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**Central Bank Digital Currency (CBDC):  
Concepts and Prospects in Bangladesh**

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# Central Bank Digital Currency (CBDC): Concepts and Prospects in Bangladesh

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## Abstract

*Central banks in many countries are conducting research on central bank digital currency (CBDC), creating its prototype own currency, and testing pilot programs before implementing CBDC systems in their jurisdictions. Against this backdrop, this paper attempts to understand the global CBDC trends and its prospects for Bangladesh's financial systems. The paper listed some prerequisites that the country's regulatory agencies should consider before implementing CBDC systems. Preparing a roadmap with a clear vision and mission, conducting extensive research from financial, monetary and technical points of view should be the starting point before considering about the prospects of CBDC in the country. The paper also offer a number of recommendations, including, among others, conducting wide-scale survey to gather market perceptions, setting up a trial program with prototype e-taka, using a shared cross-border platform and participating in international capacity building initiatives.*

**Keywords:** Monetary policy, Money, Banks, Payment Systems

**JEL Classification:** E42, E52, E58, G21

## 1. Introduction

Rapid advances in technology and innovative business models have accelerated the implementation of existing diverse digital-based retail payment systems. According to a BIS study (BIS, 2012), the diverse digital payment methods helped to reduce the use of cash gradually. As an alternative or expansion of the current digital payment systems, many central banks worldwide have been exploring the prospect of developing their own digital currency

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models in recent years. Thus, it is inevitable to ask why the Central Bank Digital Currency (CBDC) will be needed, even when digital payment systems have achieved success all over the world. What advantages would make the CBDC payment systems better? What are the benefits for central banks to consider implementing a CBDC system? Or what distinguishing characteristics or distinctions exist between CBDC and the current digital payment systems, and how they might work in tandem?

The issue of introducing CBDC came to the minds of policymakers for several reasons. In fact, the digitization of financial systems has expanded financial inclusion and coverage through innovative business models like credit and debit card issuance. Nevertheless, credit cards may cause security problems in the financial system if the issuers become insolvent, whereas debit cards are issued by private institutions and are denominated in sovereign currencies. However, since a central bank (or other public authority) leads the creation and application of the CBDC models, they are immune to credit risks. It implies that the CBDC can establish a direct link between the central bank and the general public without fear of credit risk, thereby strengthening a greater public sector commitment. On the other hand, greater engagement of domestic and global financial transactions from standard versions of CBDC arrangements can benefit financial institutions. Cross-border agreements and interoperability with other CBDC systems may improve functionality while lowering total transaction costs and payment processing times (Auer, et. al., 2022).

A new challenge emerged in financial transactions, following the introduction of privately produced cryptocurrencies like Bitcoin,. The introduction of Bitcoin by Nakamoto (2008) brought attention to the future of money and financial systems by presenting a decentralised, international digital currency that functioned independently of banking systems. However, in many jurisdictions, the regulatory authority has security concerns because central banks have no control over the user data of cryptocurrencies. The CBDD could serve as a regulated platform, providing digital, decentralized, and cross-border transactions that are transparent and secure.

During and after the COVID-19 epidemic, digital payment systems became more and more widespread because of public health concerns regarding the use of cash. Since the CBDC could provide a risk-free alternative to digital payments, the demand for cashless transactions during

the crisis has prompted many countries to step up their efforts towards CBDC programs. In reality, social distancing needs, as observed during the COVID-19 epidemic, have led to the creation of CBDC programs in several countries because the CBDC could be similar to cash. In 2020, the Bahamas launched the Sand Dollar, the first nationwide CBDC in history. Nigeria then introduced eNaira, and China was the first big economy to test a digital currency (PwC, 2022).

One hundred thirty-seven different countries and currency unions are presently exploring the prospects of issuing central bank digital currencies (CBDCs), according to the Atlantic Council's CBDC Tracker (2025)<sup>2</sup>. Bangladesh is not an exception, as it has shown an increasing interest in learning about the possible advantages of CBDC. Bangladesh Bank (BB) intends to evaluate whether CBDC models are a viable substitute for private digital currencies. Initially, Bangladesh prefer to learn from other countries' experiences, such as China, India, and Singapore, which have implemented CBDC pilot projects. BB can then create its own CBDC that is specific to its own financial system, payment infrastructure, and macroeconomic conditions.

In light of this, this paper aims to comprehend global CBDC trends to gather information as inputs for considering the prospects of issuing CBDC in Bangladesh. The paper begins by providing a conceptual overview of CBDC, emphasising its types, definition, and frameworks. This study aims to determine the prerequisites that the country's regulatory agencies should consider when implementing the CBDC, based on a conceptual discussions.

## **2. Definition and Conceptual Framework of CBDC**

The central bank issues money as its liability, and the money, with its functions, circulates in the economy in different forms, such as cash in circulation, deposits with commercial banks, and deposits or commercial bank reserves with the central bank. Here, the money can be held in physical cash, which is cash in circulation, having features of wide accessibility and use in peer-to-peer transactions. Deposits with commercial banks can be available in electronic payment systems, utilizing the online infrastructure of both the commercial bank and the central bank. On the other hand, central bank reserves are primarily electronic, and this money is generally accessible only to central bank-approved financial institutions. Therefore, most payments, except for cash, are in digital form; however, not all digital payments are equivalent. One digital

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<sup>2</sup> <https://www.atlanticcouncil.org/cbdctracker/>

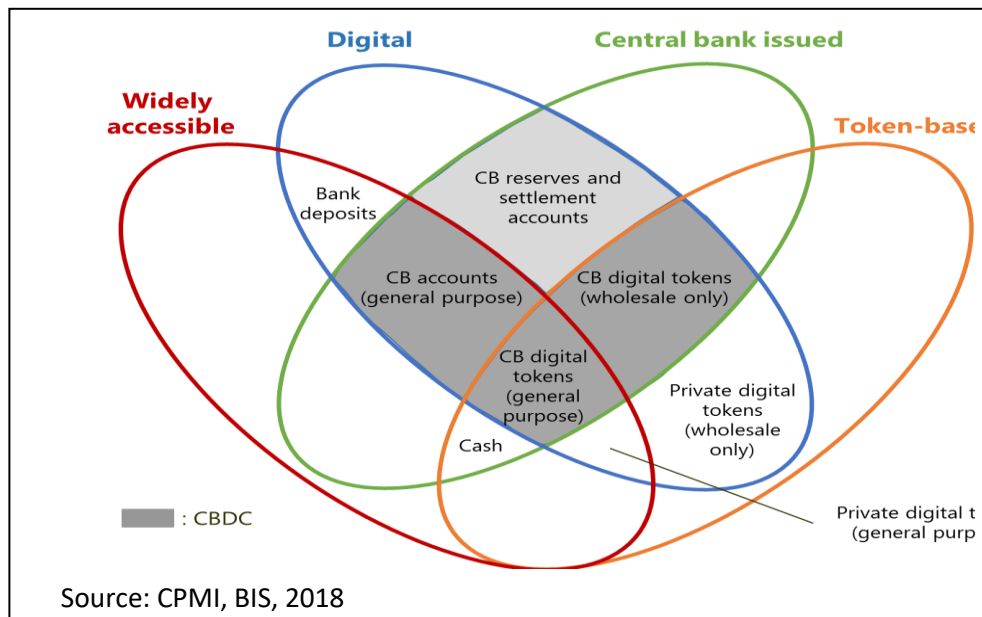
payment can be riskier than others based on functionality (World Bank Group, 2021). Here, issuing CBDC could offer an online setup, with risk-free features as controlled by central banks.

However, the Committee on Payments and Market Infrastructures (CPMI-MC (2018)) highlighted that the Central Bank Digital Currency (CBDC) currently lacks a well-defined definition. Since central banks already provide digital money in the form of commercial banks' reserves with the central bank, it is challenging to define what the unique characteristics of CBDC would be that could serve all the features of cash other than the reserves of central banks. In this respect, CPMI-MC (2018) argues that CBDC is "a digital form of central bank money that is different from balances in traditional reserve or settlement accounts". Therefore, CBDC is a new form of central bank money, which is central bank liabilities denominated in the existing unit of account, providing both a medium of exchange and a store of value. Whereas the reserve balance is only available for selected financial institutions that maintain accounts with the central bank, the CBDC would be retail and publicly available. Moreover, CBDC would be widely available for domestic and cross-border transactions, with easy accessibility for person-to-person, person-to-business, and business-to-business transactions of any amount.

### **3. Types of CBDC**

BIS attempts to provide clear conceptual ideas for CBDC by utilizing the following taxonomy of money, known as the "money flower." This taxonomy of money describes the operational or functional features of CBDCs in the context of other forms of money. The Venn diagram in chart 1 illustrates four key properties of money: issuer (central bank or other), form (digital or physical), accessibility (widely or restricted), and technology (account or token-based).

**Chart 1: The money flower: a taxonomy of money**



Here, the gray-shaded areas in Chart 1 represent three variants of CBDC within the money flower. They are general-purpose central bank (CB) accounts, general-purpose CB digital tokens, and wholesale-only CB digital tokens. CB account (general purpose) refers to an account at the central bank for general purposes, which would be widely available and primarily targeted at retail transactions. The general-purpose CB digital token is a type of digital currency that central banks provide to the general public for retail transactions. The wholesale-only CB digital token is a restricted type of digital cash for large-value settlements, such as interbank payments or securities settlements.

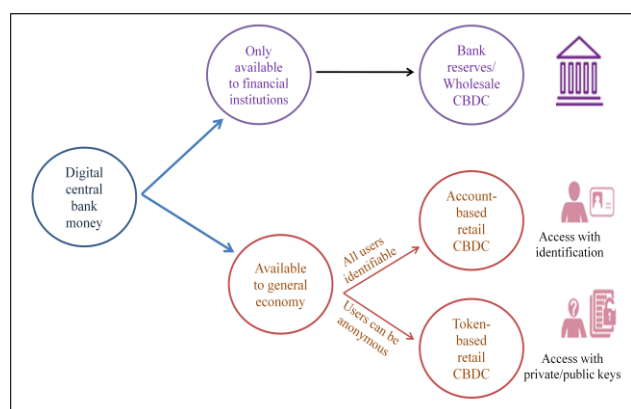
Chart 1 also shows that the central bank does not issue bank deposits and private digital tokens<sup>3</sup>. All forms of money, except physical cash, are issued in digital form by the issuer. In terms of accessibility, cash, bank deposits, and two forms of CBDC (account and token for general purposes) are widely accessible. On the other hand, central bank reserves, wholesale CBDCs, and private digital tokens are not widely accessible, meaning that they are issued and circulated for specific users.

<sup>3</sup> Private digital token means crypto-assets and currencies, such as Bitcoin and Ethereum.

#### 4. Operational Model of CBDC

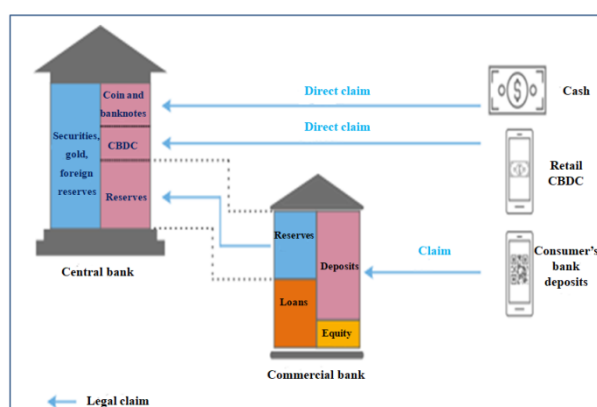
There are two legs of central bank money, one is available for the general purpose in the form of cash or retail CBDC, and the other is available for central bank-approved banks and financial institutions in the form of reserve or wholesale CBDC (Chart 2). Functionally, wholesale CBDCs resemble central bank reserves in completing settlements between two financial institutions by debiting the account with net obligations and crediting it with net claims. Moreover, wholesale CBDC settles transactions only upon fulfillment of specific conditions, such as the delivery of other payments or assets. This type of transaction could significantly enhance the delivery-versus-payment mechanism in real-time gross settlement systems, thereby improving security and efficiency in wholesale financial markets. Additionally, wholesale CBDC could be cost-effective and facilitate speedy cross-border payments. Retail CBDC is generally classified into two variants. The first option adopts a cash-like design, offering token-based access and enabling anonymity in payments. Under this model, individual users can access the CBDC through a password-like digital signature supported by private–public key cryptography, without the need for personal identification. The second approach is account-based, requiring identity verification and integration with a digital identity framework.

**Chart 2: Forms of digital central bank money**



Source: BIS, 2021

**Chart 3: The monetary system with retail CBDC**



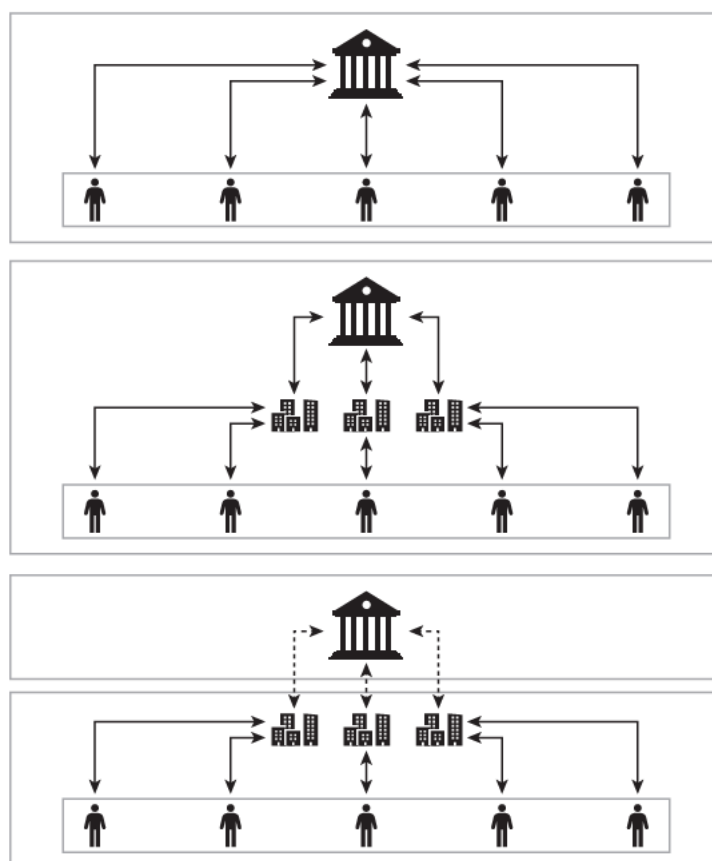
Source: R Auer and R Böhme, “Central bank digital currency: the quest for minimally invasive technology”, BIS Working Papers, no 948, June 2021.

The flow chart of retail CBDC is shown in Chart 3. The primary advantage of retail CBDCs is that they do not entail any credit risk for payment participants, as the central bank directly claims

them. Other forms of digital money are claims on financial intermediaries. Such intermediaries could face an illiquidity problem that could lead to payment outages.

Soderberg et. al. (2022) explain three operational models on how CBDC will be issued and circulated, and what the role of central banks and the private sector will be on the structure of CBDC (Chart 4). The first model refers to unilateral CBDC as shown in the top part of Chart 4. In a unilateral CBDC, the central bank issues money and performs all financial operations, maintaining a direct connection with users.

**Chart 4: Operational Models of CBDC**



Source: Soderberg et. al. (2022)

In the case of an intermediate CBDC, as shown in the middle of Chart 4, the central bank issues money, but there are non-central bank intermediaries that perform all the financial functions with

end-users. There is no direct interaction between the central bank and the general public. The third model is a synthetic CBDC where the central bank does not issue money but some non-central bank actors. Non-central bank intermediaries acquire the required asset from the central bank to issue the funds. Likewise, in an intermediate CBDC, there is no direct interaction between the central bank and end users.

## **5. Country Experiences**

The current strategy of many central banks is exploratory, which involves conducting research, continuous learning from global developments, implementing pilot projects, and focusing on international cooperation. China is widely regarded as the global leader in the development of CBDC, initiating a pilot project in 2019. Malaysia remains in the research and development phase, closely monitoring global trends and technological advancements. Malaysia has not yet launched a pilot project on retail CBDC; instead, it has conducted extensive research and pilot studies, drawing on the experiences of early adopters like China and the Bahamas. Singapore's strategy also involves continuous learning from global developments, fostering public-private partnerships, and ensuring that any future CBDC aligns with the needs of its digital economy (Kochergin, 2021; Kshetri, 2024; Chattopadhyay, 2023; Kuo et al., 2023). However, the USA has taken a cautious and deliberative approach to CBDC development, conducting extensive research and public consultations to assess the potential benefits and risks of introducing CBDC.

China began research on retail CBDC named e-CNY as early as 2014, to modernize payment infrastructure, enhance monetary sovereignty, and reduce reliance on private payment platforms. The project gained momentum in 2019, leading to extensive pilot programs in major cities and regions. By 2022, residents in 11 areas could open e-wallets linked to nine major banks, and the e-CNY was being used in various real-world scenarios, including retail payments, government subsidies, and public transportation. The e-CNY is designed as centralized digital cash, intended to replace traditional paper currency gradually. It is distributed through a two-tier system, involving both commercial banks and, increasingly, technology companies. The e-CNY has shown positive impacts on tax collection, particularly in smaller provinces, and has contributed to green finance by promoting the issuance of green bonds and reducing environmental pollutants.

The Bank Negara Malaysia (BNM) has participated in international projects such as Project Dunbar, which tests multi-CBDC platforms for cross-border settlements with partners like Singapore and Australia. The Monetary Authority of Singapore (MAS) has played a proactive role in international collaborations, such as Project Dunbar and Project Nexus, which test multi-CBDC platforms with Malaysia and other partners. Similar to Malaysia, Singapore's approach emphasizes wholesale CBDC applications, aiming to improve the efficiency and security of large-value payments between financial institutions.

Nigeria became the first African country to launch a functional retail CBDC, the eNaira, in October 2021 under the guidance of the Central Bank of Nigeria (CBN) (Corbet et al., 2024; Nesterov, 2023). The CBN developed the eNaira to address financial inclusion, enhance payment system efficiency, and provide a secure alternative to private digital currencies. The eNaira is a direct liability of the central bank, offering low-cost transactions with greater regulatory oversight and security compared to existing electronic money. Despite initial enthusiasm, the adoption of the eNaira has faced challenges, including public skepticism, technical issues, and concerns about privacy and security. In reality, public adoption has been slow, with limited awareness and trust issues, and the CBDC's impact on financial inclusion and monetary policy remains under evaluation. The CBN is working to improve the eNaira's functionality, expand its use cases, enhance user experience, and address barriers to adoption by increasing public awareness, strengthening cybersecurity measures, and collaborating with financial institutions and technology providers.

India has shown a strong interest in CBDCs as part of its broader digitalization agenda. The Reserve Bank of India (RBI) began pilot programs in late 2022, focusing on both wholesale and retail applications, with the digital rupee designed to complement existing electronic money systems. The RBI is also exploring the potential of CBDCs to improve cross-border payments, reduce transaction costs, and enhance monetary policy transmission.

Overall, the country experiences highlight the importance of regulatory quality, public education, and infrastructure readiness in successful CBDC implementation. Countries that have launched pilot projects are planning to scale up, addressing regulatory challenges, and ensuring interoperability with other digital financial services. Countries are exploring further the potential

of CBDCs to improve cross-border payments, reduce transaction costs, and enhance CBDC's role in monetary policy transmission.

## **6. The US's Hesitancy towards CBDC Implementation**

A primary reason for US caution is the potential disruption to the existing financial system. In a widely accessible CBDC environment, individuals might shift deposits from private banks to the central bank under the modern digitized payment systems in the US, particularly during periods of financial stress. This shift could centralize credit allocation within the Federal Reserve, increasing the risk of systemic bank runs and undermining financial stability (Bindseil, 2020; Chorzempa, 2021). A set of comprehensive regulatory strategies is critical before transitioning to CBDC, as rapid deployment in a complex, developed market could pose significant risks (Corbet et al., 2024).

Moreover, while CBDCs offer potential efficiency gains, these benefits may be marginal in the US context, where electronic payment systems are already highly developed. Davoodalhosseini (2018) explains that having both cash and a CBDC available could, under certain conditions, result in lower overall welfare than maintaining the current system. Therefore, US hesitancy toward CBDC adoption is driven by concerns over financial stability, limited incremental benefits, regulatory caution, and public sentiment, which collectively explain the Federal Reserve's slow and measured approach to CBDC implementation.

## **7. India's Faster Preparation towards CBDC Implementation**

India's unique financial landscape—characterized by a large unbanked population, a thriving digital payments ecosystem, and strong government support for digitalization—has created fertile ground for CBDC initiatives. The Reserve Bank of India (RBI) has adopted a phased and experimental approach, leveraging lessons from successful digital payment platforms like the Unified Payments Interface (UPI). This familiarity reduces barriers to CBDC adoption, as users are already comfortable with digital wallets and cashless payments. Studies show that prior experience with UPI and other digital platforms positively influences behavioral intentions toward CBDC use, with performance expectancy, social influence, and hedonic motivation playing significant roles (Gupta et al., 2023). Overall, the country's rapid progress towards

CBDC is underpinned by digital readiness, policy alignment, financial inclusion goals, and public trust—factors that collectively distinguish its approach from other economies.

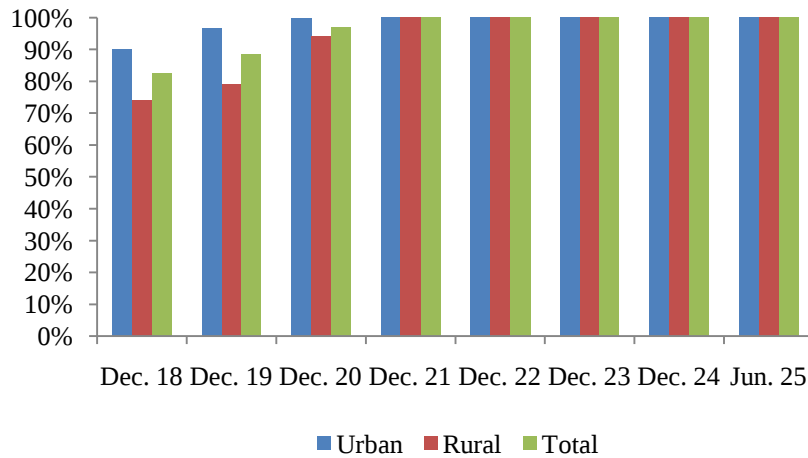
## **8. China’s Slowing Momentum towards CBDC Implementation**

Regulatory and institutional caution, challenges in public adoption due to the entrenched use of private digital payment platforms, the need for further pilot testing and evaluation, and concerns about both domestic and international legitimacy have collectively contributed to a more measured and incremental approach to CBDC rollout in China, despite its initial rapid progress. This caution reflects the need for comprehensive regulatory strategies to ensure financial stability and manage risks associated with transitioning to digital currency. Regulatory quality and institutional development are now seen as more critical than technological readiness, prompting a slower, more deliberate rollout to avoid unintended consequences for the financial system. Despite technical readiness and strong government promotion, public adoption of the e-CNY has lagged. Chinese consumers and merchants are already well-served by efficient private digital payment platforms such as Alipay and WeChat Pay, reducing the perceived added value of the e-CNY. Further pilot tests are necessary to comprehend the economic implications and public acceptance of CBDCs, as well as to refine operational models and address any unforeseen issues.

## **9. Digitization in the Banking System and Prospects for CBDC in Bangladesh**

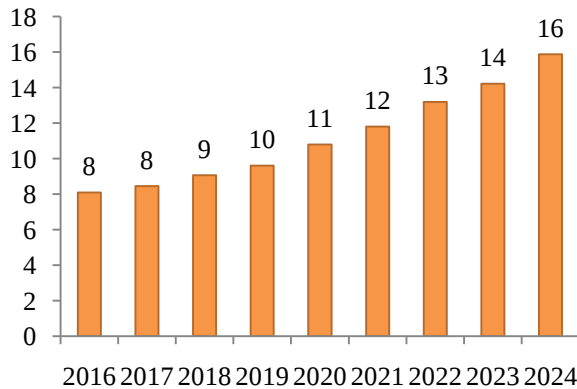
Digitization in the banking sector gained momentum in Bangladesh in the last decade as the government put a high priority on financial inclusion and digitization with the slogan of “digital Bangladesh”. Online banking services are currently available at practically all commercial banks and their branches (Chart 5). Additionally, all facets of the country's population can open a bank account for less than Tk 100, covering wider access to formal financial systems.

**Chart 5: Fully Online Banking**

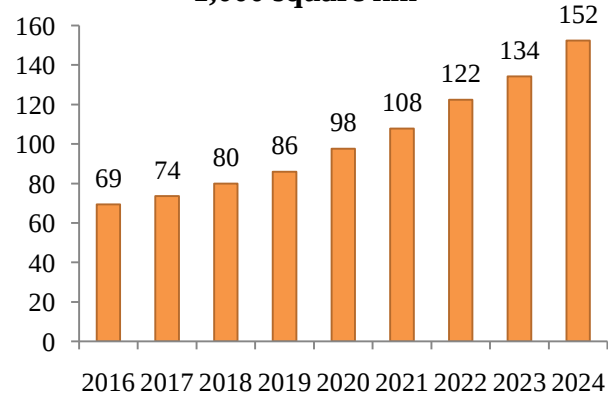


Automated teller machines (ATMs) are playing key roles in online transactions of money in the country. As seen in Charts 6 and 7, the use of ATMs is growing daily. In 2016, there were eight ATMs per 100,000 adults; this number has steadily climbed, reaching 16 in 2024. Similarly, there were 69 ATMs per 1000 square kilometers in 2016; by 2024, that figure had risen to 152.

**Chart 6: Number of ATM Per 100,000 adults**



**Chart 7: Number of ATM Per 1,000 square km**



Source: Financial Access Survey, 2024, IMF

However, cash recycler machines (CRMs), which allow both depositing and taking cash from the same machine, are gradually replacing ATMs. An average of 6,000 adult Bangladeshis had access to one ATM or CRM as of the end of December 2024 (Table 1). Moreover, 9 percent of adults utilised internet banking in December 2024, indicating its growing popularity.

**Table 1: Digitization in the banking systems and mobile financial services**

| Period  | Number of population (thousands) per ATM/CRM | Number of population per card | Amount (thousand taka) per transaction in card | Number of Internet banking customer as % of adult population | Number of active MFS account as % of total adult population |
|---------|----------------------------------------------|-------------------------------|------------------------------------------------|--------------------------------------------------------------|-------------------------------------------------------------|
| Dec. 18 | 10                                           | 6                             | 7                                              | 2%                                                           | 35%                                                         |
| Dec. 19 | 10                                           | 5                             | 7                                              | 2%                                                           | 33%                                                         |
| Dec. 20 | 8                                            | 5                             | 8                                              | 3%                                                           | 30%                                                         |
| Dec. 21 | 8                                            | 4                             | 9                                              | 4%                                                           | 48%                                                         |
| Dec. 22 | 7                                            | 3                             | 9                                              | 6%                                                           | 52%                                                         |
| Dec. 23 | 6                                            | 3                             | 9                                              | 8%                                                           | 75%                                                         |
| Dec. 24 | 6                                            | 2                             | 9                                              | 9%                                                           | 78%                                                         |

Source: Staff's calculation based on data from Bangladesh Bank, World Development Indicators and Financial Access Survey, 2024, IMF.

Table 1 demonstrates that, on average, two people in December 2024 had one credit or debit card, compared to six people per card in December 2018, indicating a considerable improvement in digitalized transactions. The volume of card transactions likewise exhibits an upward trend. In December 2024, a total of Tk. 9000 was paid for each card transaction, compared to Tk. 7000 in December 2018.

Bangladesh performed exceptionally well in the area of mobile financial services. There are currently 13 mobile financial service providers available in this country. By June 2025, there were 145 million mobile money accounts, a number that had grown rapidly in recent years. In December 2024, the number of active MFS account of the total adult population was 78 percent, indicating that the MFS account was widely distributed across all segments of the population. In December 2024, the average daily transaction was Tk. 49 billion, compared to around Tk. 11 billion in December 2018.

BB licensed 9 Payment Service Providers (PSP) and 12 Payment Service Operators (PSO) to facilitate the growth of E-wallets, mobile wallets, payment gateways, and the payment market towards a more cashless society. BB is continuously evaluating existing rules and regulations and actively considering the adoption of new and practical regulations to better address both the opportunities and challenges presented by the emergence of newer technologies. BB launched Nikash-BEFTN software as part of the Bangladesh Automated Clearing House (BACH) for

electronic fund transfer. The National Payment Switch Bangladesh (NPSB) is another core platform of BB, which was established to provide interoperability among participating banks, catering for interbank Automated Teller Machines (ATM), Point of Sales (POS), Internet Banking Fund Transfer (IBFT), and QR-based transactions. BB also launched the Real Time Gross Settlement (RTGS) system in 2015 to facilitate real-time transactions of financial institutions, inland foreign currency transactions, customs duty e-payment, VAT e-Payment, and other important government payments.

Due to notable technical advancements in the financial systems in recent years, the country's financial system has benefited from digitization. The introduction of CBDC at the retail level may be advantageous because a significant portion of Bangladesh's population has access to MFS. Given the widespread availability of internet connections in both rural and urban bank branches, the CBDC may be the ideal platform for wholesale-level transactions as well. However, if the authority decides to implement the CBDC at this time, it is crucial to determine whether setting up the infrastructure for the platform will significantly alter the way the existing digitization is built. It is also necessary to consider the country's capacity and financial feasibility to develop CBDC, given the significant investments made in digitization initiatives and the potential need for additional significant investments in CBDC infrastructure. On the other hand, given that people are becoming used to utilising the current digital platform and that it can support the goal of cashless transactions, what additional benefits would the new CBDC system offer that people should recognise? Therefore, if CBDC is introduced in light of global events, a cost-benefit analysis will be required to determine the appropriate timing of implementing CBDC.

## **10. Implications of CBDC for Monetary Operations**

### **10.1 Substitution Scenarios and Implications to Monetary Operations**

The introduction of a CBDC can lead to various substitution scenarios, each carrying distinct implications for monetary operations and the financial system. These scenarios involve CBDC replacing existing forms of money such as: physical cash, commercial bank deposits, and central bank reserves.

## CBDC Substituting for Cash

When households choose to substitute physical cash with CBDC, the balance sheet of the central bank reflects an increase in CBDC liabilities and a corresponding decrease in currency in circulation (Scenario 1). While the banking sector's balance sheet is not directly affected by this shift between cash and CBDC held by the non-bank sector, indirect effects can emerge. Commercial banks might reduce their cash holdings due to lower demand for cash services, and they may opt to hold CBDC themselves to facilitate conversion processes.

| Scenario 1: households substitute cash for CBDC |                                                                                                           |                |               |                                                                                                             |               |
|-------------------------------------------------|-----------------------------------------------------------------------------------------------------------|----------------|---------------|-------------------------------------------------------------------------------------------------------------|---------------|
| Central bank                                    |                                                                                                           | Banking sector |               | Non-bank sector                                                                                             |               |
| Assets                                          | Liabilities                                                                                               | Assets         | Liabilities   | Assets                                                                                                      | Liabilities   |
| Securities                                      | Currency in Circulation  | Reserves       | Deposits      | Currency in Circulation  | Miscellaneous |
|                                                 | Reserves                                                                                                  | Securities     |               | Deposits                                                                                                    |               |
| Miscellaneous                                   | CBDC                    | Cash           | Miscellaneous | CBDC                     |               |
|                                                 | Miscellaneous                                                                                             | Miscellaneous  |               | Securities                                                                                                  |               |
|                                                 |                                                                                                           |                |               | Miscellaneous                                                                                               |               |

Source: Tansaya Kunaratskul (2025). Implications of CBDC on Monetary Operations, International Monetary Fund, METAC webinar series

## CBDC Substituting for Deposits

The scenario where households substitute commercial bank deposits for CBDC has more direct and potentially significant implications for the banking sector and monetary operations. In this instance, the central bank's liabilities increase due to the issuance of CBDC, while the commercial banks' liabilities (deposits) decrease (Scenario 2). This reduction in commercial bank deposits can lead to a decrease in the supply of reserves within the banking system. If the demand for reserves remains constant, this reduction could exert upward pressure on short-term interest rates. To mitigate such an effect and maintain the target interest rate, the central bank would likely need to inject additional reserves into the financial system through its monetary operations, such as repurchase agreements.

## Scenario 2: households substitute deposits for CBDC

| Central bank  |                         | Banking sector |               | Non-bank sector         |               |
|---------------|-------------------------|----------------|---------------|-------------------------|---------------|
| Assets        | Liabilities             | Assets         | Liabilities   | Assets                  | Liabilities   |
| Securities    | Currency in Circulation | Reserves ↓     | Deposits ↓    | Currency in Circulation | Miscellaneous |
|               | Reserves ↓              | Securities     |               | Deposits ↓              |               |
| Miscellaneous | CBDC ↑                  | Cash           | Miscellaneous | CBDC ↑                  |               |
|               | Miscellaneous           | Miscellaneous  |               | Securities              |               |
|               |                         |                |               | Miscellaneous           |               |

Source: Tansaya Kunaratskul (2025). Implications of CBDC on Monetary Operations, International Monetary Fund, METAC webinar series

### CBDC Substituting for Reserves

The substitution of commercial bank reserves for CBDC primarily concerns wholesale CBDC (wCBDC) and involves commercial banks holding CBDC instead of traditional reserves (Scenario 3). Access to wCBDC is typically provided to financial institutions that already have reserve accounts, although access could potentially be extended to non-banks.

The impact on short-term interest rates in this scenario is generally considered to be limited if CBDC and reserves are treated as largely interchangeable and have similar characteristics. However, if there are design differences between CBDC and reserves, for example, if they are subject to different regulatory treatments or are remunerated differently, the demand for reserves could be different. Central banks and commercial banks would need to manage liquidity effectively between these two systems to prevent fragmentation and ensure seamless interoperability.

### Scenario 3: banks substitute reserves for CBDC

| Central bank  |                         | Banking sector |               | Non-bank sector         |               |
|---------------|-------------------------|----------------|---------------|-------------------------|---------------|
| Assets        | Liabilities             | Assets         | Liabilities   | Assets                  | Liabilities   |
| Securities    | Currency in Circulation | Reserves ↓     | Deposits      | Currency in Circulation | Miscellaneous |
|               | Reserves ↓              | CBDC ↑         |               | Deposits                |               |
| Miscellaneous | CBDC ↑                  | Securities     |               | Securities              |               |
|               | Miscellaneous           | Cash           | Miscellaneous | Miscellaneous           |               |
|               |                         | Miscellaneous  |               |                         |               |

Source: Tansaya Kunaratskul (2025). Implications of CBDC on Monetary Operations, International Monetary Fund, METAC webinar series

## 10.2 Adapting Monetary Operations and CBDC Designs

Central banks must adapt their monetary operations and carefully consider CBDC designs to maintain effective control over short-term interest rates in a CBDC environment. Several strategies can be employed to achieve this.

Firstly, central banks need to enhance their liquidity forecasting capabilities to anticipate changes in reserve supply and demand more accurately. This improved foresight allows for timely interventions to manage liquidity. Secondly, central banks can utilize liquidity-injecting monetary instruments, such as repurchase operations, if market interest rates begin to diverge from the policy rate. They may also introduce or allow for fine-tuning operations to manage daily liquidity more precisely. Thirdly, adjustments to existing operational frameworks, like narrowing the corridor between the ceiling and floor rates or introducing a longer averaging period for reserve requirements, can help to stabilize interest rates. Finally, the design features of the CBDC itself are critical. Central banks should carefully consider aspects such as holding limits for CBDC to manage its potential impact on bank deposits and, consequently, on reserve levels. In the case of wholesale CBDC, ensuring interoperability and a coherent design with existing reserves is essential to prevent market price distortions and undesirable liquidity fragmentation.

## 11. Preconditions for Issuing CBDC in Bangladesh

Countries spearheading the CBDC project have been implementing it in a step-by-step manner. Country experience shows that many countries, including China, Singapore, India, and Malaysia have conducted extensive research on their digital platform, adaptability, and applicability of

establishing CBDC projects in their jurisdictions. **Therefore, there is a need for clear vision and motivation for conducting research on CBDC in the context of the Bangladesh economy and its digital landscape.**

**Secondly, the research should include a comparative analysis of immediate or medium-term plans to issue CBDC against the strong existence of digital payment systems in the country.** The analysis will help policymakers adopt a strategic policy stance regarding CBDC. Forming a research team with representatives from related departments of BB and including some representatives from government agencies involved in the digitization process is crucial to conducting the study. The research team will also be responsible for conducting an impact study on monetary policy, considering peer country experiences if CBDC is implemented.

**Thirdly, in addition to conducting research on CBDC, a technical team comprising members with IT and FinTech expertise must assess the viability of the technological infrastructure for CBDC, including interoperability, cross-border trade, cyber-security, and digital ID, in order to develop the top-level architecture and essential features of CBDC.** The team should address potential challenges including cyber risks in implementing CBDC. The team will explore the prospects and challenges of distributed ledger technologies (DLT)-based interbank payment and securities settlement systems and blockchain technologies for Bangladesh. A first-generation e-taka prototype that might be used in a pilot project can be made by the technical team. Both research and technical teams can gain practical experiences by visiting countries that have completed testing phases of pilot programs on CBDC.

**Fourthly, if BB decides to implement CBDC, it should examine its current legislative and regulatory frameworks as part of the central bank's preparedness and focus on the areas that require amendments.** Regulatory reforms may include the currency act on legal tender classification, CBDC's impact on monetary policy and anti-money laundering/countering the financing of terrorism (AML/CFT) compliance, among others. To this end, BB could coordinate and communicate with financial institutions for their feedback on legal and regulatory changes.

**Fifthly, a wide-scale survey could be initiated by BB to understand the market perception and readiness regarding the CBDC.** The survey participants should cover all types of market players in the financial systems, including banks, non-banks, and the general public. Issues on offline payments of CBDC in underserved regions, wallet models, tokenized models, and

programmable government transfers (e.g., subsidy), among others, should be included in the survey questions. In general, the survey is crucial to enhance public awareness and literacy about the new product of CBDC.

**Sixthly, if the survey provides positive results for the CBDC, BB could initiate a small-scale pilot CBDC project to get hands-on experience by issuing e-taka.** The research results should identify the location, areas, and limitations of the pilot CBDC project before testing. The experience from the pilot project will provide critical insights into whether the CBDC could be applicable to the Bangladesh's financial systems, highlighting its prospects and challenges. If the pilot project is successful, the authority could expand the project into some other strategic areas in order to understand its wider accessibility.

**Finally, in parallel to the pilot programs, the authority can go into partnership with some peer countries, including SAARC countries, for cross-border settlements on a certain joint product of CBDC, particularly the wholesale CBDC.** This initiative will not only help to develop a shared cross-border CBDC platform with multiple central banks, but also integrate with global trends and technological advancements. Besides, BB can join in international cooperation, such as a member of the IMF high-level CBDC group, FSB, and BIS initiatives on interoperability, legal standards, and ISO20022.

## **12. Conclusions**

This paper finds that Bangladesh has already emerged as a technologically advanced country in its financial systems. Therefore, Bangladesh should not go for an immediate plan to issue CBDC due to the strong existence of digital payment systems. However, considering the global development, Bangladesh should not be reluctant on CBDC. Preparing a roadmap with a clear vision and mission is critical to progress on CBDC. A comprehensive research on CBDC will help to understand the appropriate strategic stance of the country. Preparing a white paper on the strength of digital infrastructure (mobile network, agent banking) and exploring the prospects and challenges of distributed ledger technologies (DLT)-based interbank payment and securities settlement systems, and blockchain technologies for Bangladesh are essential before issuing CBDC in the country. BB can initiate limited-scale pilot programs to understand market perception and the applicability of CBDC in the country. Developing legal and regulatory frameworks to ensure CBDC aligns with AML/CFT standards and monetary policy goals is also

crucial. Parallel to cross-border engagement on a shared cross-border platform, authorities can focus on building capacity on CBDC initiatives through international cooperation.

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