities of the agencies to offer guidance on how to make their data available.
4	Data privacy	A strong data privacy and security mechanism should be formulated while the dashboard is being designed. Only the aggregate level of data should be reported to ensure security.

4.2.2. Consumer perception surveys

Consumer surveys can be initiated by either the regulator or any designated authority to evaluate the opportunities and challenges in using DFS. These surveys can clarify the digital payment awareness, adoption, and usage behaviour of individuals and enterprises. Multiple parameters might motivate stakeholders to learn about consumer behaviour and business priorities. These surveys highlight the challenges that governments can prioritise. Several indicative parameters are provided in Figure 7 below. Please note that these are only indicative in nature.

Figure 6: Indicator parameters of customer surveys

 Awareness • Whether the respondents were aware of digital payments. • Which of the payments method(s) introduced by BB or market players method(s) the respondents were aware of.	 Usage • How the respondents generally receive money for their regular expenses. • Purpose of digital transactions done by the respondents. • Preferred mode of the respondents for digital payments.	 Risk Perception • Whether the respondents share their passwords/ Personal identification Number (PIN)/One Time Password (OTP) for cards, bank, accounts, etc. with others. • How often the respondents change PIN for their prepaid/ debit or credit cards/mobile banking. • Opinion of the respondents about using PIN/ OTP for small value transactions.	 Issues Faced • Hindrances faced by the respondents while making digital payments
--	--	---	--

A survey on consumer (individuals and businesses) perceptions can be expanded in scope to solicit feedback through an array of modalities, including digital, in light of the COVID-19 pandemic. This initiative can gauge the public's trust and confidence in the digital payment initiatives undertaken both directly and indirectly. The initiative would gather feedback and expand the platforms for the use and frequency of public sentiment surveys.

Investment in sex-disaggregated data is required urgently to close the gender gap in adoption and usage of financial services in Bangladesh. The data investment will pay dividends over a long period of time for advancing women's financial inclusion.

A 360-degree perspective on digital payments adoption in the market can help service providers and the government understand the landscape. It can enable the government to plan initiatives better and modify the existing ones. It will allow service providers to understand market needs and roll out products focused on individual and enterprise consumers. These surveys can be undertaken on a periodic basis by the government or regulator, or preferably, through a public-private partnership model, as done in many countries.

The advantages of consumer perception surveys are enumerated below.

Initiatives in Bangladesh

Multiple initiatives are being undertaken by corporations in Bangladesh to gain an understanding of digital payments uptake. Several sector-specific surveys are also underway:

- Researchers of the Dhaka-based South Asian Network on Economic Modeling and Microfinance Opportunities (MFO), a United States-based non-governmental organisation, undertook a survey on the RMG sector titled 'Massive Shift to Digital Wages Payments in Bangladesh's RMG Sector'.
- The 2015, the Hrishipara Daily Diaries initiative tracked the money management behaviour of low-income households in Bangladesh.
- Several COVID-19 impact studies were conducted by Innovision, an international consultancy based in Dhaka, whose results were published in 2020.

Advantages

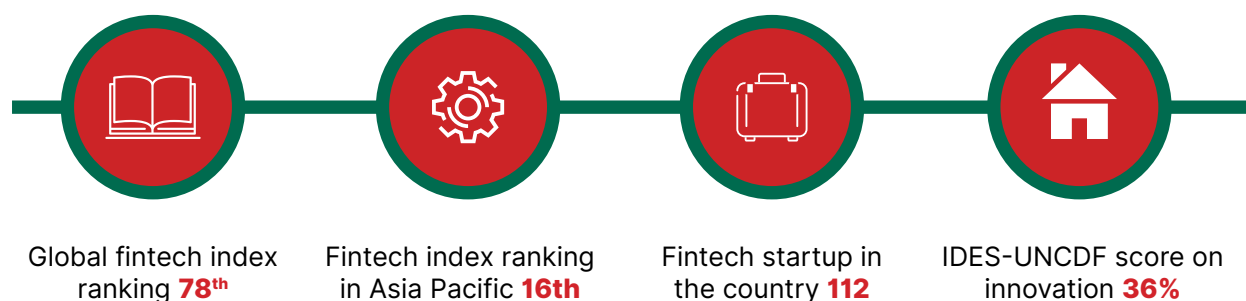
- They reveal the demographic factors, attitudes, perceptions, and issues of consumer segments that use digital payments
- They identify the advantages of digital payments for consumers
- They identify the most-adopted mode of digital payments and the elements influencing consumers' adoption of digital payments
- They measure the frequency of digital payments transactions, and map trends
- They assess consumer satisfaction with digital payment mechanisms
- Fact-based assessments provide an overview of consumer perceptions and digital payments adoption
- They help providers plan their products and services for non-core user segments
- They facilitate government policy planning and execution
- Surveys will allow stakeholders to look into consumer segments separately if the data is collected in a disaggregated manner, which may reveal inequalities experienced by unserved and underserved segments

Feedback surveys of users across provider ecosystems, intended to enable overall service improvement, reflect accountability across participants. This solution proposes that consumers be surveyed on their experience of using digital payments through various touchpoints and payment modes. These surveys enable designated and mandated authorities to learn about multiple factors, such as: (1) levels of trust in the digital payments landscape, (2) safety of funds, (3) data, (4) inclusion of women, (5) experience, and (6) price sensitivity and transparency. This approach is in line with the G20 'Facilitate Customer Identification for Digital Financial Services' principle.

4.2.3. Fintech regulatory sandbox

Bangladesh lags behind in financial services innovation – ranked 78th among 83 countries on the fintech index as of 2021²⁶ and 16th in the Asia-Pacific region (see Figure 8). There were 112 fintech start-ups in Bangladesh as of June 2021,²⁷ of which only a few have managed to scale up. Despite noteworthy progress in accelerating financial inclusion, challenges remain on both the access and usage fronts, leaving 34 percent of the population with no formal financial footprint.

Figure 7: Fintech ecosystem in Bangladesh



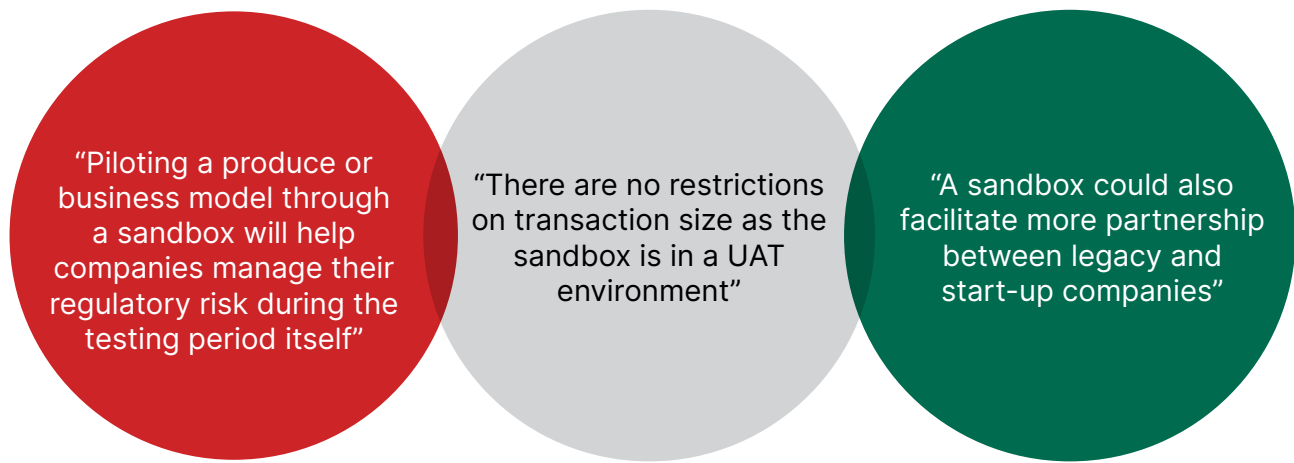
Bangladesh has a huge opportunity to set up support systems to enhance fintech's competitiveness and growth. A regulatory sandbox can be one such support system. Sandboxes are safe testing beds for new business models, products, and services in a controlled environment without the fear of immediate regulatory consequences. A sandbox acts as a layer between FIs and their innovation initiatives and facilitates smooth collaboration between fintech companies and incumbents. FIs are spared the stress of dealing with multiple data requests, often the first step in solution development, with the sandbox serving as a ready reservoir of process-related information. Regulatory sandboxes are expected to bring affordable and fast innovation in the fintech industry.

The Bangladesh Bank has an innovation office and a regulatory sandbox in the beta phase. It has a mandate to regulate and govern banking and NBFIs, MFS providers, payment system operators (PSOs), PSPs, and agent banking providers. This mandate does not include MFIs, which are regulated and governed by the Microcredit Regulatory Authority, or mobile network operators and postal services, which are regulated by the Bangladesh Telecommunication Regulatory Commission (BTRC). Thus, the Bangladesh Bank works with other regulators and government entities to ensure a wider uptake of digital payments. The development of NFIS-B is an excellent example of how the central bank works with ministries, other regulators,

and private companies to define a comprehensive and empowering policy. Several of its departments are involved in activities that enhance financial inclusion, such as monitoring market trends and consumer behaviour and analysing transaction patterns to provide support for policy implementation. The same approach is needed to ensure that the benefits of the sandbox reach as many fintech firms as possible and translate into benefits for digital payment users. This is the right time to use this sandbox.

The benefits of a regulatory sandbox are shown in Figure 8 below.

Figure 8: Benefits of regulatory sandbox



Seeing the benefits to fintech firms from the regulatory sandbox in the beta phase, the Bangladesh Bank created a regulatory innovation office under the Payments System Department in 2019. The logical next step is to come up with a regulatory sandbox.

Similar solutions in other geographies

Fintech Regulatory Sandboxes in Thailand

The Bank of Thailand (BOT), the Securities and Exchange Commission (SEC), and the Office of Insurance Commission (OIC) are operating three different sandboxes. However, they differ in approach, eligibility, and mandate.

Following are the key features of the different sandboxes:

- The BOT sandbox focuses on new innovations. The focus has been on quick-response (QR) codes and cross-border payments.
- The SEC sandbox provides fintech firms a testing bed for new eKYC technologies.
- The OIC sandbox allows insurers and insurtech firms to test innovations.

Fintech Regulatory Sandbox in India

The Reserve Bank of India (RBI) released its final guidelines for a regulatory sandbox for fintech companies in August 2019.²⁸ India has emerged as a hotbed of fintech innovation with 2174 FinTech startups, as of December 2020.²⁹ The country ranks 23rd globally in fintech adoption.³⁰ In addition to the RBI, two other financial regulators have announced plans for regulatory sandboxes. The Securities Exchange Board of India (SEBI), which regulates India's securities markets, announced its plans in August 2021 and the Insurance Regulatory and Development Authority of India (IRDAI), which oversees the insurance sector, in July 2019.

The features of India's regulatory sandbox are as below:

- The RBI regulatory sandbox accepts innovative products or services in the domains of money transfer, marketplace lending, digital KYC, wealth management, digital identification, smart contracts, financial inclusion, and cybersecurity.
- The testing may run for varying periods but should ordinarily be completed within six months.
- Entities applying for the RBI's regulatory sandbox must have a net worth of INR 2.5 million and be incorporated and registered in India or licensed to operate in India.

4.3. Ensuring user capacity and access

4.3.1. Digital ID-based payment solutions

The World Bank estimates that roughly one billion³¹ people do not have documents to prove their identity. Millions of people have forms of ID that cannot be reliably verified or authenticated, resulting in their exclusion from economic opportunities. Women make up 55 percent³² of the world's unbanked population, often because of a lack of documentation.

The COVID-19 pandemic has accelerated the adoption of digital payments, while the risk of fraud has also increased.

The diagnosis showed that the robust growth in digital payments in Bangladesh during the pandemic has produced an unprecedented need to focus on prevention of fraud in the ecosystem, which should be competitive, inclusive, and secure.

Digital IDs are the best way to address the challenge posed by Bangladesh's limited smartphone and internet penetration, as they allow access to low-cost digital payments. With data-sharing mechanisms in place, as well as proper regulations and governance, an integral digital ID system can give the excluded segments easy and affordable access to formal financial services and digital payments. Using digital ID for authentication eliminates the need for personal identification numbers (PINs) or passwords and can support most day-to-day financial transactions. Bangladesh's national ID (NID) system has close to 90 percent penetration rate, making it ideal for enabling digital payments.

This solution is particularly applicable for the RMG sector, where workers often forget their PINs. Digital ID-based payments can be enabled through biometrics, which will make the process convenient for users. Businesses might need an additional peripheral device, but smartphones will become the go-to option, given the evolving device and biometric standards. Competition will make the process easier, more cost-effective, and quicker, eventually making digital transactions ubiquitous. The digital ID-based payment system will have a strong user authentication mechanism based on the digital/NID (identifying what users own) and biometrics (identifying who/what users are).



Digital ID-based payment solutions

This integrated digital ID-based payments scheme enables the authentication of the use of digital IDs, like the use of NIDs. It facilitates a payment authentication system that consumers can access anytime, anywhere, and on any device.

Key highlights:

- Digital identity to be used for authentication.
- Highly suitable for segments with limited education and limited access to devices and internet.
- No need to remember any password or PIN.
- Can ride on the existing payments infrastructure.
- It can be interoperable across various banks and FIs.
- Encourages financial inclusion and serves the underbanked sections of society.



"I opened an MFS wallet in March 2020 and found it easy to operate. I feel confident that nobody can trick me or find out my PIN."

Shanta Aktar

25, RMG factory worker, Dhamrai



The advantages of the digital ID-based payment solution are enumerated below.

Advantages

- **Interoperability and scalability** – The solution is interoperable, since it is based on existing payments systems.
- **Biometrics as password/PIN** – Only digital ID numbers and biometric information will be required for transactions.
- **Financial inclusion** – It fosters financial inclusion by extending digital ID use to other financial services, including payments.
- **Convenience** – Payment systems based on digital IDs are easy to use, as there is no need to remember passwords or PINs.
- **Allows all basic transactions** – Digital ID-based payments systems can enable users to carry out basic financial transactions (e.g., cash deposits, withdrawals, transfers and merchant payments).
- **Cost-effectiveness** – Digital ID-based payment systems are cost-effective, as they do not involve card schemes.

The digital ID-based payment solution allows users to carry out transactions conveniently without needing to remember PINs or passwords. The solution also enables the inclusion of women in the formal financial system by addressing societal challenges and women's hesitancy to share their mobile numbers with agents. Digital IDs allow them to complete transactions using biometrics. The solution is also in line with the G20 'Promote a Digital Approach to Financial Inclusion' principle.

The associated risk and mitigation measures for the digital ID-based solution are presented in Table 14 below.

Table 14: Risks and mitigation measures for the digital ID-based payments solution

S. No.	Risk	Mitigation
1	Concerns about personal data misuse	The digital ID-based payment system will run on the existing ID (NID) infrastructure through which a person's biometrics are used for authentication. Once authenticated, the user can transfer funds. One of the major risks is that devices used for identification and verification could store personal information, which, in turn, could be susceptible to a breach. Strict regulatory guidelines are needed to ensure that personal data are not misused by any of the participants.
2	Concerns about biometric data misuse	Potential misuse of biometric data is a concern. The biometric data collected on the authentication device at a merchant location can be stored on the device or merchant smartphone for a long time. Strong regulatory guidelines are needed for the usage, processing, and storage of biometric data that introduces the right to be forgotten.
3	Privacy risk	Strong data privacy regulations are needed to ensure that data are used by a participating member only with explicit consent and only for those purposes for which the consent is given.
4	Authentication risk	Fingerprints of users engaged in labour-intensive occupations may change over time. Regulators should ensure federated and multi-factor authentication.

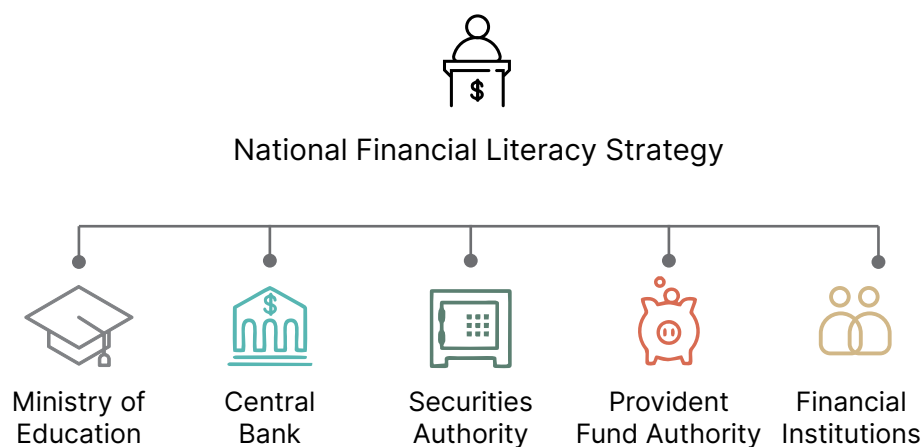
4.3.2. National Financial Literacy Strategy

Holistic financial literacy is the key to obtaining know-how about using financial instruments, achieving financial capability, and avoiding fraudulent and harmful dealings.

The National Financial Literacy Strategy aims to enhance financial literacy, encourage active savings behaviour, and raise awareness of the benefits of credit.

The activities conducted under this strategy shall be governed and monitored by government institutions, preferably the central bank (see Figure 9).

Figure 9: Institutions that will govern and monitor the Strategy



The aims of the strategy are to:

- Instil savings, money management, and financial protection habits in consumers
- Include digital and financial literacy in school curricula
- Raise awareness of financial instruments, access channels, and their usage
- Raise awareness of fraud and scam protection
- Instil financial planning habits.



National Financial Literacy Strategy

The Strategy shall drive understanding, awareness, and action towards adoption and expansion of DFS for citizens in Bangladesh.

Key Highlights

- Innovative mechanisms for digital, financial, and social literacy are prevalent in Bangladesh.
- Storytelling, helplines, AVs brochures, women agents, and DFS on boarding at the time of recruitments are some options.
- These can be baked into a public-private collaborative strategy for financial literacy.

The advantages of the National Financial Literacy Strategy are enumerated below.

Advantages

- **Multipronged objectives:** The policy would aim to make people aware of multiple aspects of financial habits and usage.
- **Enhanced public-private partnership:** The policy would be implemented through collaborations and partnerships between public and private bodies to ensure that financial education efforts extend to all sections of society.
- **Governance structure:** Policy governance and monitoring would be performed by multiple government and private sector bodies to ensure a wide coverage of financial aspects and an effective outreach.
- **Effective targeting** would enable a structured approach to outreach for the financial education of all age groups, from school children to retirees.
- **Structured communication** would aim to inculcate positive financial behaviour through communication.
- **Targeted populations would be educated** on financial products, instruments, and channels, as well as on their ideal usage and management and fraud avoidance/grievance redress.

This solution will ensure equal access to financial literacy for women by treating them as a separate and prioritised set of target segment. The National Financial Literacy Strategy is envisaged as an all-encompassing initiative that would provide specific guidance and measures to instil financial literacy among all priority groups, especially women. It will also make grievance handling and recourse mechanisms clearer for users. This solution is also in line with the G20 'Strengthen Digital and Financial Literacy and Awareness' principle.



"A bank where I used to save money just disappeared. It is difficult for me to trust financial institutions again."

Moyna

19, informal factory worker, Dhaka

4.4. Treating users' fairly by ensuring access to credit to those without a formal credit history



ACS solution

The ACS is a model that assesses the credit-worthiness of borrowers using current, reliable, and easily available data

4.4.1. Alternative data and credit scoring for new-to-credit (NTC) users

Access to credit is a challenge for many consumer segments in Bangladesh because they lack a credit profile. This can widen social inequality and impede economic growth. However, formal lenders facing regulated interest rates often have a limited appetite to lend money to the poor, women, NTC segments, and small businesses that lack a credit history with which to assess their creditworthiness.

The World Bank estimates the financing gap for micro, small and medium enterprises (MSMEs) in Bangladesh at US\$2.8 billion.³³

The diagnostic phase of the study highlighted that credit-excluded groups, such as micro retailers and other MSMEs, RMG workers, farmers, and gig economy workers, often turn to non-traditional sources for loans and often at prohibitively expensive rates of 30–40 percent per annum. This presents an opportunity for FIs to use alternative data to conduct credit assessments and tap opportunities at the bottom of the pyramid. Alternative credit scoring (ACS) is the use of data from traditional and non-traditional sources of consumer behaviour for credit risk assessment, such as mobile money usage, geolocation, airtime usage, bill payment history, rent payments, shopping, and social media usage. This process helps lenders access the underbanked sections.

Some supply chains and distributor networks are well established with retailer networks, but most new, small, and informal businesses need access to credit. In the **agriculture sector**, excessive interest rates from informal sources disincentivise SHFs from taking loans. Alternative scoring using digital transactions or behaviour data can help build a profile for a loan applicant and ensure easier, more convenient, and quicker access to credit.

Key Highlights:

- There is a financing gap of US\$2 million in the MSME sector in the country.
- Around 10 million people had MFS accounts at the end of December 2020.
- Nearly 40 percent of the population remains outside the formal financial system.
- There are 170 million mobile connections and 111 million internet users in the country.

Recent initiatives in Bangladesh for alternative credit scoring (ACS)³⁴

Dana, a fintech start-up in Bangladesh, has partnered with a commercial bank and several non-banking financial institutions (NBFIs) to pilot an artificial-intelligence-powered ACS engine to assess borrowers' credibility and evaluate their eligibility for loans. Dana's ACS engine can be used by banks, microfinance institutions, NBFIs, and insurance companies.

Using machine learning for data scoring, this ACS engine goes through the transaction alert messages sent by financial institutions (FIs) to the users' smartphones. No sensitive or private applicant information is accessed or moved out of the mobile phone. Dana also uses a set of questionnaires to assess users' financial psychology and how they manage their money. The parameters of Dana's ACS engine can be modified based on the FI's preference. It does not require human intervention and its accuracy is determined by the data collected from borrowers.

ShopUp, a start-up in Bangladesh, utilises data from 25 sources to appraise the credit eligibility of f-commerce entrepreneurs. It uses an algorithm that assesses an entrepreneur's working capital requirement and eligibility based on an analysis of business growth and social media profiles.

The advantages of alternative data and credit scoring for NTC users are enumerated below.

Advantages

- **Faster and more accurate** – The solution is more accurate and faster than the traditional scoring models.
- **Uses data from non-traditional sources** – The solution uses data from a diverse set of sources, such as social media, Short Message Services (SMSs), emails, e-commerce transactions, and rent payments.
- **Inclusive** – The solution can serve a larger set of people, including the unbanked, underbanked, and NTC.
- **Increases target segment** – This model can create credit scores for people who do not have one and increase the target segment for lenders, thereby expanding the market size.
- **Cost-effective and automated** – This model is based on a cost-effective and automated consent framework wherein users give explicit consent to service providers.
- **Improves assessment** – This solution is focused more on current parameters than historical data. It provides a better view of applicants' ability, stability, and intent to pay back.
- **Enhanced user experience** – ACS can lower loan origination costs and transfer this benefit as lower interest rates to applicants; automated processes reduce bias and errors.

A well-implemented ACS scoring for NTC users will ensure a fair use of algorithms and of inputs and assumptions in user profiling. This is guaranteed by the array of data points that are fed into the scoring model. In addition, it will ensure that user data are not misused. Users provide initial consent for sharing and processing of their personal and financial data for credit assessment. The solution is in line with the G20 'Balance Innovation and Risk to Achieve Digital Financial Inclusion' principle.

The associated risk and mitigation measures for the alternative data and credit scoring model are presented in the Table 15 below.

Table 15: Risks and mitigation measures for use of alternative data and credit scoring

S. No.	Risk	Mitigation
1	Data protection and privacy concerns	Lenders should obtain explicit consent from borrowers to collect and process their data and must not use it for any other purpose. Regulatory and policy guidelines are needed to protect the privacy of borrowers and address their concerns.
2	Ensuring data accuracy	The system will evolve and lenders should be able to assess the authenticity and accuracy of the data collected.
3	Requirement of open API platform	The success of this solution depends on how seamlessly the data flows between the participating members, from the data-owning entity to the data-processing entity. A robust and ecosystem-driven API platform can enable this.
4	Federated mechanism for creditworthiness	The alternative credit scoring model should be used as a federated model to assess credit worthiness. Many borrowers may not have enough historical data beyond a credit history.

4.4.2. Agriculture credit scoring solution

Better Than Cash Alliance's 'Digital Payments Diagnostics for Bangladesh, 2022' showed that the agricultural value chain, which includes SHFs, input retailers, and forward market actors, all rely on time-based credit arrangements among themselves. Credit needs are serviced from informal sources, primarily due to a lack of access to formal credit and because credit risk analysis and disbursement take almost a month when what is needed is instant credit.

Many SHFs lack a digital trail and formal financial history. An agricultural credit scoring solution is proposed to bridge the data gap and determine the creditworthiness of farmers, especially SHFs. It leverages an aggregated database with multiple data inputs collected over a long time, which enables FIs to perform credit appraisals for participants with little or no financial history. These credit appraisals can then be used to estimate the likelihood of loan repayment for both existing and NTC farmers.



Agri-based credit score

Agriculture credit scoring involves an aggregated data repository and credit scoring model leveraged by FIs/PSPs to estimate the likelihood of loan repayment for farmers.

Key highlights:

- Agriculture is majorly credit based across the value chain.
- Many short-term and need-based lending requirements serviced from informal sources.
- Credit risk analysis takes the maximum time, with the overall disbursement taking 1 month.
- MFIs are active in this space, but they require appropriate indicators to tailor their services to user needs.

The credit scoring model for value chain participants can help unlock the true potential of the agricultural sector. The challenge has two elements: (1) data recording and collection and (2) data analysis. Although data can be collected and farmer relationships managed by players who have, or wish to have, further reach (e.g., MFIs, fintech firms), data analysis can be undertaken by FIs (e.g., MFS, banks) or an aggregator body. In this way, FIs can obtain credit scores for farmers or well-defined reference points (from other similar profile scores). Last-mile players can focus on collecting data at the level of FIs. Their business model will evolve along with transactions and the associated data.

The advantages of the agriculture credit scoring solution are enumerated below.

Advantages

Consent mechanism: Farmers' data used and analysed for credit scoring only with their consent

Periodic updates: The data can be updated regularly based on periodic feeds and collection

Multiple data points: The data points are aggregated through multiple sources — electronic and manual — to build a complete farmer profile

Security of data: Farmer data are securely stored and processed by an authorised service provider

Packaged solution: Financial institutions can purchase the solution package with a built-in credit scoring model integrated with the government's data repository without having to aggregate and maintain farmer data to analyse creditworthiness

Transparent evaluation: Analyses of multiple data points collected over time through a credit score will give the FSP an accurate measure of the farmer's repayment capacity

Cross-sell other products: Based on the credit score and repayment history, FSPs can market linked products to farmers

A well-implemented agriculture credit scoring solution can facilitate the fair usage of algorithms and inputs or assumptions in user profiling and recommendation engines to identify biases. This is ensured through the array of data points that are fed into the scoring model in the agriculture credit scoring solution to ensure a holistic and realistic assessment of the repayment capacity of SHFs. It can also ensure that user data are not misused. This is reflected in the agriculture credit scoring solution, wherein farmer data are sourced from a secure database, and the FI seeks farmers' consent for sharing and processing their personal and financial data. The solution is also in line with the G20 'Promote a Digital Approach to Financial Inclusion and Facilitate Customer Identification for Digital Financial Services' principle.

The associated risk and mitigation measures for agricultural credit scoring solutions will be similar to the ones for the 'Alternative data and credit scoring for NTC users' solution (see Section 4.4.3).

4.4.3. MSME invoice-discounting platform

MSMEs are the engines of economic growth and contribute to the socioeconomic environment. They cover a number of sectors. Bangladesh has 10 million MSMEs, which contribute 23 percent of the gross domestic product (GDP), 80 percent of jobs in the industry sector, and 25 percent of the total labour force. The SME finance policy will play a pivotal role in the segment's growth.³⁵

The diagnostic phase of this solution showed a Bangladeshi Taka (BDT) 238 billion (US\$2.8 billion) financing gap in the MSME sector in Bangladesh,³⁶ with unmet needs for 60 percent³⁷ of women-owned MSMEs due to a lack of collateral. SMEs often do not keep data, or the data are unorganised, making it difficult for banks to assess their financial situations. Banks tend to provide loans to users with whom they have relationships. MSMEs without existing relationships with banks may become deprived of loans. Banks usually avoid loans to MSMEs because of their lack of business documentation, insufficient data, and the low returns on effort and investment.

An MSME invoice-discounting platform can overcome these challenges and mitigate the risks emerging in the post-pandemic era. It will be a collaborative effort to facilitate the discounting of invoices for MSMEs from corporate buyers through a range of financiers of interest. Invoice discounting on the platform will involve three participants: MSMEs, corporate buyers, and financiers. The invoice will be uploaded by either the buyer or supplier, depending on the discounting method, and will be approved by the other party. Once the invoice is approved, the financiers on the platform will start to bid on the invoice. The supplier will accept the bid and the discounted amount will be credited to its account within a prescribed period, as per the mandated agreements on the platform.

This is a fast, simple, transparent, and robust way to provide much-needed working capital to MSMEs. The request, approval, and financing arrangements are all digital, and any agreement can be used for subsequent credit requests. This MSME platform will allow consolidated data and analysis to generate more informed decisions regarding the financing of participating MSMEs and build an additional revenue stream for financiers. This solution can be deployed on a platform-as-a-service basis to allow other entities to participate and contribute to the growth of MSMEs in the country.

All priority and non-priority sector stakeholders benefit from the MSME invoice-discounting platform, which eases access to working capital for MSMEs. The financing institutions evaluate the invoices, approved by the corporate buyer, and provide credit based on assessment indicators, such as order size, payment terms, complexity, and the effort involved in order services. These indicators and their evaluation algorithms can be built up over time as more buyers, sellers, and financiers come on board and the number of transactions increase.



MSME invoice discounting platform

This platform connects MSME suppliers, corporate buyers and multiple financiers to discount the invoices duly approved by the buyers.

Key highlights:

- Currently, MSMEs depend on lending from MFIs and NGOs.
- 42% of MSMEs are in direct risk of failure in next six months.
- Invoice discounting is a minimal-risk mechanism of raising quick working capital.
- In India, US\$3 billion worth of MSME invoices were discounted through the Trade Receivables Discounting System platform.

The advantages of the MSME invoice-discounting platform are enumerated below.

Advantages

Access to funding applications: Seamless connectivity and data flow between stakeholders on a unified platform.

End-to-end digital: Each transaction is digitised and tracked in the system through a unique identifier.

Single platform connecting suppliers, corporate buyers, and financiers.

Standardised practices: System SOPs are baselined and documented, including template e-contracts.

Collateral-free working capital eases the balance sheets of MSMEs.

Improved cash flows lead to shorter cash cycles.

Timely access to money for MSMEs and seamless vendor payments for buyers.

Competitive discounting rates and flexible payment terms can be accommodated.

Easy reconciliation and low risk of default for financiers, as buyers are top-rated and credit scoring is robust.

The MSME invoice-discounting platform will have product features and user interfaces that minimise wrongly allocated transactions. It enables reconciliation of transactions to track defaulted payments. The solution also assists small and informal entrepreneurs, including women-owned MSMEs in Bangladesh by easing access to credit. The accountability and recourse mechanisms are managed through agreements binding on all participants. The solution is also in line with the G20 'Facilitate Customer Identification for Digital Financial Services' principle.

The associated risk and mitigation measures for the MSME discounting platform are presented in Table 16 below.

Table 16: Risks and mitigation measures for the MSMSE invoice-discounting platform solution

S. No.	Risk	Mitigation
1	Requirement for alternative credit scoring	Lenders should use the alternative credit scoring model to assess the creditworthiness of MSMEs.
2	Requirement of digital signature	Digital signatures should be preferred to make the process end-to-end digital and eliminate paper processing.
3	Requirement of open API platform	The success of this solution depends on how seamlessly the data flows between the participating members, from the data-owing entity to the data-processing entity. A robust and ecosystem-driven API platform can enable this.

4.5. Ensure funds are protected and accessible

4.5.1. Central consent-based framework

Consent is an important aspect of data storage, sharing, and processing in financial accounts and transactions, which are governed by strict international norms. A governing mechanism that controls which financial information is shared with user consent and how financial information is shared is the key to ensuring protection and anonymity of confidential financial information.

The diagnosis revealed that a lack of trust in digital payments arising from concerns such as fraud, data privacy, and theft is a major obstacle to acceptance and uptake of DFS in the country. Thus, a central consent-based framework is needed that acts as a gateway between the account holder, financial information providers (FIPs), and financial information users (FIUs) and requires prior consent for data sharing. This solution seeks to control which financial information is shared between the FIPs and FIUs and how financial information is shared after the user gives consent.

The advantages of the central consent-based framework are enumerated below.

Advantages

- **Consent mechanism:** The data are shared only after the user gives explicit consent
- **Data encryption:** The data shared with FIUs from the FIPs are encrypted using a unique registry when the consent for data sharing is approved by the user
- **API-based system:** The system works via API-based data flow and can be connected to various institutional systems and user devices
- **Real-time processing:** User consent and data sharing between the FIP and FIU happen in real time
- **Multiple account linking:** The user can link multiple financial accounts in the consent aggregator system to enable a consent mechanism for data sharing
- **No data storage requirement:** The account aggregator does not store or process user data and is 'data blind', as the data can be processed only by the appropriate institution
- **Single point of user authentication:** The account aggregator application or portal can act as a central point for managing all authentication requests and records
- **Functionality to revoke data sharing:** The user can revoke data sharing consent based on the conditions agreed to when it was given

This solution focuses on transparency in personal data usage by making audit trail data available to regulators and end-users while ensuring that personal information is protected. The solution is based on user data protection, consent, and data encryption whenever a third-party request the use of personal financial data. The solution is also in line with the G20 'Establish Responsible Digital Financial Practices to Protect Consumers' principle.

The associated risk and mitigation measures for the central content-based framework are captured in Table 17 below.

Table 17: Risks and mitigation measures for the central consent-based framework

S. No.	Risk	Mitigation
1	Data protection and privacy concerns	The FIUs should obtain explicit consent from the borrowers to collect and process their data. The FIUs should not use the collected data for any other purpose. Regulatory and policy guidelines on data usage are needed to protect the privacy of users and address their concerns.
2	Need to create awareness among users	Users, especially from underprivileged segments, need to be educated in how to give consent for data points.
3	Requirement of open API platform	The success of this solution depends largely on how seamlessly the data will flow between the participating members, from the data-owning entity to the data-processing entity. A robust and ecosystem-driven API platform can enable this.

4.5.2. Cross-border remittance platform

Remittances are often considered the lifeline of developing countries. Remittances into low- and middle-income countries grew from US\$75 billion in 2000 to US\$ 548 billion in 2019 according to the World Bank.³⁸ This payment stream targets the G20 principles for digital payments and aims for remittances to cost no more than 3 percent by 2030 and for no single corridor to cost more than 5 percent. The current average is 6.51 percent, according to the World Bank (2020). In some parts of the world, the price of sending remittances is particularly high, as informal remittances that flow through 'hawala' and 'hundi' schemes are still prevalent. Informal remittance channels depend on international travel, which has been impacted by COVID-19-related restrictions. As a result, sending money through informal channels has become difficult, prompting remitters to turn to the official formal channel.



Cross-border Remittance Portal

One-stop solution for sending and receiving remittance in dedicated corridors, to or from other countries using a unique and standard identifier.

Key Highlights

- Bangladesh is the 8th highest receiver of inward remittances worth– US\$20 billion.
- The Middle East (mostly KSA), USA, UK, and Malaysia are amongst the top contributors.
- Arrangements facilitated through partners (e.g., Fintech, BigTech) can bring down costs.
- Cross-border RTP payment corridors can be explored.

Bangladesh has recognised the importance of remittances and pursued global goals to address some of the challenges. The government offered a 2 percent cash incentive for inflows to make the channel attractive. In 2021, Bangladesh received US\$21.9 billion³⁹ in remittances, up 19.7 percent year-on-year. In August 2020, three organisations came up with a platform to enable expatriates to send money home in just five seconds⁴⁰ at any time of the day or night.

The diagnosis highlighted that some remittances came through informal channels too and that a large percentage of the remittance receivers were women.

Digital solutions provide a fast, secure, convenient, and affordable way for transferring remittances, making remittances the most attractive use case for Bangladesh. These solutions can address the challenges in cross-border payments (see Box 'Recent initiative in Bangladesh for easing cross-border payments').

Recent initiatives in Bangladesh for easing cross-border payments⁴¹

MasterCard unveiled a cross-border money transfer platform, HomeSend, to tap into Bangladesh's fast-growing market for sending remittances through the formal channel. Remitters from 136 countries will now be able to transfer money directly to account holders of the Dutch Bangla Bank Ltd and bKash, which partnered with Bank Asia to provide the service. Beneficiaries will no longer need to visit a bank or physical money transfer location, mitigating health risks.

Malaysia is one of the top five sources of remittances and Bangladesh has the third largest remittance flows in South Asia. Ripple has signed a deal with Malaysia's Mobile Money and Bangladesh's bKash to create a wallet-to-wallet remittance corridor between the two countries. The corridor will use RippleNet, Ripple's distributed-ledger-technology-based global payments network, to enable Mobile Money and bKash to offer wallet-to-wallet transactions. In Bangladesh, Mutual Trust Bank will work as the local banking partner for remittance settlements.

The cross-border platform will allow remittance services providers to have access to existing and new payment infrastructure (such as IDTP) in a seamless manner. The advantages of the cross-border remittance platform are enumerated below.

Advantages

- **Standard identifier** – A unique key, such as a mobile number, can be leveraged to send money.
- **Differential pricing** – Bilateral agreements can be negotiated for specific use-cases (e.g., high inflow and outflow).
- **Multiple entities** – These can be leveraged for payments from/to persons and businesses both.
- **Rule-based** – The best path for routing every transaction can be determined on-the-go.
- **Intuitive user interface** – Funds can be transferred in simple steps.
- **Reduce commissions** – Charges (e.g., switching costs, network fees, intermediary fees) can be optimised via negotiation.
- **Reduces multi-switching** – Multiple unnecessary intermediaries are circumvented.
- **Global market collaboration** – Business cases can emerge for global market players to tap a booming payments market (e.g., Google, WhatsApp).
- **Economies of scale** – Sender–receiver transactions become easier and the potential of the monthly payments market is tapped (Tk 220 billion in July 2021).

A sound cross-border remittance platform showcases the UN Principles for Responsible Payments by building greater trust in digital payments by enabling clear and accountable guidelines for preventing fraud, theft, and mistaken payments. Countries engaging in cross-border payments can come together to establish bilateral guidelines or conform to established global resolution guidelines, such as the Society for Worldwide Interbank Financial Telecommunications (SWIFT). It enables a RTP infrastructure for cross-border payments to minimise loss and service interruption. Traditionally, cross-border payments, especially those through informal and traditional channels, took a long time. This time can be considerably reduced using RTP corridors. RTPs enable quicker reconciliation and dispute resolution. This solution is also in line with the G20 'Establish Responsible Digital Financial Practices to Protect Consumers' principle.

The associated risk and mitigation measures for the cross-border remittance platform are presented Table 18 below.

Table 18: Risks and mitigation measures for cross-border remittances

S. No.	Risk	Mitigation
1	High cost	The charges for cross-border payments depend on the transaction amount, payment method, transfer destination, exchange rate, and the service provider. The provider's cost can increase due to the complexity of settlement in multiple currencies. The factors contributing to the high costs include the process for ensuring KYC/AMC guidelines and partnerships. Standardised regulation and innovative technologies could reduce these costs as well as the overall transaction costs for users.
2	Ensuring quick turnaround time of transactions	Many countries have enabled domestic real-time payments. However, cross-border payments take a considerable amount of time due to the checks and controls and the multiple layers. The most common reasons for delay are incomplete remittance information and anti-money laundering and fraud checks. Different institutions use different processes to mitigate risk. Digitising and standardising information sharing across borders can help increase payment processing.
3	Lack of standard regulations	Cross-border payments are subject to the regulations in the origin country as well as the destination country, and the jurisdiction of any other country they pass through. Each country has its own systems and regulatory authorities for protecting consumers and their personal data and preventing fraud and other illegal activities. Regulatory bodies across the globe have strict regulations and guidelines for AML and KYC checks. Banks have high-level regulatory and compliance requirements for AML and KYC. This may increase set-up costs, and the cross-border payment volumes may not justify the compliance costs. Standardizing the AML and KYC process will help create a level playing field.
4	Ensuring consistent message format across ecosystem	Standardisation and interoperability are important for increasing the efficiency and scale of cross-border retail payments. Most cross-border payments are processed using the SWIFT MT103 messaging format, which is highly reliable but limited in the amount of information it can carry. Any information that cannot be captured through MT103 and MT199 is usually sent in an accompanying email. Several payment systems use their own proprietary format, while some systems follow ISO 8583 messaging related to card payments. One of the biggest challenges for improving the speed of cross-border payments is interoperability. The introduction of ISO 20022 is a step towards mitigating this problem, with many countries adopting or planning to adopt these messaging standards. Though converting to ISO 20022 can foster interoperability and data richness, it is a long-term solution, as the process is time- and effort-intensive. Therefore, it will take time to standardise global messaging formats, but this should not be an obstacle to the development of an evolved cross-border payments system.

4.5.3. Consent-based direct debit payments (R2P)

Users in Bangladesh have the option to pay digitally for electricity, gas, water, and telephone bills, as well as services related to city corporations. As of November 2020, the monthly payments of utility bills through MFS stood at BDT8.31 billion (up from BDT7.8 million in 2013).⁴² Preferences are changing because the manual channels involve queuing and lengthy processes, and because MFS and bank accounts, through request to pay (R2P), can provide seamless and secure transactions. The pandemic has enabled multiple players to provide bill-paying capabilities for their services. Payment volumes and values spiked during the pandemic as people chose contactless transactions.

The government has developed ekPay, a payment platform for utility bill payments through digital channels. It offers bill payment through 50 assisted agents, 50,000 syndicated agents, 15 banks, and 30 service providers. Bill payments are made through debit cards, bank accounts, credit cards, and MFS accounts. ekPay now manages 200,000 transactions every month.⁴³

MFS and ekPay are important initiatives to increase utility bill payments and other use cases, such as payments for **school tuition, rent, and airtime top-ups**. These can be enhanced by making them fast, flexible, secure, and available round the clock. The R2P platform can utilise the existing infrastructure to achieve these objectives.

R2P (pull transactions) is a messaging framework that allows users to easily request and complete real-time, direct account-to-account payments. R2P allows a biller or payee to send an electronic request for payment to the debtor account directly. The payer receives this request via an electronic interface, such as a mobile app (bank or MFS), reflecting the requested amount and the due date for payment. On the payer side, the platform will have options that include making the payment in full, sending a partial payment, sending messages, and requesting an extension.

During the diagnostic and data collection phase, 2 percent of MFS transactions were bill payments, and 2.48 percent were merchant payments. This highlights the importance of making user journeys easy and seamless for transactions where consent-based debit transactions can enable almost every segment of the population to make such payments quickly, safely, and easily. R2P cuts across multiple use cases. Aside from utility bill payments, its application is seen in **retail and e-commerce** payments, where it is used by businesses for a frictionless experience. In **education**, a major use case is tuition fee payments for public and private schools. This solution helps keep track of payments and provides query and resolution threads with the school or PSP.



Request to Pay (R2P) Platform

R2P is an open and secure pull/push-based payments framework for customers and businesses to manage and settle bills.

Key highlights:

- Utility bill payments increased during COVID-19 with consumers availing MFS.
- Bill payments through MFS stand at BDT 7,652 Cr (↑52%).
- The process of P2G and B2G payments needs to be seamless, frictionless, and interactive.
- This new use case can help increase adoption of DFS.

The advantages of consent-based direct debit payments are enumerated below.

Advantages

- **Open framework** – Third-party apps can build products and collect user data, with user consent.
- **Request management** – Billers can set an amount and due date and add attachments, while users can seek more information.
- **Security** – Accepting a biller is required before payment requests can be sent.
- **Audit logging** – Each transaction and its details are logged.
- **Secure payments with consent mechanism** are sent to a payer's proxy payment address without the need to disclose sensitive payment details. The payer is in control, and a verified app is used to accept the payment.
- **Flexibility to pay** allows time and comfort in managing bills, paying in part or full, and deferring or declining payments.
- **Cross-sell and up-sell** – Billers can cross-sell products based on user payment preferences.
- **Easy reconciliation** – Unique references are tagged to transactions rather than payers.
- **Timely reminders** – Alerts are set for due dates of bill payments.

Consent-based R2P enables product features and user interfaces that minimise misdirected transactions. This is reflected in the consent mechanism, where the user has the right to approve or reject the payment request, thus preventing duplicates and transactions that are no longer tied to the user's liability. R2P also ensures easier tracking of user feedback and complaints. Unique payment references are tagged to transactions rather than usernames, which makes it easier to track and resolve disputed transactions. The solution is in line with the G20 'Expand the Digital Financial Services Infrastructure Ecosystem' principle.

The associated risk and mitigation measures for the consent-based direct debit payments are presented in the Table 19 below.

Table 19: Risks and mitigation measures for consent-based direct debit payments

S. No.	Risk	Mitigation
1	User awareness about prevention of fraudulent transactions	Users, especially the underprivileged sections, need to be educated on how to determine if the request is from a legitimate payee. The FSPs will need to take this task up with their user base. Users should be shown how to check all the details before entering their personal identification number (PIN)/password.
2	Concerns about data privacy	Payees need to obtain explicit consent from the user before withdrawing money from their account. The regulator should set global best practices for FSPs to obtain explicit consent from users for pull transactions.
3	Participation of ecosystem for successful implementation	The success of this solution depends on holistic participation from all the billers and service providers in providing a unified experience to users.
4	Transaction details for users	Service providers should share their invoices with users to make the end-to-end process transparent.

4.6. Providing user choice through interoperability

4.6.1. Open banking Application Programming Interfaces (API) platform

Banking is rapidly evolving with changing user expectations and behaviours, regulatory scrutiny, and emerging technologies that enable a broader variety of products and services. Within this dynamic environment, FIs also need to stay compliant, manage costs, and maintain security and public trust. Governments are becoming involved as they look for ways to increase innovation and competition across the financial sector.

All these aspects are being addressed globally through the availability of an open, secure, and convenient financial services spectrum. Traditional institutions (e.g., banks and MFS providers) at the back end enable these services, but front-end user relationships can be managed through third-party service providers or traditional FIs.



Open banking API platform

The open banking API platform enables better financial products by FIs/PSPs. Data is shared securely only after customer consent.

Key highlights:

- Bank are not incentivised to invest in unattractive markets.
- Fintechs with leaner business models are better placed to target these markets.
- Multiple markets can be targeted with the existing banking infrastructure.

In Bangladesh, FIs can focus on collaborations and adopt an ecosystem approach by adding third-party capabilities to their core business offerings and offering access to their user data through APIs, thereby enabling innovative business models and sources of revenue. In fact, banks have already started securely opening their ecosystems to third parties and have rolled out products and services for various target segments.

Recent initiatives in Bangladesh

A leading private bank in Bangladesh has reengineered its architecture and enabled enterprise middleware on top of its core transactional systems. The intermediary layer enables several initiatives, such as social banking, WhatsApp-based services for users, and other innovative products. This eliminates the need for multiple complex integration touchpoints with core and third-party provider applications and provides a single reusable interface. In addition to allowing flexibility, reusability, and increased security, it also ensures that core systems are not directly exposed to the internal and external systems of third-party service providers. Agent banking was implemented a while ago, and middleware has recently been used to provide microloans in the rural areas. In addition, the Bangladesh Bank has reduced the rate of interest to 9 percent for small loans. These factors were important for the bank's decision to undertake this initiative and manage the overhead and time required to provide the loans. The agents and third parties found the process more convenient, as connecting with the bank to process loans and other products was a seamless experience.

Potential participants in the open banking initiative in Bangladesh are presented in Figure 10 below.

Figure 10: Potential participants in the open banking initiative in Bangladesh

01		Innovators are expected to flourish and integrate with any bank in the ecosystem
02		Users will have a greater choice of digital services offered by innovators. These services will either compete with or complement those provided by banks
03		Banks will be able to 'openly' integrate with one another and leverage additional information to improve processes, experiences, and offerings
04		Some banks will seize the opportunity to become 'open banking innovators', enabling additional value-added services in response to user needs

Open banking can unlock the true potential of digital payments access, quality, and usage. Banking services, such as payments, credit, and corporate banking, can be enabled for cross-sector participants. Relevant products and services can be enhanced, such as banking products for user segments, including RMG workers, teachers, students, small businesses, SHFs, and input retailers.

The advantages of the open banking API platform are enumerated below.

Advantages

- **Decentralised services** – Services are decentralised through traditional banks, neo-banks, IT firms, fintech/innovators.
- **Consolidated backend transactions** are processed at the bank in the trusted layer.
- **Solution innovations** – Fintech/innovators can build seamlessly onto the existing services landscape.
- **Integration with other application** – Open API integration with legacy applications at banks.
- **Inclusive provider ecosystem** – Low entry barriers for fintech/ innovators and smaller bank transactions.
- **Clarity of provider roles** enable more inclusivity in the financial market via role segregation, providing the flexibility to choose a role in the overall open banking environment.
- **Revenue share** – Increases in the share of digital revenue for traditional banks and innovator partnerships.
- **User engagement** – Improvements in overall user engagement, as the user relationship is with innovators/fintech firms.
- **Opportunities for all ecosystem players** – Offers a level playing field for traditional and niche market players.

This solution ensures that payment products meet the needs of target markets. The open banking API standard enables FIs to work on collaborations and adopt an ecosystem approach by adding third-party capabilities to their core business offerings and by voluntarily opening their APIs, thereby creating innovative business models and targeted products. Interoperability is a critical foundation on which open banking standards, platforms, and provider landscape are based. However, the solution will not be successful if the pricing of services is not made transparent by the intermediaries. That would lead to a loss of business for the sponsor FIs and could cause user attrition. This solution is in line with the G20 'Provide an Enabling and Proportionate Legal and Regulatory Framework for Digital Financial Inclusion' principle.

The associated risk and mitigation measures for AI/ML-based fraud detection systems are shown in Table 20 below.

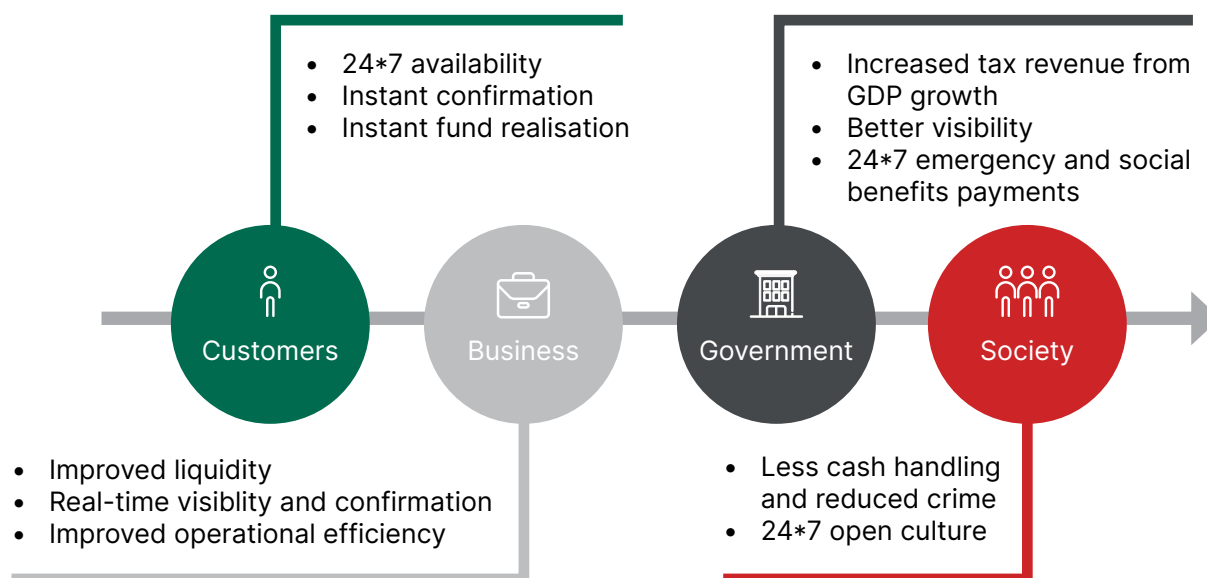
Table 20: Risks and mitigation measures for open banking API platform

S. No.	Risk	Mitigation
1	Data privacy concerns	There should be regulatory oversight for explaining and displaying information and obtaining user consent.
2	Security concerns	API connection suitability and eligibility of third parties must be assessed to prevent unauthorised access.
3	Partnership integration	The open API-based transactional experience cannot be provided to users by working in silos. User experience becomes the responsibility of every stakeholder. This needs to be achieved through collaboration among market players and service providers.
4	System failure challenge	This can be done by building a high level of redundancy at each API level to avoid transaction breakdown due to infrastructure failures or latency impacts, and by building a strong reconciliation mechanism.

4.6.2. Real-time payment (RTP) systems

RTP transfers are settled instantaneously, round the clock, even on weekends and holidays. So far 56⁴⁴ countries have developed RTP systems, which entail extensive data exchange, real-time messaging, and instant confirmations. With such capabilities, RTP can help improve cash flow for businesses and individuals, operational efficiencies, user engagement, data transparency, and accuracy. The benefits of RTP for stakeholders are shown below (see Figure 11).

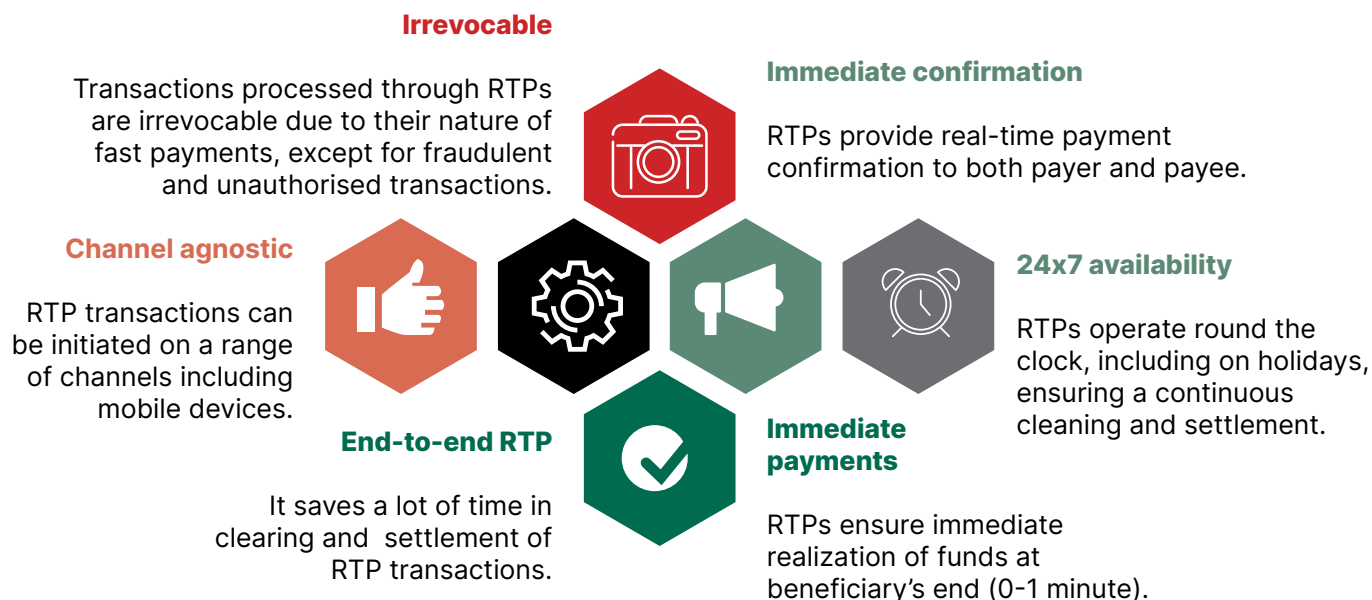
Figure 11: Benefits of RTP systems



RTPs have revolutionised payments across geographies, gaining wide acceptance from users and businesses. The global value of RTPs was estimated at US\$10.64 billion in 2020 and is expected to expand at a compound annual growth rate of 33 percent during 2021–2028.⁴⁵ Many countries use proprietary messaging systems for RTPs, but most adhere to the global standard of ISO 20022.

The core features of RTPs across the globe are shown in Figure 13.

Figure 12: Core features of RTP systems



Virtual/ proxy payments are the new drivers of RTP systems

There is a strong demand from users for more ways to transfer funds in real time. This requires addressing databases that can link aliases or proxy/virtual addresses, such as mobile phone numbers, email addresses, social media IDs, or virtual account numbers/addresses, to bank account information. The Unified Payments Interface in India and Paym in the United Kingdom are examples.

The advantages to virtual/proxy addresses are enumerated below.

Advantages

- **Drive adoption of proxy identifiers** – Beneficiaries' privacy concerns are addressed while removing friction from transactions because the information used is less sensitive. Entering a phone number, for example, is less error-prone than typing an International Bank Account Number or Indian Financial System Code.
- **Bank details are not required** – Payment through virtual addresses, which are similar to an email ID, does not require bank account or card details. The virtual address is easy to remember and share.
- **Superior user experience** – With the use of virtual payment addresses, the real-time transfer of money occurs between bank accounts using smartphones. Proxy payments bring it all under one umbrella instead of multiple apps for different banks.
- **A blessing for e-commerce** – Online sellers can employ proxy addresses in RTPs. Subsequently, the buyer receives a message for payment approval. The buyer can withhold approval until delivery. When the buyer receives the product, the payment and delivery people obtain real-time confirmation.

The NPSB processes internet banking fund transfers (IBFT) transactions of six banks. The users of these six banks can transfer funds to another bank within a minute using IBFT. An account or card holder of an IBFT member bank can transfer funds — account-to-account or card, and card-to-card or account — to other banks through internet banking. The proposed RTP system should, initially at least, make it mandatory for all banks to become members of this payment scheme within an agreed timeline. The RTP system is expected to incorporate new features, such as transfers using 'virtual addresses', onetime mandate, and push and pull payments.

The associated risk and mitigation measures for the RTP system are presented in Table 21 below.

Table 21: Risk and mitigation measures for a RTP system solution

S. No.	Challenge	Mitigation
1	Messaging standard across participating FSPs	Participating banks should use an ISO messaging standard, preferably ISO 20022, for RTP interoperability
2	Security risk	The RTP system will provide strong end-to-end security and data protection. Participating members will securely capture the data and encrypt it.
3	Settlement risk	The failure of a participating bank to meet its obligation should be offset by the Clearing Agency. This should be done by obtaining collateral from participating banks and giving them a debit cap.
4	User-support-related risk	Every participating FSP should provide a robust and scalable 24×7 customer support centre through multiple channels.
5	Authentication risk and prevention of fraudulent transactions	Participating members should ensure that all users (or applications) that are able to initiate RTPs be strongly authenticated. This can be done by properly storing passwords and ensuring they require sufficient complexity, as well as by making use of multi-factor/federated authentication to mitigate password-related risk.
6	Operational risk (uptime)	The RTP system must be designed to be available 24×7 throughout the year, including on holidays. Being unavailable even for a few minutes can cause hundreds of payments to fail.

4.6.3. Payment interoperability

The National Payment Switch Bangladesh (NPSB) is a centralised platform governed by the central bank to enable ATM and card interoperability across the country. It was launched on December 27, 2012, with the aim of attaining interoperability among scheduled banks for ATM and card-based or online retail transactions. Currently, 53 banks are interoperable for ATM transactions through NPSB and 52 for POS transactions through NPSB. The NPSB is also being used to enable IBFT. Twenty-five banks are interconnected for IBFT through NPSB.⁴⁶ Additionally, the Bangladesh Bank has an interoperable RTGS system for high-value and time-critical payments, which are being used by both corporations and individuals.

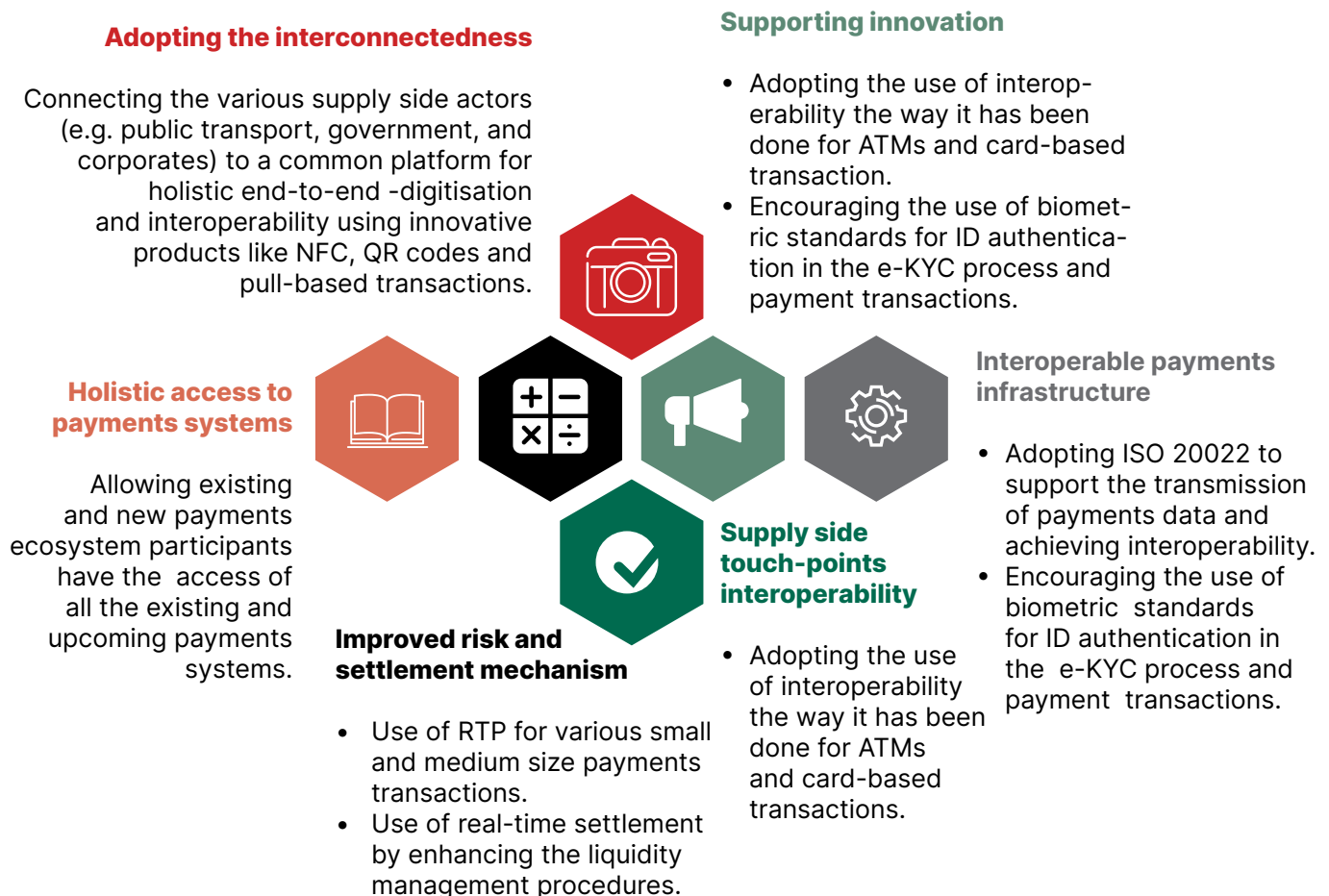
In January 2021, the Bangladesh Bank launched the Bangla QR code, an interoperable solution designed to standardise QR code-based, small-value payments. Merchants can accept funds by using Bangla QR from various payment instruments, including bank accounts, cards, and MFS accounts.

The government's Information and Communication Technology (ICT) Division has taken measures to make payments across banks, MFS providers, and payment system providers interoperable. The IDTP is being set up to establish payment interoperability among banks, MFS providers, and PSPs to make the country a 'cashlite' economy.

All payment-specific solutions proposed in the Roadmap need to be aligned with the interoperability framework and the eventual IDTP platform. The alignment of the proposed solutions with the interoperability framework will eventually translate into a wider adoption of digital payments, enhanced experience for users, and lower costs for service providers. It will also boost market competitiveness, the benefits of which will be realised by users.

This approach to holistic payment interoperability should provide equitable access to all entrants, current and new. Figure 14 below illustrates the holistic approach to enabling payment interoperability for the benefit of every payment system participant.

Figure 13: Payment interoperability approach



The associated risk and mitigation measures for payment interoperability are presented in Table 22 below.

Table 22: Risk and mitigation measures for payment interoperability

S. No.	Risk	Mitigation
1	Messaging standard across participating FSPs	Participating banks should use an ISO messaging standard (preferably ISO 20022) for payments interoperability.
2	Security risk	The interoperable payments system will provide strong end-to-end security and data protection. Participating members will capture data securely and encrypt it.
3	Customer support-related risk	Every participating FSP should provide a robust and scalable 24×7 customer support available through multiple channels.
4	Operational risk	The governing body should have a strict due diligence process for on-boarding participating members to avoid liability risk and operational failure such as settlement risk.
5	Pricing-related risk	The central bank should monitor the pricing of interoperable payment services. The pricing should be market driven, but a close watch is essential to enable an equitable market driven by innovation.

4.7. Champion value chain accountability

4.7.1. Government subsidy for direct-to-citizen cash-based payments

As of June 2020, government subsidies worth BDT6.86 billion had been delivered digitally to cash transfer recipients. Service providers, such as MFS and bank agents, played an important role in service delivery with low costs. Incentivising the digital payment value chain participants is imperative for fostering expansion and adoption. Table 23 below shows options for different cost distribution solutions.

Table 23: Options for different cost distribution solutions

 Subsidise cash transfers directly by padding minimum cash-out costs	OPTION: Topping disbursements with the market's highest cash-out fee multiplied by the minimum number of transactions (e.g., BDT10 cash-out fee x 4 transactions = BDT40). OUTCOMES 1. Money will stay in the digital ecosystem for a longer period, helping MFS providers earn a float revenue.
 Share cash-out transaction costs with providers	OPTION: Flat subsidy or percentage share on cash-out transactions (e.g., 40/60 or 50/50 share of the transaction charges). OUTCOMES: 1. Key performance indicators for cash-out transactions will be devised (e.g., account activity). 2. A fixed reward can be provided to FSPs that have a fixed percentage of active users on a month-to-month basis.
 Waive interoperability costs through the IDTP infrastructure	OPTION: Incentivise integration with IDTP for interoperability of transactions by waiving the switching and routing costs for a specified period after the launch of IDTP (agent-level interoperability). OUTCOMES: 1. Push towards interoperability and reduced dependence on agents. 2. Fintech players can develop solutions for target segments.

Other options for MFS cash-out cost optimisation that emerged from the interactions are listed below.

- **Revisiting taxes on MFS transactions** – Discuss value-added tax (VAT) for transactions for providers, intermediaries, and users. There is 15 percent VAT levied on user transaction charges, which deters users. More focus could be placed on diversifying the business models of agents.
- **Time-based restriction or deferred withdrawal** – Set a time-based restriction on withdrawal of funds, enabling the money to be 'digital' for a longer period and producing an incremental earning of float for providers. Government subsidies could involve FIs, to which funds would be transferred in bulk at a specified period (T). The provider would earn float on the funds for a specified period (x days) and then disburse the funds to beneficiary accounts on the (T+x)th day.

- **Establishing a transaction charge ceiling** – Create a guideline for a price ceiling for cash-outs or transaction costs charged by providers. Invite feedback on an acceptable price ceiling through a viability analysis on the entire payment value chain. This ceiling can be periodically revisited to assess the adoption of digital payment instruments.

Slashing cash-out charges could make users more comfortable about cashing out money and spending cash. However, the long-term objective is to encourage digital spending. There should be alternative ways to offset for users by paying them a higher interest rate on deposits, giving cashbacks and rewards for digital spending, and offering more personalised services. An important reason why users still cash-out money and spend it on day-to-day needs is a lack of awareness of digital payments. A well-prepared, multipronged marketing plan is critical for addressing this. Supplementing the marketing plan with user-orientated incentives will help.

The RMG sector is crucial to the country's economic growth. During the COVID-19 pandemic, wages were digitally disbursed as part of a stimulus package. The uptake of digital payments for wage payments increased exponentially, but the uptake decreased after the initial surge. The charges on withdrawing salaries from MFS wallets were a big deterrent. Distributing this cost by sharing the burden across the value chain might help bring new users into the formal financial system.

“



“The first time when we received our wages digitally, it was a thrilling experience. The factory management reassured us that the transition will be smooth, and we will receive our salaries on time. We were also trained by MFS providers to use our wallets.”

Moushumi Akhtar

29, RMG factory worker, Dhamrai

”

4.7.2. Optimisation of retail payment costs through global and local payment schemes

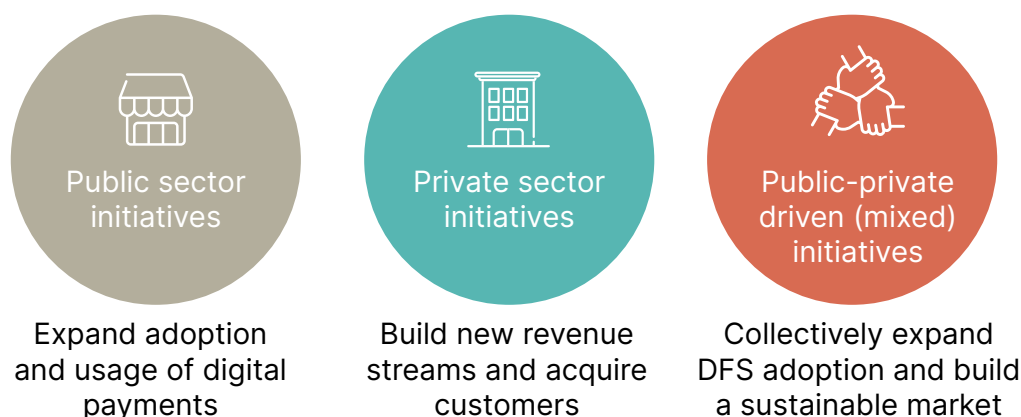
Transaction costs are optimised through underlying global or regional payment schemes, and the basic financial market infrastructure is established. There are two scenarios that are relevant for any country's digital payment adoption journey: (1) growing digital payments adoption, and (2) sustaining digital payments adoption. Both options are assessed below (see Table 24). Policy options and alignment with payment schemes are also discussed.

Table 24: Options for growing and sustaining digital payments

	Option 1: For international card schemes	Option 2: For national card schemes	Option 3: For national instant payments schemes
Scenario-1: Growing digital payments adoption 	Policy objective: increase digital payments instrument penetration • No interchange (IC) or merchant service fee (MSF) caps • No/low surcharging allowed	Policy objective: increase digital payments instrument penetration • No IC or MSF caps • Option for MSF waiver by government • No surcharging (if MSF is waived)	Policy objective: grow digital payment transactions • No IC or MSF caps • Option for MSF waiver by government • No surcharging (if MSF is waived)
Scenario-2: Sustaining digital payments adoption 	Policy objective: increased adoption of digital payments • IC caps in place • MSF caps in place • Allow surcharging at actual cost of acceptance	Policy objective: increased adoption of digital payments • No IC or MSF caps needed • Open competition in the market • Allow surcharging at actual cost of acceptance	Policy objective: increased adoption of digital payments • No IC or MSF caps needed • Open competition in the market • Allow surcharging at actual cost of acceptance

4.7.3. Public, private, and mixed cost incentivisation strategies

The costs associated with merchant payments can be optimised through direct or indirect initiatives driven by either public or private sector entities (see Figure 14 and Table 25). The government and market players (banks, MFS, fintech firms, third-party service providers) can cooperate in providing incentives or value-added services to merchants.

Figure 14: Stakeholder initiatives and their objectives**Table 25:** Initiatives across public and private sectors that promote digital payments

		
Public sector initiatives Initiatives by the government to promote digital payments in Bangladesh, specifically in sectors that have been overlooked and need assistance. These incentives can be in the form of: • Fiscal and financial incentives (e.g., merchant incentives, subsidised POS, VAT/income tax reduction, lotteries, offers, and cashbacks for the users). • Regulatory pushes (e.g., merchant formalisation, disincentivising cash-cash transaction limits, IC and MSF guidelines, mandated digital payments acceptance, and digital wage disbursement). • Other incentives (e.g., government adoption of digital payments through internal systems and processes).	Private sector initiatives Competitive initiatives in the private sector to acquire users and address gaps in the market. These incentives can be in the form of: • Value-added services (e.g., easing access to credit, solutions for increasing productivity, revenue-generating services, and customer relationship management solutions). • Technology innovations and new business models (e.g., new products and services, improving user experience, non-traditional partnerships, and payment aggregators).	Public-private driven (mixed) initiatives Government incentives to the private sector to promote market development and enhanced digital payments uptake. These incentives can be in the form of: • Ecosystem development (e.g., interoperability and standardisation, consumer protection and financial literacy, telecom infrastructure, and supply chain digitisation). • Awareness campaigns (e.g., brands and factories engaging in sensitisation campaigns, IDO workshops and awareness sessions through interactive storytelling and other techniques). • Acceptance development funds (e.g., identifying the potential of digital payments for the economy and allocating a fund to nurture and bootstrap digital-payment-related initiatives).

The e-commerce sector has seen a sizeable uptake, accelerated by the pandemic. Providers have highlighted transaction costs as a challenge for use of digital payments in online shopping. Although a reduction or elimination of VAT can help reduce MFS transaction costs, optimising retail payments (provided in Section 4.7.2) through card schemes can be implemented to reduce transaction costs using debit and credit cards.

A well-implemented cost distribution structure will enable participants to leverage partnership agreements, ensuring commitment to the initiatives and agreements on cost to ensure a fair treatment of users. It will foster transparency in pricing information in a simple manner. This solution will also be in line with the G20 'Promoting a Digital Approach to Financial Inclusion' principle.

4.8. Ensuring recourse is clear, quick and responsive

4.8.1. AI/ML-based fraud detection system

With the advent of digital financial systems, suspicious transactions have become common across payment platforms, instruments, and financial service touchpoints. Payment fraud over e-commerce platforms is on the rise, and as a result, merchants are experiencing heightened impacts on their online sales and revenues. In 2021, 3.1 percent of e-commerce revenue was lost to payment fraud globally, and 4 percent of e-commerce revenue was lost due to payment fraud in the Asia-Pacific region.⁴⁷

While digital spending has increased due to the pandemic, trust remains a challenge for users and enterprises. To address this, FIs and global card networks have detection systems for fraudulent transactions. AI/ML-based fraud detection systems blocked US\$2 billion in card fraud in Latin America in 2019.⁴⁸



AI/ML-based fraud detection system

This system consumes, analyses, and derives suspicious patterns from extensive data (e.g., transaction volumes) on a near-real-time basis to highlight any anomalies.

Key highlights:

- Overall digital spending has increase due to COVID, but trust is a continuing pain point for citizens and business.
- Detecting fraud is key to adoption of DFS.
- AI blocked US\$2 billion in payment -card fraud in Latin America.
- Visa, MasterCard, PayPal, and Danske Bank and Danske Bank have leveraged AI as a powerful tool.



"Once, I was charged double by a food delivery company when I paid through my credit card. I was able to access recourse and get it reversed within 24 hours. Cards are my preferred mode for transactions; however, I use my MFS apps as well."

Tasnuva

26, executive in communications agency, Dhaka



AI/ML-based fraud detection systems leverage the capabilities of machine learning to derive patterns from all available data to detect fraud by analysing transactions in real time. The advantages of these systems are enumerated below.

Advantages

- **Data-based decision making** – The system makes a decision on a transaction based on analysis and trends from analysed previously datasets.
- **Large volume data processing** – The system can analyse huge volumes of transactions simultaneously with increased operational accuracy.
- **Limited human interaction for faster and more objective decision making** – The system is designed to minimise human intervention in decision making due to the time-critical nature and volume of the transactions.
- **Processing speed** – Machine-learning-based systems can evaluate huge numbers of transactions in real time. They build rules and perform transaction pattern analysis by continuously analysing and processing new data.
- **Efficiency of analysis** – The systems are designed to decipher unusual patterns and suspicious behaviour in transactions, the detection of which becomes more accurate as the systems process more data.

This solution fosters a fair usage of algorithms by scrutinising inputs and assumptions in user profiling and recommendation engines to identify biases. AI/ML-based systems follow this principle by using a ML model rather than a strict rule-based model. AI/ML-based fraud detection systems process each dataset on a case-by-case basis and build on what was learned from previous transactions. This minimises the possibility of errors in ID of false positives and negatives. This solution also ensures that user funds and data are protected through efficient detection of transaction fraud. The solution is in line with the G20 'Establish Responsible Digital Financial Practices to Protect Consumers' principle.

The associated risk and mitigation measures for AI/ML-based fraud detection systems are shown in Table 26 below.

Table 26: Risks and mitigation measures for AI/ML-based fraud detection systems

S. No.	Risk	Mitigation
1	Unavailability of holistic data	The system needs to be integrated with various sources of data at FSPs to ensure accurate prediction and decisions.
2	Ensuring data accuracy	The system will evolve over time, and FSPs should be able to determine the authenticity and accuracy of the data and data sources.
3	Requirement for geolocational data	Geolocational data should be used with these types of applications, as fraudulent transactions often occur far away from where the account owner lives.
4	Lack of human judgement	The system needs to be trained to 'understand' that each deviation is either fraud or a new acceptable deviation.

4.9. Solutions for wider adoption of digital payments in retail

4.9.1. Software Point of Sale (SoftPOS) solutions for merchant payments

Point of Sale (POS) systems have evolved from being merely a tool to record sales into a robust platform. According to a report from Grand View Research, the global POS terminal market is expected to reach US\$130.91 billion by 2028.⁴⁹ The trend in Bangladesh is similar.

SoftPOS is a software-only mobile application that allows individuals to accept contactless payments from cards or near-field communication (NFC) wallets on their personal smartphones without any additional hardware, such as traditional electronic data capture terminals, which is an additional cost for merchants. SoftPOS moves 90 percent of acceptance functionality, including components that enable contactless transactions and certain security functions, from the smartphone to the Cloud. The encrypted messages are exchanged between the acceptance device and Cloud infrastructure. This offers robust security, reduces development and maintenance costs, and creates scalable distribution channels by allowing immediate connectivity to partners.



SoftPOS and BNPL initiatives

SoftPOS is a cloud-based payment acceptance app on an NFC-enabled device. BNPL enables shorter credit cycles (10-15 days) for staggered payments.

Key highlights:

- The e-commerce industry is expected to generate – US\$5 billion in gross merchandise value and serve least 25% population.
- Volume of digital merchant transactions through MFS have tripled in the past three years.
- This provides a compelling case for SoftPOS in the merchant acceptance space.
- Multiple BNPL distribution models exist across the world, allowing merchants to offer their own BNPL solution.

The National Digital Payments Diagnostics conducted by UN-based Better Than Cash Alliance revealed that a mere 2.5 percent⁵⁰ of transactions from MFS accounts between December 2020 to May 2021 were merchant payments. The number of POS transactions increased by 27 percent from December 2020 to May 2021 (the increase between December 2019 and December 2020 was below 2 percent).⁵¹ While there has been growth during the pandemic, there is scope to make person-to-merchant payments more cost-effective and user-friendly.

The pay-as-you-go option means small businesses can compete with medium and large retailers and disrupt the market while remaining lean and nimble themselves. There are many options and providers. Most system providers do not charge cancellation fees or lock businesses into annual contracts. Therefore, a business can upscale, downscale, or switch providers without sacrificing a large upfront investment.

In Bangladesh, only credit cards are approved for use as contactless instruments. The regulator should approve the contactless feature in debit cards and prepaid cards. The Bangladesh Bank approved the use of credit cards in contactless transactions in 2018, but it is yet to incorporate other form factors. Over half a dozen FSPs, including banks and NBFIs, have launched contactless credit cards and POS terminals in the country.⁵²

The Bangladesh Bank proposed contactless QR code-based merchant payment guidelines in January 2021. Currently, 450,000 contactless credit cards and 42,000 POS terminals that can support contactless payments are available in Bangladesh. Contactless payment has grown by 70 percent annually since its inception in 2018. This is the right time for the regulator to foster the growth of contactless payments and approve other form factors. Forbes reported that 61 percent of merchants are seeking Cloud-based POS for their businesses.⁵³

The advantages of the SoftPOS solution for merchant payments are enumerated below.

“



“There is a wave of digital payments around us; however, why should we accept digital payments if our customers are fine with cash?”

Mohammad Imam Hossain

23, convenience store merchant, Keraniganj

”

S. No.	Risk	Mitigation
1	Need for additional hardware	If the mobile device is used as a POS, it will need additional hardware to accept card transactions that are not NFC enabled.
2	Security concerns	The merchant will need to follow regular updates from the acquiring FSP to upgrade the device. FSPs will need to educate the merchants in how to keep their device's software up to date.
3	Online receipts and user awareness	Users will receive online receipts through email and SMS. Merchants and users will need to be adapt to digital receipts by default. In locations where this poses a challenge, a printer may have to be attached to the SoftPOS.

The SoftPOS solution, designed specifically for merchants, provides ease of use and convenience for merchants who can accept payments using their mobile phones and tablets, while ensuring security and lower overhead and maintenance costs. This solution is in line with the G20 'Expand the Digital Financial Services Infrastructure Ecosystem' principle.

Table 27 presents the risks and mitigation measures for SoftPOS solutions.

Table 27: Risks and mitigation measures for SoftPOS solutions

Advantages
• Easy registration – Instant online registration, with the acquiring bank taking less than 30 minutes. • White label solution – It can be provided as a white label solution to FIs and payment aggregators. • Integration of additional features – Innovative features can be built into the acceptance software (e.g., credit reconciliation, cash register, and online shopping). • Cost-effective – Provides a cost-effective card acceptance solution for all micro-merchants. • Access through existing mobile devices – Merchants can accept contactless payments directly by using their smartphones or tablets. • Access to credit in informal sector – Helps reach informal sector merchants with small ticket transactions. • Brings the merchant community closer and opens areas of collaboration.

4.9.2. Buy Now Pay Later (BNPL) scheme for e-commerce

The need for alternative credit mechanisms has been growing amid the increase in digital payments at merchant outlets and the widespread use of e-commerce. BNPL schemes offered by banks, fintech firms, e-commerce firms at merchant POS terminals, and e-commerce websites have become immensely popular. BNPL reduces the financial burden on users by doing away with the upfront payment and replacing it with no-cost, equal monthly instalments. It can increase the use of digital payments in the e-commerce sector in Bangladesh, where 80 percent of online transactions are still COD.⁵⁴

The advantages of the BNPL scheme for e-commerce are enumerated below.

Advantages
• Soft credit check – The BNPL scheme, unlike traditional credit disbursement, enables the buyer to make instant product purchases without traditional credit approval. Most fintech firms offering a line of credit carry out a soft credit check on users on their platforms. • Interest-free instalments – Most BNPL schemes offer interest-free instalment plans, with repayments made within a defined timeline (generally 14–30 days). • Instant processing and payment for merchant: –The processing of the repayment schedule and confirmation of product purchase happen instantly. The e-commerce platform receives instant payment in full from the FS provider. • Incentivisation for buyers – Buyers can afford to purchase goods (up to a defined limit) as no upfront payment is required.

Table 28 below presents the risks and mitigation measures for the BNPL scheme for e-commerce.

Table 28: Risks and mitigation measures for the BNPL scheme

S. No.	Risk	Mitigation
1	User education	Users should be educated in the use of BNPL schemes to ensure a seamless and satisfying experience.
2	Investment in marketing and promotion	FSPs will need to promote the BNPL scheme to ensure that consumers are aware of the facility and its terms and conditions.
3	Requirements for quick decision making	FSPs need to have a robust and scalable infrastructure to enable quick decisions about user eligibility.

4.9.3. MSME lending solution for merchants

Banks and FIs are reluctant to lend to MSMEs, one of the engines of the economy, because they usually have little or no financial history. MSMEs therefore turn to other finance providers, such as manufacturers, or alternative lenders and informal players, and end up paying high interest rates. Funding for this segment is particularly important in Bangladesh, where 97 percent of the enterprises are MSMEs and account for 25 percent of the GDP, according to an Asian Development Bank study.⁵⁵

Micro-credit solutions for MSMEs and small merchants will help them get loans from FSPs even without a formal credit history. The FSP would leverage a business-specific financial history (e.g., order fulfilment, payment cycle) or other data points to arrive at a credit decision.

The advantages of the MSME lending solution for merchants are enumerated below.



Central micro-credit solution

This central platform focuses on credit risk evaluation and scoring based on various parameters to underwrite small short-term loans for micro-merchants.

Key highlights:

- Small merchants tap informal lending at high interest rates (30-40%).
- Small, immediate short-term loans are the key requirements.
- MF-CIB from MRA can be leveraged for introducing micro-merchant-specific parameters.
- Right to play for fintechs, MFS, banks, and MFIs.

Advantages

- **Holistic data analysis for credit underwriting** – Multiple data points are analysed to come up with a credit decision.
- **Seamless integration with external data providers** – When the financial services provider leverages information from a third-party for in-house credit scoring, a seamless data transfer and update mechanism throws up the latest information.
- **Safe and secure** – The merchant data are retrieved, stored, and processed securely.
- **Packaged solution or in-house data processing** – FIs can purchase the solution package or procure data directly from the agency in case of a tie-up and process them in-house according to the type of credit scheme.
- **Transparent evaluation** – Analyses of multiple data points collected over time through a credit score provide fair measures by which the FSP can evaluate the MSME's repayment capacity.
- **Faster processing** – The loan application can be tendered digitally and processed objectively within a short time.

This solution will foster the creation of gender-focused and innovative financial products for women and extend access to credit for a growing cohort of micro-merchants and SMEs, including women entrepreneurs who are working to expand their businesses, particularly in f-commerce. A solution with a multitude of financial and non-financial parameters enables credit assessment without bias, thus offering fair credit evaluation to all. This solution is in line with the G20 'Expand the Digital Financial Services Infrastructure Ecosystem' and 'Facilitate Customer Identification for Digital Financial Services' principles.

Table 29 below presents the risks and mitigation measures for MSME lending solutions.

Table 29: Risks and mitigation measures for MSME lending solutions

S. No.	Risk	Mitigation
1	Data protection and privacy concerns	The FIUs should obtain explicit consent from the borrowers to collect and process their data. The FIUs should not use the collected data for any other purpose. Regulatory and policy guidelines on data usage are needed to protect the privacy of users and address their concerns.
2	Need to create awareness among users	Users, especially from underprivileged segments, need to be educated in how to give consent for data points.
3	Requirement of open API platform	The success of this solution depends largely on how seamlessly the data will flow between the participating members, from the data-owning entity to the data-processing entity. A robust and ecosystem-driven API platform can enable this.

4.9.4. Integration of digital payment providers with telemedicine and online consultancy websites and applications and enabling push- and pull-based transactions using the RTP platform

The COVID-19 lockdown accelerated the digitisation of many sectors. Hospitals, pharmacies, diagnosticians, paramedics, and other agents had to instantaneously alter their processes to comply with pandemic-related protocols. One way of doing this was to digitise processes entirely. Many healthcare service providers adopted digital payments to minimise the risk of the virus spreading. Many telemedicine apps and websites in Bangladesh have witnessed tremendous growth in traffic.

Digital payments are becoming increasingly popular in the healthcare sector as virtual healthcare expands and more patients expect the same seamless checkout experience as e-commerce. For this, telemedicine and teleconsultancy websites and applications should be integrated with payment gateways, FSPs, and aggregated payment platforms, such as ekPay, to enable digital payment through bank accounts, cards, and MFS accounts.

Healthcare service providers will gain insights from such payment gateways and platforms in the form of transaction logs and will be able to manage their payment processing through a single dashboard or mobile app on which they can view transactions, manage recurring payments, reconcile deposits, and build custom reports. Such platforms will enable real-time confirmations for both the payer and payee and provide unique transaction reference numbers.



Payment gateway and platform integrations with health apps/websites

Integrations with telemedicine and teleconsultancy apps and websites will allow patients and relatives to pay their fees in a hassle free and digital manner.

Key highlights:

- The integration will allow multiple payment instruments to be used for making payments.
- The payers will get a real-time receipt and confirmation SMS/WhatsApp with a unique transaction number.
- The service provider will get real-time confirmation of the receipt of the payment.
- The integration will allow both push and pull payments using the upcoming RTP system.

The advantages of the solution are enumerated below.

Advantages
• Interoperability and scalability – The solution is interoperable, since it is based on existing payments systems. • Biometrics as password/PIN – Only digital ID numbers and biometric information will be required for transactions. • Financial inclusion – It fosters financial inclusion by extending digital ID use to other financial services, including payments. • Convenience – Payment systems based on digital IDs are easy to use, as there is no need to remember passwords or PINs. • Allows all basic transactions – Digital ID-based payments systems can enable users to carry out basic financial transactions (e.g., cash deposits, withdrawals, transfers and merchant payments). • Cost-effectiveness – Digital ID-based payment systems are cost-effective, as they do not involve card schemes.

An outcome of this solution is the inclusion and fair treatment of all users irrespective of the environment available for digital payments. The solution also caters to the needs of target markets, providers, and users alike. Payment through ekPay integration enables transactions for users and healthcare service providers in the same way it has been traditionally done in retail and e-commerce. The solution is in line with the G20 'Facilitate Customer Identification for Digital Financial Services' and 'Expand the Digital Financial Services Infrastructure Ecosystem' principles.

The associated risk and mitigation measures for the integration of digital payments with online health applications using RTP platform are presented in Table 30 below.

Table 30: Risk and mitigation measures for integrating digital payments with online health applications

S. No.	Challenge	Mitigation
1	Client disputes and refunds	A challenge of online payments is that users want complete visibility, confirmation, and refunds in the shortest possible time. A robust, standard transaction reference and tracking system is needed to identify each transaction independently.
2	Privacy risk	Strong data privacy regulation is needed to ensure data are used only with explicit consent and only for the intended purposes.
3	Authentication risk	A strong customer authentication mechanism with two-factor authentication is required to ensure that transactions can be uniquely identified and mapped with each unique user in real time.
4	Federated mechanism for assessing creditworthiness	The alternative credit scoring model should be used as a federated mode to assess creditworthiness. Many borrowers may not have enough historical data beyond a credit history.

5

VISION OF THE NATIONAL DIGITAL PAYMENTS ROADMAP



5. Vision of the National Digital Payments Roadmap

The solutions proposed in the National Digital Payments Roadmap have been grouped according to level of urgency (see Figure 16). The implementation of the solutions in this roadmap will depend on policy decisions, infrastructural readiness, and alignment with other priorities. The solutions proposed have taken the following into consideration:

- **Existing or planned initiatives** for building critical infrastructure by the government, international agencies, and corporations. These initiatives could be in a specific setting or for a larger population. These parameters will affect the time and resources required. For example, if the NFIS-B has established a clear path for micro-credit analysis with the MF-CIB, wrapper applications, such as the NTC credit score and SME lending applications, can benefit from what is learned during the MF-CIB implementation.
- **Prioritisation of payment streams** as per existing digitisation, the significance of which is based on transaction volume and the envisaged immediate and long-term impact on user volume. The state of play of these payment streams and the anticipated return on investment will affect the evaluation of the importance of a solution or use-case implementation. For example, as the volume and value of tax payments increase and as the government intends to increase the tax net, person-to-government may be prioritised for immediate focus over other payment streams.

- **Prioritisation of sector-specific use cases** that have been highlighted as important for digitisation but fall below the desired level of digitisation. For example, there is a gap between the demand for credit and what is available to farmers through formal financial channels. Similarly, the digitisation of fee payments for educational institutions is a growing need. E-commerce has been growing at a rapid pace, but most payments are still made COD due to many factors, including the reluctance to make upfront payments through financial accounts.

The priority areas described above will provide guidance for the sequencing of solution implementation. Roadmap implementation will include broader activities, such as governance structure conceptualisation, policies, guidelines and strategies, deciphering dependencies and assumptions, tracking, monitoring, and re-aligning with technological developments and innovation. Specific solutions will have 'Solution Champions' from departments and organisations to ensure the expectations are reflected in post-implementation reality.



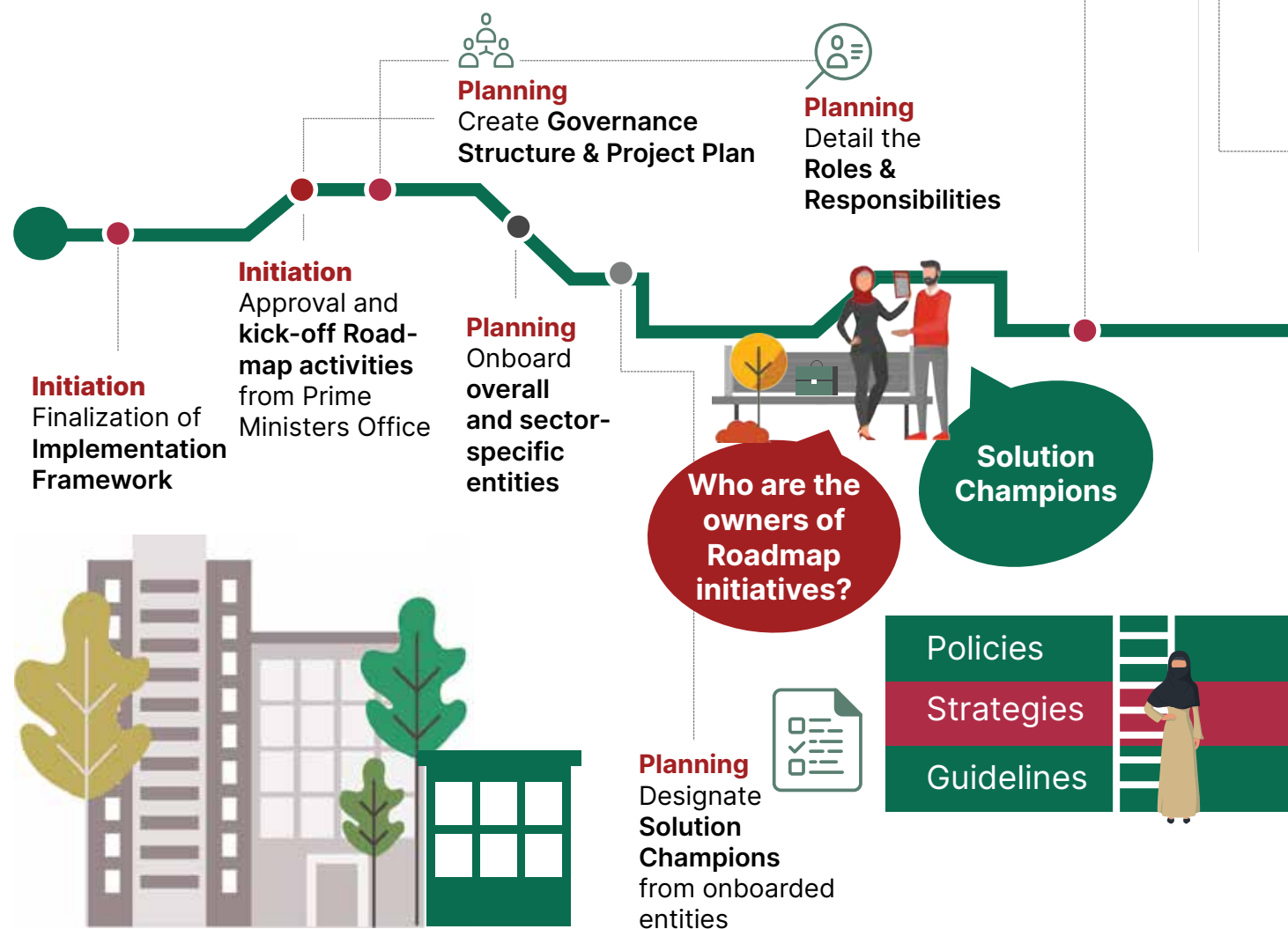
Figure 15: National Digital Payments Roadmap for Bangladesh

Implementing the National Digital Payments Roadmap for Bangladesh

Overview of the implementation plan for overall and sector specific work-streams



Scoping
Call out dependencies and resource requirements



Execution

Coordinate Roadmap implementation in three phases



Focus on open banking, cost optimisation and SSN solutions. NTC customer credit scoring initiated



Focus on cross border remittances and new payment solutions. B2B and SME products prioritised



Potent use cases like utility payments, agri-lending and transport prioritised. Focus on e-commerce



Closure

Roadmap objectives of **expansion and usage of DFS** in the country are achieved and tracked by the **National Dashboard for Digital Payments**



Stabilization

Technology and Innovation Group

constituted to re-calibrate the Roadmap, if required



Execution

Establish an **enabling environment** through support and foundational DFS infrastructure

Stabilization

Coordinate with departments for integration with other initiatives



Planning and Execution

Initiated and post reiterative sessions with overall and sector representatives along with external consultants (as required)



Table 31 below represents the phase-wise timeline and considerations for implementation of the proposed overall and sector-specific solutions.

Solution	Areas of relevance	Timeline	Stakeholders	Considerations
Cost distribution and structure	RMG, retail	Phase 1	Core: Ministry of Finance, Bangladesh Bank Payment Systems Department and FID, National Board of Revenue Support: FSPs, IDOs	1. Funding for incentives and setting up of central market infrastructure 2. Inputs on economic viability from market players 3. Coordination between all stakeholder for initiatives
Alternate credit scoring model for NTC users	Retail, agriculture, overall	Phase 1	Core: Ministry of Finance Regulators: Bangladesh Bank Payment Systems Department and FID, micro-credit regulatory authority Support: FSPs	1. Information exchange between public and private agencies 2. Involve think tanks to overcome systemic bias in emerging technologies 3. Robust data privacy and protection laws and framework
Digital ID-based payment solution	Overall	Phase 2	Regulators: Bangladesh Bank Payment Systems Department and FID, Election Commission (NID wing), BTRC	1. Increased NID penetration 2. NID to be connected with the payments infrastructure for transaction processing 3. Protection of personally identifiable (PII) data through robust security mechanisms
CSME invoice-discounting platform	Overall	Phase 2	Ministry: Ministry of Industries Regulators: Bangladesh Bank Payment Systems Department and Financial Institution Division, Bangladesh Bank, ICT Division Support: fintech firms, FSPs	1. Provision for fraud handling for prevention of duplicate invoice processing 2. On-boarding of banks, financiers, SME suppliers and buyers on the platform 3. Alignment with data security and grievance redress guidelines

Solution	Areas of relevance	Timeline	Stakeholders	Considerations
Cross-border remittance platform	Overall	Phase 2	Ministry: Ministry of Finance Regulators: Bangladesh Bank Payment Systems Department and Financial Institution Division, Bangladesh Bank, ICT Division Support: fintech firms, FSPs	1. Assess the possibility of bilateral agreements for possible remittance corridors depending on remittance inflow/outflow with the countries involved 2. Assess feasibility and alignment of connectivity to the payment infrastructure of other countries to ensure seamless connectivity for funds transfer in case of a remittance corridor arrangement
Business-to-Business (B2B) payment solution for retail sector	Retail	Phase 2	Regulators: Bangladesh Bank Payment Systems Department and Financial Institution Division	1. Secure data transfer between payers and payees. 2. Ensure adherence to clearing and settlement timelines. 3. Awareness and sensitisation campaigns for small retailers to facilitate platform use. 4. Negotiation of optimised rates to promote platform use. 5. Linkage with scoring data bases/solution proposed in the Roadmap.

Solution	Areas of relevance	Timeline	Stakeholders	Considerations
Agriculture credit scoring solution	Agriculture	Phase 2	Ministry: Ministry of Finance, Ministry of Agriculture (MoA), ICT division Ministry: Ministry of Finance, Ministry of Agriculture (MoA), ICT division Regulators: Bangladesh Bank Financial Institution Division and Agricultural Credit Department, Department of Agricultural Extension (DAE) Support: fintech firms, FSPs	1. Ensure coverage of farmer population to ensure data completeness for near-accurate credit scoring. 2. Coordinate with MoA and DAE to build and enhance the government's farmer database. 3. Watertight guidelines for both agent-assisted and direct consent. 4. Well-trained and equipped transformational teams to champion the shift to digital in rural communities.
SoftPOS solution for merchants	Retail	Phase 3	Ministry: Ministry of Finance and National Board of Revenue Ministry: Ministry of Finance and National Board of Revenue Regulators: Bangladesh Bank Payment Systems Department and Financial Institution Division, Ministry of Industry Support: FSPs, merchants, card networks, Bangladesh Association of Software and Information Services	1. Build on existing guidelines for POS devices (e.g., Brown label POS device provisioning). 2. Engage fintech firms to provide low-cost end-to-end solutions that integrate with merchants' internal systems. 3. Publicise incentive programmes and showcase success stories. 4. Leverage any available public or private development funds. 5. Shortlist regions of opportunities where card payments are prevalent. 6. Ensure critical level of smartphone penetration.

Solution	Areas of relevance	Timeline	Stakeholders	Considerations
BNPL scheme for e-commerce	Retail	Phase 3	Ministry: Ministry of Finance, Ministry of Industry and Commerce Regulators: Bangladesh Bank Payment Systems Department and Financial Institution Division Support: FSPs, e-commerce companies, e-Commerce Association of Bangladesh	1. Assessment of the need and ease of micro-credit for online shopping. 2. Partnerships between FSPs, card networks and e-commerce firms to provide credit at the time of payment. 3. Adherence to payment and settlement timelines for payment to merchants.
Consent-based direct debit payments	RMG, retail, education	Phase 3	Regulators: Bangladesh Bank Payment Systems Department and Financial Institution Division, Regulatory Fintech Facilitation Office (RFFO)	1. Ensure coverage of farmer population to ensure data completeness for near-accurate credit scoring. 2. Coordinate with MoA and DAE to build and enhance the government's farmer database. 3. Watertight guidelines for both agent-assisted and direct consent. 4. Well-trained and equipped transformational teams to champion the shift to digital in rural communities.
SME lending solution for merchants	Retail	Phase 3	Ministry: Ministry of Industry Regulators: Bangladesh Bank Financial Institution Division Support: FSPs, fintech firms	1. Collaboration between fintech firms, third-party providers and FSPs to source the credit and non-credit data of merchants for credit scoring. 2. Consent mechanism for SMEs to share data for credit scoring.

Solution	Areas of relevance	Timeline	Stakeholders	Considerations
National Financial Literacy Strategy	Overall	-	Ministry: Ministry of Finance, Ministry of Education (Ministry of Primary and Mass Education, Ministry of Science and Higher Education), Ministry of Women and Children Affairs Regulators: Bangladesh Bank Payment Systems Department and Financial Institution Division Support: FSPs, IDOs	1. Evaluate the needs and levels of financial education among the target audience. 2. Design quality financial literacy programmes tailored to the needs and educational levels of target audiences. 3. Use financial literacy/education programmes to strengthen the technical skills of individuals and thus enable them to undertake digital transactions. 4. Form partnerships with the private sector to deliver sustained, quality literacy programmes. 5. Ministry of Education to incorporate financial literacy in schools. 6. Develop channels for dissemination of financial literacy to the broader population.
Open banking API platform	Overall	Phase 1	Core: Ministry of Finance, Bangladesh Bank Payment Systems Department and Financial Institution Division, FSPs, RFFO Support: Third-party providers	1. Buy-in from banks, enabling of fintech firms and third-party providers. 2. Distributing of accountability in the value chain. 3. Protection of user and transaction data.

5.1. Critical success factors for the Roadmap

To realise the goals of the National Digital Payments Roadmap, the evolution of the digital payment ecosystem will require several stakeholders to come together and collaborate to build platforms, infrastructure, and services that are interoperable. The adoption and long-term viability of the project require that the nuances and specificities be defined. A proper evaluation and definition of the key aspects and critical parameters will ensure holistic, thorough coverage, and project success. Some of the critical factors for Roadmap implementation are:

- Ensuring government commitment, planning, vision dissemination, and coordination of the initiatives proposed in the Roadmap. A well-laid-out vision, governance, and monitoring plan is instrumental in this.
- A competent team with defined responsibilities for managing and implementing the Roadmap at the national and union levels in Bangladesh. This will include institutionalised SOPs and guidelines for project management units concerning security, compliance, people management, and other aspects.
- Proactive stakeholder communication and consultations at each stage of implementation to gain step-wise buy-in. This would include consultative committees that can be formed to provide inputs from the domain, technology, and regulatory standpoints for informed decision making.
- Engaging with the private sector to collaborate in the design, implementation, and socialisation of the solutions is instrumental in enhancing their reach.
- Ensuring the development and percolation of foundational digital infrastructure, especially in the rural areas, is critical.
- Incentivising the stakeholders at all levels of the digital payment value chain is integral for uptake and proliferation of the proposed solutions. Sufficiently funded incentive programmes are key to the success of the Roadmap.
- Regulatory bodies need to ensure a level playing field for established market players, as well as new entrants, through new regulations and policies.
- As multiple solutions leverage personal data points, specific compliance standards must be established for data privacy and protection as well as anti-fraud and cyber security measures for risk-free and safe uptake.

5.2. Potential impact of the Roadmap

The Roadmap will have a positive impact on responsible introduction, adoption, and expansion of digital payments in Bangladesh. It will help improve the digital space through collaboration among the government, private sector, and IDOs, and offer a solution to the challenges faced by the users and providers from an overall and priority-sector perspective. The development of the digital infrastructure in Bangladesh coupled with the increased reach of digital financial services in remote areas has made digital payments more accessible and affordable.

Digital payment adoption has been shown to have multiplier effects on the growth of the economy through cost savings and process efficiencies. The increased usage of digital payments across the priority areas has contributed to the achievement of SDGs across numerous initiatives undertaken in Bangladesh and elsewhere. Use of digital payments has a direct correlation with digital inclusion, financial literacy, technological knowhow, and identity, fostering the growth, prosperity, and empowerment of women.

Since the onset of the COVID-19 pandemic, use of digital payments on an unprecedented scale has allowed the economy to maintain its momentum despite the challenges to business continuity.

5.2.1. Empowering the economy

A cashless economy with robust digital payments has multiplier effects on the overall economic growth. The advantages stem from the lower cost of maintaining money and the efficiency of an automated electronic system. Transitioning to digital payments is estimated to add 3 percent to an emerging country's GDP. This growth can come from multiple aspects, such as:

- Savings in the cost of maintaining and handling cash across economic stakeholders, such as the government, banks, businesses, and individuals. According to a study by the Bangladesh Bank and McKinsey, the maintenance cost of printed money accounts for 0.5 percent of the GDP.
- A 1 percent increase in the usage of payment instruments, such as cards for multiple use cases (e-commerce, shopping, bill payments) can add 0.02 percent to the GDP of emerging economies and 0.04 percent to the GDP of developed countries, according to a Moody's study.

These insights are key to linking the usage of digital payments with economic growth through increased process efficiencies, transparency, and digital integration of the economy.

The solutions in the Roadmap comprise interventions across aspects of digital payments that address the reach, access, and ease of use of digital financial instruments and foster their use. The intervention for digital payment capability building — the National Financial Literacy Strategy — highlights the importance of disseminating financial knowledge to enhance user know-how, confidence, and fraud reduction.

5.2.2. Achieving SDGs

The Roadmap encompasses digital payment interventions and solutions that can help Bangladesh achieve the SDGs by inducing changes at the ground level. The interventions proposed in the Roadmap can help achieve SDGs in Bangladesh by:

- **SDG-1 on No Poverty** – Digital payments help alleviate poverty by providing access to digital accounts and allowing government benefits to be received digitally in a secure manner while keeping the funds safe. In the Roadmap, the solution on cost distribution and structure (i.e., government subsidy options for direct-to-consumer payments) will make the receipt of government payments more affordable for marginalised populations by topping up the subsidy amount by the cash-out fees levied by MFS providers. Similarly, the solution on digitally signed QR codes can help identify social safety net beneficiaries easily and allow them to receive government benefits without any need to remember PINs for digital authentication.
- **SDG-2 on Zero Hunger** – Digital payments can provide SHFs with equitable access to credit and facilitate low-cost and efficient remittances that sustain many families. The agricultural credit scoring solution in the Roadmap provides a framework for agricultural credit in an automated and non-biased manner to SHFs. Similarly, the cross-

border remittance platform solution proposes a dedicated and real-time channel with standardised protocols for sending and receiving international remittances at optimised costs. The channel will reduce informal remittances, which are used primarily by marginalised sections, to avoid the charges on transactions for overseas remittances.

- **SDG-4 on Quality Education** – Digital payments can make receiving education stipends and subsidies and paying school fee much easier for students and parents. The digital ID-based payment solution in the Roadmap proposes that payments be enabled through biometrics to make them convenient and seamless. This solution can be leveraged to allow students or their parents to receive scholarship funds without a PIN or any credentials.
- **SDG-5 on Gender Equality** – Digital payments have been positioned as an enabler of women's empowerment, giving them better control over their funds, allowing them to build assets, and supporting their engagement in economic activity. The Roadmap's SME lending for merchants' solution will help with an unbiased and comprehensive assessment of the creditworthiness of small businesses, many of which are owned by women. Solutions such as these enable timely funding of, and support for, women-centric businesses.
- **SDG-6 on Clean Water and Sanitation and SDG-7 on Affordable and Clean Energy** – Digital payments can be instrumental in sustainably expanding clean water and sanitation services. They can also help in providing affordable and clean energy through predictable and secure utility bill payments and by reducing the overhead costs in the bill collection process. The Roadmap's 'Consent-based direct debit payments' solution will help users pay their utility bills correctly and on time.
- **SDG-8 on Decent Work and Economic Growth** – Digital payments can enable small businesses to reduce the inefficiencies associated with the flow and handling of cash and to use the savings to grow their businesses. The Roadmap's CSME invoice-discounting platform solution enables automated approval and payment of invoices, doing away with the delays of manual processes.
- **SDG-9 on Resilient infrastructure, Sustainable industrialisation, and innovation.** – Digital payments can enable small businesses to grow and innovate and enter new segments. The Roadmap's BNPL scheme for e-commerce solution can help consumers obtain instant access to credit at the time of payment, increasing their purchasing power. In turn, this benefits businesses who receive instant payment and exposure to a wider market. The 'SME lending for merchants' solution allows unbiased and comprehensive assessments of the creditworthiness of small businesses and improves their access to credit.
- **SDG-10 on Reduced Inequality** – Digital payments can increase economic opportunities for marginalised households and help them manage their expenses in a better way. The Roadmap's government subsidy options for direct-to-citizen cash-based payments can promote the use of digital payments and help in reducing inequalities.

5.2.3. Women's financial inclusion

Women are now at the forefront of economic activity in all spheres, including running of businesses and creating employment. Still, most women lack equal access to connectivity, identity, financial credit, digital inclusion, and financial literacy. Women have been identified as a priority in the UN's SDGs and its Principles for Responsible Digital Payments.

Use of digital payments fosters financial inclusion, enhances financial know-how, and expands access to formal financial accounts and credit. This not only empowers women within the social boundaries of their families and households but also improves their economic condition outside their homes.

The Roadmap presents solutions and interventions, both overall and in priority sectors, that can increase women's use of digital payments and their inclusion in economic activities. The Roadmap strongly advocates assessing sex-disaggregated data to understand how best to design and develop policies and solutions for women in Bangladesh.

For instance, the cross-border remittance platform solution seeks to rationalise and standardise the cost of receiving and sending international remittances. This could have a marked impact on the incomes of female household heads of migrant families that use informal remittance channels to save on inward remittance charges. Women are usually recipients of remittances through informal channels, and the money does not always go to the right person. This solution can enhance women's financial control.

Many women and small businesses need access to credit but are not able to approach formal FIs for reasons that include a lack of formal financial accounts and a lack of credit history. Solutions such as ACS for users and SME lending solutions for merchants enable unbiased credit scores for those who have limited financial or credit histories.

The National Financial Literacy Strategy aims to provide specific and coordinated financial training and raise awareness among user categories, with a special focus on women.

Consumer perception surveys seek to capture the opinions and experiences of users, including women, concerning digital payment usage. The inputs are turned into measures for making the products better aligned to user needs, with a focus on women users.



6

BIBLIOGRAPHY

- ¹ <https://investindigitalbd.gov.bd/page/digital-bangladesh-vision-2021>
- ² UNDP Bangladesh, Available From: <https://www.bd.undp.org/content/bangladesh/en/home/sustainable-development-goals.html>
- ³ Better than Cash Alliance, 2021, Available From: <https://responsiblepayments.org/>
- ⁴ Baur-Yazbek S, 2019, The Future of G2P Payments, Towards an Integrated Infrastructure in Bangladesh , CGAP, Available From: https://www.findevgateway.org/sites/default/files/publications/files/g2p3.0_bangladesh_case_study_apr2019.pdf
- ⁵ SDG Cell, Bangladesh Bureau of Statistics, Available From: <https://www.sdg.gov.bd/public/page/indicator-wise/1/141/2/0>
- ⁶ Bangladesh Bank, Economic Data, Bangladesh Bank Open Data Initiative, 2021, Available from: <https://www.bb.org.bd/econdata/index.php>
- ⁷ Bangladesh Bank, Economic Data, Bangladesh Bank Open Data Initiative, 2021, Available from: <https://www.bb.org.bd/econdata/index.php>
- ⁸ Data analysis
- ⁹ Discussion with Unilever-Bangladesh and Mr. Zahid Islam, March 10, 2021
- ¹⁰ The Daily Star, October 20, 2020, ShopUp raises \$22.5 million Series A financing round, Available from: <https://www.thedailystar.net/online/news/shopup-raises-225-million-series-financing-round-1981209>
- ¹¹ Bangladesh Bank, Economic Data, Bangladesh Bank Open Data Initiative, 2021, Available from: <https://www.bb.org.bd/econdata/index.php>
- ¹² Bangladesh Bank, Economic Data, Bangladesh Bank Open Data Initiative, 2021, Available from: <https://www.bb.org.bd/econdata/index.php>
- ¹³ Discussion with Mr. Rezwanul. Haque, a2i, March 3, 2021
- ¹⁴ <https://www.unsgsa.org/news/regulatory-sandboxes-not-always-answer-regulating-inclusive-fintech-says-new-report-commissioned-unsgsa>
- ¹⁵ The Daily Star, November 17, 2021, Bangladesh behind Nepal, Pakistan in smartphone use, Available from: <https://www.thedailystar.net/backpage/news/bangladesh-behind-nepal-pakistan-smartphone-use-2069457>
- ¹⁶ Bangladesh Telecommunication Regulatory Commission (BTRC), License and Statistics for internet subscribers, Available from: <http://www.btrc.gov.bd/telco/internet>
- ¹⁷ <https://unb.com.bd/category/Bangladesh/women-entrepreneurs-get-less-than-4-of-msme-loans/61603>
- ¹⁸ The Business Standard, January 4, 2021, Foreign exchange reserves of Bangladesh: 2021 challenges, Available from: <https://www.tbsnews.net/thoughts/foreign-exchange-reserves-bangladesh-2021-challenges-180553>

- ¹⁹ Bangladesh Bank, Economic Data, Bangladesh Bank Open Data Initiative, 2021, Available from: <https://www.bb.org.bd/econdata/index.php>
- ²⁰ Discussion with Mr. Rezwanul. Haque, a2i, March 3, 2021
- ²¹ Bangladesh Financial Intelligence Unit, 2019. Guidelines on Electronic Know Your Customer (e-KYC). Available from: <https://www.bb.org.bd/mediaroom/circulars/aml/jan082020bfui25.pdf>. (Accessed 20 December 2021).
- ²² Gelb, A., Mukherjee, A., Navis, K., Akter M., and Naima, J., 2019. Primary Education Stipends in Bangladesh: Do Mothers Prefer Digital Payments over Cash? Centre for Global Development, 14 May. Available from: cgdev.org/publication/primary-education-stipends-bangladesh-do-mothers-prefer-digital-payments-over-cash. (Accessed 20 December 2021).
- ²³ Breza, E., Klapper, L., and Kanz, M., 2017. Real effects of electronic wage payments: Bangladesh factory workers. International Growth Centre (blog). April 6. Available from: <https://www.theigc.org/blog/real-effects-electronic-wage-payments-bangladeshi-factory-workers/>. (Accessed 20 December 2021).
- ²⁴ Poutiainen, T. and Rees, D., 2021. How digital payment systems can boost Bangladesh's push to meet the SDGs. World Economic Forum, 14 May 14. Available from: <https://www.weforum.org/agenda/2021/05/bangladesh-ready-made-garments-digital-payment/>. (Accessed 20 December 2021).
- ²⁵ Sethi, I. P. S., and Gupta, O.P., 2021. Digidhan Dashboard Dashboard for monitoring Digital Payments. Available from: https://informatics.nic.in/uploads/pdfs/95455251_12_13_egps_digidhan_compressed.pdf. (Accessed 20 December 2021).
- ²⁶ Findexable Limited., 2021. Global Fintech Rankings Report, BRIDGING THE GAP. London, UK: Findexable Limited. Available from: <https://findexable.com/wp-content/uploads/2021/06/Global-Fintech-Rankings-2021-v1-23-June-21.pdf>. (Accessed 20 December 2021).
- ²⁷ Tracxn., 2021., FinTech Startups in Bangladesh. 10 December. Available from: <https://tracxn.com/explore/FinTech-Startups-in-Bangladesh>. (Accessed 20 December 2021).
- ²⁸ The Reserve Bank of India., 2019, Enabling Framework for Regulatory Sandbox. 13 August 13 Available from: https://www.rbi.org.in/Scripts/BS_PressReleaseDisplay.aspx?prid=47869. (Accessed 20 December 2021).
- ²⁹ Sinha, S., 2020. With over 2000 FinTech startups India emerges as a leading hub. Economic Times, 14 December. Available from: <https://bfsi.economictimes.indiatimes.com/news/fintech/with-over-2000-fintech-startups-india-emerges-as-a-leading-hub/79715444>. (Accessed 20 December 2021).
- ³⁰ Findexable Limited, Global Fintech Rankings Report, BRIDGING THE GAP.
- ³¹ Appayaminita, S. and Varghese, M., 2019. Digital ID – a critical enabler for financial inclusion. World Bank Blogs, 20 June. Available from: <https://blogs.worldbank.org/psd/digital-id-critical-enabler-financial-inclusion>. (Accessed 20 December 2021).

- ³² Thompson, J. 2021, Tech can reach the world's unbanked women – but only if they tell us how it should work, World Economic Forum, 22 January. Available from: <https://www.weforum.org/agenda/2021/01/women-banking-digital-divide/>. (Accessed 20 December 2021).
- ³³ The World Bank., 2021. Small and Medium Enterprises (SMEs) Finance. Available from: <https://www.worldbank.org/en/topic/sme/finance>. (Accessed 20 December 2021).
- ³⁴ Rabbi, A. H., 2021. Dana Fintech: Pioneering digital credit scoring for digital loans in Bangladesh. The Business Standard, 18 May 18. Available from: <https://www.tbsnews.net/feature/panorama/dana-fintech-pioneering-digital-credit-scoring-digital-loans-bangladesh-247174>. (Accessed 20 December 2021).
- ³⁵ The World Bank, Small and Medium Enterprises (SMEs) Finance
- ³⁶ Ibid.
- ³⁷ Ibid.
- ³⁸ Asian Development Bank., 2021. Harnessing Digitization for Remittances in Asia and the Pacific. Mandaluyong City, Philippines: Asian Development Bank. Available from: <https://www.adb.org/sites/default/files/publication/714036/harnessing-digitization-remittances-asia-pacific.pdf>. (Accessed 20 December 2021).
- ³⁹ Bangladesh Bank., n.d. Monthly data of Wage earner's remittance. Available from: <https://www.bb.org.bd/econdata/wageremittance.php>. (Accessed 20 December 2021).
- ⁴⁰ United News of Bangladesh., 2021. Send money home in 5 seconds through Blaze. 25 August. Available from: <https://www.unb.com.bd/category/Bangladesh/send-money-home-in-5-seconds-through-blaze/77746>. (Accessed 20 December 2021).
- ⁴¹ Dhaka Tribune., 2021. Mastercard unveils cross-border remittance transfer platform. 26 January. Available from: <https://www.dhakatribune.com/business/2021/01/26/mastercard-unveils-cross-border-remittance-transfer-platform>. (Accessed 20 December 2021).
- ⁴² Bangladesh Bank, Economic Data, Bangladesh Bank Open Data Initiative.
- ⁴³ Data received from UNCDF on ekPay, July 14, 2021
- ⁴⁴ FIS., 2020. Flavours of Fast -2020. Available from: <https://www.fisglobal.com/flavors-of-fast>. (Accessed 20 December 2021).
- ⁴⁵ Grand View Research., 2021. Real-Time Payments Market Size, Share & Trends Analysis Report By Payment Type, By Component, By Deployment, By Enterprise Size, By End-use Industry, By Region, And Segment Forecasts, 2021 – 2028. San Francisco, CA: Grand View Research. Available from: <https://www.grandviewresearch.com/industry-analysis/real-time-payments-market>. (Accessed 20 December 2021).
- ⁴⁶ Bangladesh Bank., n.d. National Payment Switch Bangladesh (NPSB). Available from: <https://www.bb.org.bd/fnansys/paymentsys/natpayswitch.php>. (Accessed 20 December 2021).

- ⁴⁷ Cybersource, 2021. Global Fraud Report False Declines Industry Report. Available from: <https://www.cybersource.com/en/solutions/fraud-and-risk-management/fraud-report.html>
- ⁴⁸ Agencia EFE., 2020. Report: AI blocked \$2 bn in payment-card fraud in Latin America in 2019. 11 March. Available from: <https://www.efe.com/efe/english/business/report-ai-blocked-2-bn-in-payment-card-fraud-latin-america-2019/50000265-4193733>. (Accessed 20 December 2021).
- ⁴⁹ Grand View Research., 2021, Point-Of-Sale Terminals Market Size Worth \$130.91 Billion By 2028. Available from: <https://www.grandviewresearch.com/press-release/global-point-of-sale-terminals-market>. (Accessed 20 December 2021).
- ⁵⁰ Bangladesh Bank, Economic Data, Bangladesh Bank Open Data Initiative.
- ⁵¹ Ibid.
- ⁵² Hasan, M., 2021. Contactless cards gaining traction amid Covid, digital push. The Daily Star, 16 September 16. Available from: <https://www.thedailystar.net/business/economy/banks/news/contactless-cards-gaining-traction-amid-covid-digital-push-2177101>. (Accessed 20 December 2021).
- ⁵³ Sebes, C., 2018. What Is Cloud Point Of Sale, And How Is It Different From 'Traditional' POS?. Forbes, 25 May. Available from: <https://www.forbes.com/sites/forbestechcouncil/2018/05/25/what-is-cloud-point-of-sale-and-how-is-it-different-from-traditional-pos/?sh=75f99a311180>. (Accessed 20 December 2021).
- ⁵⁴ Discussion with e-commerce expert at a2i, March 3, 2021
- ⁵⁵ Raihan, S., 2021. The challenges of SMEs in Bangladesh. The Business Standard, 26 August. Available from: <https://www.tbsnews.net/features/panorama/challenges-smes-bangladesh-293302>. (Accessed 20 December 2021).

ACKNOWLEDGMENT

The Project Team would like to extend its gratitude to these organizations for their support and insights towards the development of the publication:

Payment Systems Department & Financial Inclusion Department, Bangladesh Bank	Grameenphone
Bangladesh Election Commission	GAP
Ministry of Labor and Employment	M&S
Department of Social Services	H&M
Financial Inclusion Division, Ministry of Finance	Fakir Fashion
National Board of Revenue (NBR)	Standard Group
Aspire To Innovate (a2i) Program	Azim Group
Ministry of Agriculture	Ha-Meem Group
Ministry of Social Welfare	Inditex
Bangladesh Bureau of Statistics	Panam group
Department of Primary and Mass Education	SMC Enterprise
ICT Division	Insight Metrics
Ministry of Education	Pran RFL Group
Bangladesh Telecommunication Regulatory Commission (BTRC)	Square Toiletries Limited
Department of Agriculture Extension (DAE)	Unilever Bangladesh
Brac Bank Ltd	Nestlé Bangladesh
Islamic Bank Ltd	SDG Cell, Prime Minister's Office
Dutch-Bangla Bank Limited	Bangladesh Institute of ICT in Development (BIID)
Bank Asia	BURO Bangladesh
bKash	BRAC
Nagad	Asian Development Bank (ADB)
SSLCommerce	The World Bank
Dmoney	Bill & Melinda Gates Foundation (BMGF)

SureCash	International Finance Corporation (IFC)
e-Cab	International Labor Organization (ILO)
Rocket	US Agency for International Development (USAID)
Grameenphone	Department for International Development, (DFID)UK
Robi	BSR
Visa	United Nations Development Program (UNDP)
MasterCard	World Food Program (WFP)
Bangladesh Garment Manufacturers and Exporters Association (BGMEA)	International Office of Migration (IOM)
Bangladesh Knitwear Manufacturers and Exporters Association (BKMEA)	Microfinance Opportunities (MFO)
Federation of Bangladesh Chambers of Commerce and Industries (FBCCI)	Development Alternatives, Inc (DAI)
Bangladesh Edible Oil Limited (BEOL)	Chaldal
ACI Limited	Grameenphone

The team is grateful to the members of the Government Advisory Committee formed during the development of the Roadmap and Abdullah Al-Amin from a2i, for administrative support throughout the process.

Special thanks to Karol Karpinski and T.M Asaduzzaman from The World Bank; Ella Moffat and Smita Nimilita from BSR; Sakshi Chadha from UNCDF; and Masing Newar from WFP for reviewing the reports during the development process.

