

Financial Market Infrastructure

The Financial Market Infrastructures (FMIs) remained robust and continued to provide payment and allied services in a smooth manner during CY23. Pakistan Real-time Interbank Settlement Mechanism (PRISM) transactions showed growth both in volume and value terms. The services of PRISM were available throughout the period under review without any disruptions. The e-banking continued to be a major driver behind retail payment growth. SBP launched Person to Merchant (P2M) module of its RAAST initiative, which will further enhance digital payment acceptance for merchants and businesses. The performance of National Clearing Company of Pakistan and Central Depository Company (CDC) remained steady throughout the year under review. These institutions took various measures to enhance their efficiency and operational resilience and to facilitate investors' onboarding process.



8 Financial Market Infrastructures

Financial Market Infrastructure (FMI) is defined as a multi-lateral network among participating financial institutions which are responsible for clearing, settling, or recording of payments, securities or any other financial transactions. The FMI of Pakistan is composed of a) Large Value Payment System (LVPS) i.e. Pakistan Real-time Interbank Settlement Mechanism (PRISM), b) Retail Value Payment System (RVPS), which includes Raast, c) Interbank and ATM switch i.e. 1-Link, d) National Institutional Facilitation Technologies (NIFT), a clearing house for paper based instruments, e) a corporate securities settlement company i.e., NCCPL, and f) a corporate securities depository i.e. CDC.

A sound and secure financial market infrastructure is necessary for operational efficiency and stability of financial system as it facilitates flow of transactions between different counterparties in the market. The systemic nature of FMI components make them pivotal for the clearance and settlement of different financial transactions among all financial institutions in the country. Smooth functioning of payment systems is thus crucial for efficiency of the financial system with regards to uninterrupted provision of financial services, effective transmission of the monetary policy signals, and stability of the financial markets.

8.1 Payment Systems and their Performance

Provisions of the recently amended SBP Act, 1956 authorize SBP to ensure the soundness and efficient functioning of national payment and settlement systems.¹ The Payment Systems and Electronic Funds Transfer (PSEFT) Act, 2007 empowers SBP to regulate, operate and facilitate the national payment systems of the country.²

¹ The SBP Act, 1956 (amended up to January 2022)

² https://www.sbp.org.pk/psd/2007/EFT_Act_2007.pdf

Payment systems showed robust growth driven by digital channels

The national payment systems showed a robust growth in both large value (PRISM) and retail transactions during CY23. Both the modes have shown a double digit growth in volume and value terms during the period under review. The growth in volume of retail transactions was primarily driven by e-banking, showing further traction in customer preferences for digital channels vis-à-vis cash-based payments as the volume of paper based transactions decreased by 1.8 percent over the year (**Table 8.1**).

Profile of Payment System Mechanisms **Table 8.1**

Mechanism	CY20	CY21	CY22	CY23	Growth in CY23
Volume in millions, Value in trillion Rupees					percent
a. PRISM					
Volume	3.4	4.4	4.5	5.4	19.6
Value	373.3	577.8	647.0	824.0	27.4
b. Retail Payments (i+ii)					
Volume	1,382.7	1,788.2	2,206.2	2,764.7	25.3
Value	209.3	272.7	371.7	485.4	30.6
i. Paper Based					
Volume	389.7	393.4	384.2	377.4	-1.8
Value	136.0	166.4	210.8	277.8	31.7
ii. E-Banking					
Volume	993.0	1,394.8	1,822.0	2,387.3	31.0
Value	73.3	106.2	160.8	207.6	29.1

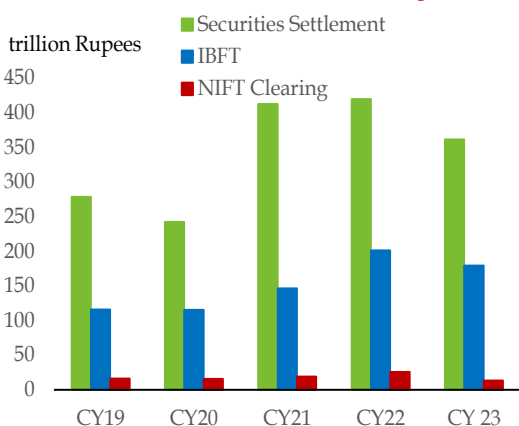
Source: State Bank of Pakistan

PRISM handled higher value and volume of transactions

PRISM is a Real Time Gross Settlement System (RTGS) operated by SBP that offers a powerful mechanism for providing settlement in real time on gross basis, thus minimizing systemic risks that are inherent in large-value settlement

systems. Since PRISM is used for large value payments, it has a share of 62.9 percent in total value of transactions, while in volume it has a share of 0.19 percent. In CY23, PRISM showed 19.6 percent and 27.4 percent growth in volume and value, respectively. Detailed data shows that the growth in value of PRISM transactions was largely driven by security settlements and interbank funds transfer, with a growth rate of 31.6 percent and 28.4 percent, respectively (Figure 8.1a). The volume of securities settlement decreased by 6.9 percent whereas interbank funds transfer increased by 21.3 percent on yearly basis (Figure 8.1b). The continuous availability of PRISM for payments settlement was ensured through its business continuity planning framework.

Value Profile of PRISM Transactions Figure 8.1a

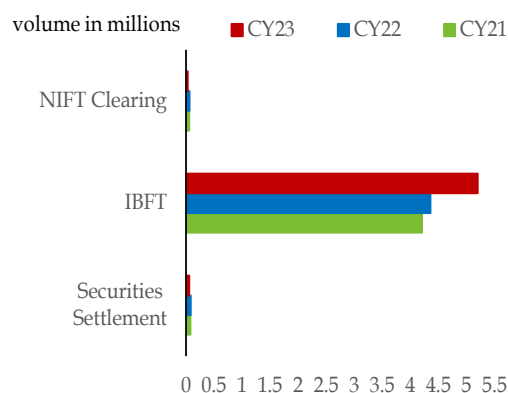


Source: State Bank of Pakistan

It is important to note that PRISM has undergone significant developments since its inception in 2008. PRISM has several features to address settlement and systemic risk. It enables financial transactions to be settled in real time throughout the day instead of the day-end clearance, thereby reducing settlement risk. For settlement of securities, PRISM offers securities to be settled via DvP (Delivery versus Payment) or PvP (Payment versus Payment), which ensures that the security is only delivered after

payment is made.

Volume Profile of PRISM Transactions Figure 8.1b



Source: State Bank of Pakistan

During the payment process, PRISM facilitates participants via providing queuing and priority setting facilities. This ensures that participants have control over the payment process and can act in accordance with criticality of a certain payment in case of limited funds. There is also a feature of GRIDLOCK, which if enabled, can reorganize the payments queued up using different algorithms.³ In order to facilitate the liquidity needs of participants, SBP has given the intraday liquidity facility against approved government securities. The continuous availability of PRISM services in case the primary site goes down is ensured by its disaster recovery sites as part of SBP’s business continuity plan. Since the introduction of PRISM, its operating rules have been proactively reviewed and strengthened to bring them at par with international standards and emerging market dynamics to safeguard the system against emerging risks including cybersecurity. The enhanced measures to ensure security of the PRISM system include multipoint network level encryption, firewalls, malware protections and prevention systems to mitigate chances of unauthorized or illegal access to the system.

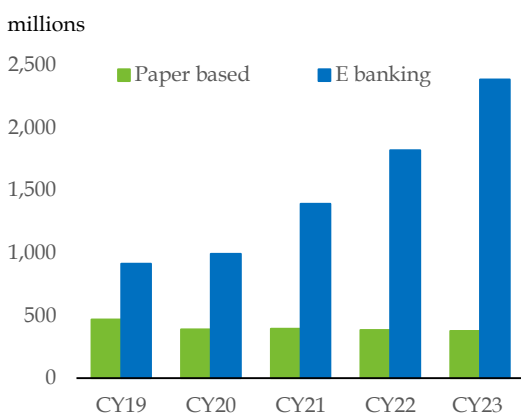
³ Gridlock Mechanism is a settlement mechanism used in case a RTGS member bank has insufficient funds to clear multiple transactions simultaneously. It nets the positions of originating bank and destination bank for settlement purposes by auto-selecting the transactions with an algorithm.

Retail transactions continued their momentum in terms of value and volume with e-banking modes dominated paper based modes in terms of volume

Retail payments have shown a sustained growth in CY23. The volume and value of retail transactions increased by 25.3 percent and 30.6 percent, respectively in CY23. With a share of 86 percent and 43 percent in total volume and value, respectively, with e-banking dominating retail payments in CY23. Paper based modes of transactions grew in value, however, their volume declined by 1.8 percent, showing clear shift of consumer preferences from paper based to e-banking channels (Figure 8.2a and 8.2b).⁴ The share of e-banking has been on the rise due to multiple initiatives taken by SBP for digitization under the umbrella of National Payment System Strategy, launched in 2019, with the aim of bringing retail payment system at par with international best practices.⁵

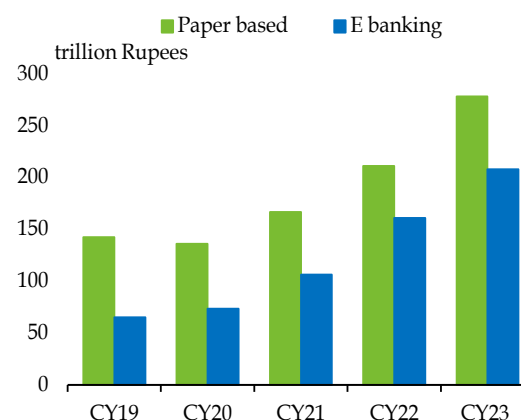
Due to increasing share of e-banking, various risks such as unauthorized access, malware, phishing scams, and vishing scam (voice phishing) are also emerging. To address these risks, SBP has rolled out a detailed set of guidelines on enhancing security of digital

Volume Profile of Retail Transactions Figure 8.2a



Source: State Bank of Pakistan

Value Profile of Retail Transactions Figure 8.2b



Source: State Bank of Pakistan

banking products and services. These guidelines require banks to formulate a Digital Fraud Prevention Policy to manage digital fraud risk. Furthermore, banks are also instructed to report fraudulent transactions. SBP mandates swift action, requiring banks to block withdrawals and investigate suspicious activity within set time frames.⁶

With declining share in overall retail payments, paper-based transactions are dominated by cheque payments and OTC transactions

Paper-based transactions have moderated over years with a significant volume of transactions shifting towards e-banking modes. Overall, paper-based transactions contracted by 1.8 percent in volume. However, the value of these transactions increased by 31.7 percent, showing that customers prefer large value payments through paper-based modes (Figure 8.3). Disaggregated data shows that cheques dominated paper based transactions, contributing 51 percent and 76 percent in volume and value, respectively. The second most-favored mode of payment was over the counter (OTC) transactions, which contributed 46 percent and 13 percent in volume and value, respectively.

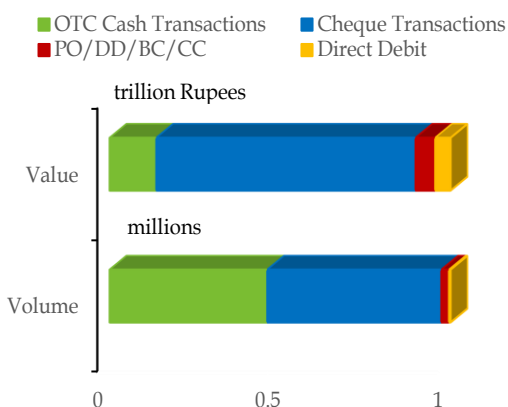
⁴ E banking channels consist of internet banking, mobile banking, Point of Sale (POS), Real Time Online Branches (RTOB), ATMs and E-commerce.

⁵ National Payment Systems Strategy available at: <https://www.sbp.org.pk/ps/PDF/NPSS.pdf>

⁶ BPRD circular 4 of 2023 available at: <https://www.sbp.org.pk/bprd/2023/C4.htm>

Value- and Volume-wise Paper Based Transactions

Figure 8.3



Source: State Bank of Pakistan

e-banking transactions maintained their momentum of strong growth...

e-banking transactions grew by 31.0 percent and 29.1 percent in volume and value during CY23, respectively. This growth largely stems from usage of mobile banking and internet banking by customers due to their cost effectiveness and convenience.

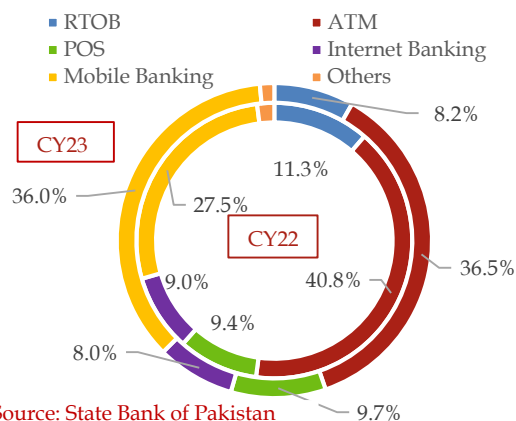
A detailed analysis of e-banking transactions shows that in terms of volume, ATMs have the largest share i.e. 36.5 percent, followed by mobile banking with 36.0 percent. Mobile banking improved its share in the period under review from 27.5 percent last year to 36.0 percent.

However, in terms of value of transactions, e-banking is dominated by Real Time Online Branches (RTOB) (67.3 percent) followed by mobile banking (16.0 percent). The share of RTOB, however, decreased from 73.6 percent in CY22 to 67.3 percent in CY23. The share of mobile banking, on the other hand, increased from 10.4 percent in CY22 to 16.0 percent in CY23 whereas internet banking slightly improved to 9.5 percent from 8.6 percent in CY22. A continuous increase in digitization of

payments shows a strong push of economy to formalization (8.4a and 8.4b).

Instrument-wise Share in Total Volume of E-banking Transactions

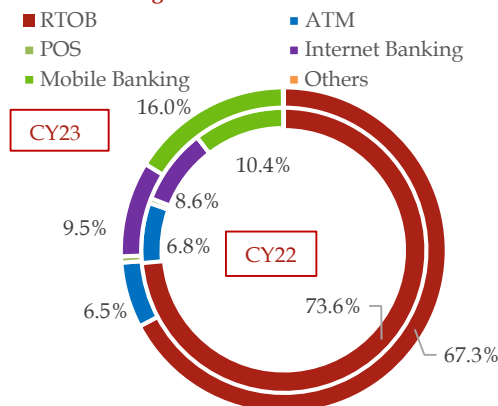
Figure 8.4a



Source: State Bank of Pakistan

Instrument-wise Share in Total Value of E-banking Transactions

Figure 8.4b



Source: State Bank of Pakistan

Raast

Raast is SBP's flagship initiative to revolutionize digital payments in Pakistan. Its bulk payment module went live in January 2021 followed by Person to Person (P2P) module in February 2022.⁷⁸ It aims to revolutionize the Pakistani financial landscape by providing an instant, secure, and cost-effective platform for digital payments among individuals, businesses, and

⁷ <https://www.sbp.org.pk/press/2021/Pr-11-Jan-21.pdf>

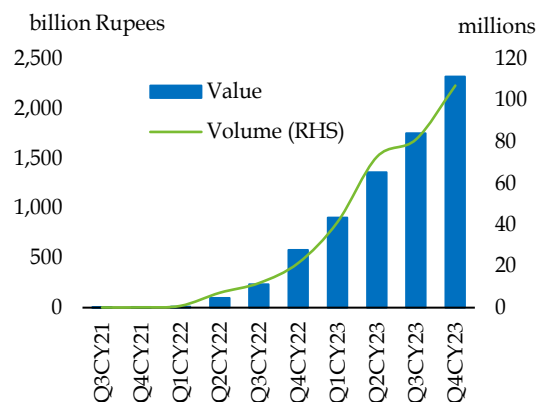
⁸ <https://www.sbp.org.pk/disd/2022/C1.htm>

government entities. Raast is a real time funds transfer mechanism which utilizes advanced encryption and security protocols to safeguard transactions and customer information. Moreover, Raast will reduce cash dependency, promote transparency in financial transactions thereby contributing to overall financial stability.

Transactions through Raast showed a strong momentum while exhibiting exponential growth in terms of both value and volume. The volume of RAAST transactions increased from 41 million transactions in CY22 to 302 million transactions in CY23. In value terms, transactions jumped from Rs 0.9 trillion last year to Rs 6 trillion in CY23. Detailed analysis reveals that the total momentum in Raast transactions is primarily due to successful introduction and wide adoption by market of P2P module in the RAAST ecosystem in February 2022. It contributed 99.7 percent in terms of volume and 96.8 percent in value during the period under review.⁹ Moreover, both modules G2P and P2P maintained robust growth in value and volume in CY23. The volume in bulk payment module increased from 0.1 million to 0.8 million transactions, whereas value increased from Rs 30 billion to Rs 170 billion during the period under review.

In the last quarter of CY23, G2P transactions grew by 90 percent and 52 percent in volume and value, respectively, from the preceding quarter. Whereas P2P transactions grew by 32 percent in both volume and value. Raast continued its functioning without any interruptions throughout the year handling the increasing value and volume of the transactions (Figure 8.5).

Trend in Raast Transactions **Figure 8.5**



Source: State Bank of Pakistan

Recently, SBP launched the third phase of Raast i.e. Person-to-Merchant (P2M) to facilitate digital payment acceptance for merchants and businesses.¹⁰ The P2M service will enable payment acceptance by businesses using Quick Response (QR) Codes, Raast Alias, IBAN and Request to Pay (RTP) utilities. This module has immense potential to digitize the financial landscape as it includes merchant service providers who will onboard other businesses, individuals and offer them multiple acceptance modes. However, few risks such as fraudulent tactics to obtain important customer information can be an important concern in upcoming years and requires increasing awareness against these tactics by financial institutions.

e-banking infrastructure

The e-banking infrastructure plays a significant role to ensure that customer’s needs are met in a digital financial ecosystem. The e-banking infrastructure showed growth in terms of number of online branches, ATMs and POS. Within the payment cards category, both credit and debit cards showed 8 percent growth in CY23 (Table 8.2).

⁹ The volume of P2P module increased from 41 million to 301 million transactions whereas the value increased from Rs 0.9 trillion to Rs 6 trillion during the same period.

¹⁰ <https://www.sbp.org.pk/psd/2023/C4.htm>

E-Banking Infrastructure **Table 8.2**

Description	CY20	CY21	CY22	CY23
Online Branches	16,165	16,571	17,005	17,625
ATMs	16,041	16,709	17,547	18,117
POS	62,480	92,153	108,899	118,444
Total Payment Cards of which:	Number in thousands ('000)			
Credit Cards	1,691	1,740	1,914	2,070
Debit Cards	27,592	30,934	32,524	35,113
ATM only cards	7,246	4,782	.	.
Social welfare cards	7,624	11,096	10,160	8,406
Prepaid Cards	133	125	99	91

Source: State Bank of Pakistan

Branchless banking has continued its momentum

Branchless banking plays a pivotal role in extending formal financial services to underserved areas. It uses the branchless banking agent-model to maximize its outreach to far-flung areas, where it is not feasible to open bank branches. In CY23, branchless banking transactions increased by 29 percent in volume and 44 percent in value. The deposit base of branchless banking has expanded by 31 percent, reaching an all-time high of Rs 115 billion in CY23 as compared to last year. Along with this, the number of accounts in the branchless banking segment have surged by 18 percent in the same period; however, active accounts have decreased by 33.8 percent. In view of the expanding branchless banking network, SBP is cognizant of AML/CFT risks associated with it.⁸ Therefore, SBP has revised industry wide controls for banks and microfinance banks providing branchless banking services. These controls include biometric verification, deployment of new devices in high risk areas, and better record mechanism for risk assessment (Table 8.3).

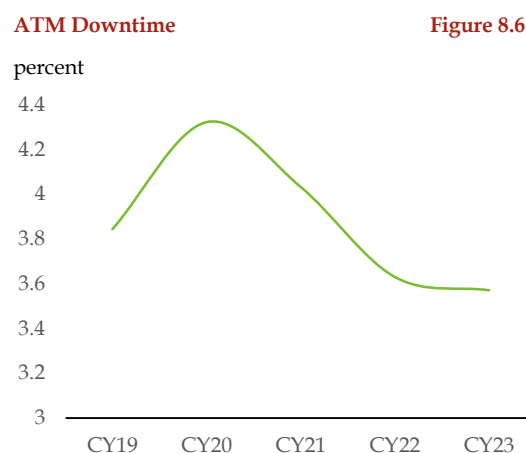
Key Highlights of Branchless Banking **Table 8.3**

Description	CY21	CY22	CY23
No. of Agents	587,547	622,884	649,683
No. of Accounts	78,810	97,097	114,643
No. of Active Accounts	44,905	42,484	64,122
Deposits at period end (million Rupees)	65,580	88,488	115,409
No of transactions (million)	2,501	3,049	3,938
Value of Transactions (billion Rupees)	8,971	12,602	18,182
Average Daily Transactions (thousands)	6,948	8,471	10,939
Average size of transactions (Rupees)	3,577	4,129	4,828
Average Deposit in accounts (Rupees)	799	911	1,007

Source: State Bank of Pakistan

ATM Efficiency

ATMs are one of the most important Alternative Delivery Channels (ADCs) in the FMIs. ATMs hold largest share in volume of e-banking. It is important to keep them functioning without any prolonged or unanticipated interruption to enhance trust in banking services. ATM downtime has further reduced to 3.6 percent of activity time in CY23, which is the lowest in previous five years (Figure 8.6).



Source: State Bank of Pakistan

8.2 FMIs other than Payment Systems

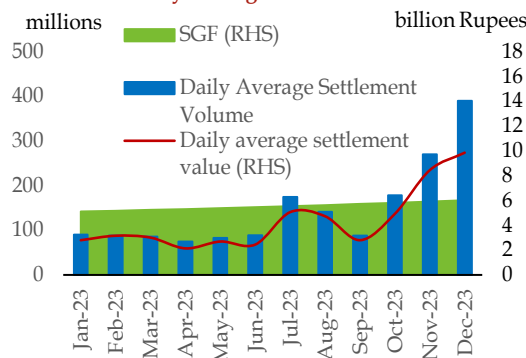
NCCPL

The National Clearing Company of Pakistan Limited (NCCPL) plays a pivotal role in ensuring smooth operations of Pakistan’s capital markets. It has three major roles. First, it acts as the central counter party for all trades executed at the Pakistan Stock Exchange (PSX). It guarantees the settlement of all trades taking place, thereby decreasing the counterparty risk. Second, it is responsible for electronic transfer of security and funds between parties of a trade without any friction. Lastly, it acts as Centralized Know-Your-Customer Organization (CKO) for all capital market participants. Furthermore, it also provides national custodial services, which entails providing safekeeping and asset servicing for investor securities.

NCCPL has multiple risk mitigating measures in place which include maintaining a settlement guarantee fund (SGF). Under SGF, participants regularly contribute towards a pool of money, depending on their risk profile and trading activity, so that financial losses could be covered in case a member defaults on his obligations. The fund stood at Rs 6 billion at the end of December 2023.

In CY23, daily average settlement value stood at Rs 4.3 billion compared to Rs 3.2 billion last year. Further trading volume has also slightly increased from last year’s 110.7 million transactions to 146 million in CY23. Though macro-financial conditions remained challenging, the Fund remained unutilized, which also reflects NCCPL’s adequate capacity to deal with risk of default (**Figure 8.7**).

Comparison of Settlement Guarantee Fund with Daily Average of Settlement Figure 8.7



Source: National Clearing Company of Pakistan Limited

NCCPL working on to transition from T+2 to T+1 settlement cycle

NCCPL is working on the practicality of turning their settlement cycle from T+2 to T+1, as it will increase efficiency of securities market operations. The transition to a shorter settlement cycle will also require realignment of risk mitigation measures specially in terms of SGF and default management. Moreover, operational efficiency requirements for custodian clearing members may correspondingly be increased as they are responsible for majority of trade.¹¹

NCCPL increased operational efficiency by improving investor onboarding process

NCCPL took a number of measures to facilitate investor onboarding process, e.g., by introducing application programming interface (API) connectivity with NADRA database for CNIC verification. Additionally, they introduced an app “NCC Bioverify” to facilitate biometric verification so that customers can get biometrically registered via their smartphones.

Central Depository Company (CDC)

CDC acts as the major securities depository in Pakistan. It facilitates the electronic settlement of transactions on the PSX and offers other related

¹¹ NCCPL, Annual Report 2023 (nccpl.com.pk) available at: <https://www.nccpl.com.pk/en/media-centre/annual-report/annual-report-2023>

services for equity, debt, and other financial instruments. The Company provides depository services which entail holding securities electronically for investors, eliminating need for physical certificates. It acts as a central party ensuring that both sides of a trade are fulfilled. Lastly CDC maintains investor records and facilitates transfer and ownership of shares bought and sold. CDC has taken multiple initiatives to facilitate investors in CY23 while ensuring uninterrupted services to investors in capital market.

transfer is that it is free of cost and it promotes an end-to-end digital experience for investors and AMCs.¹³

Pilot project for digitization of national saving certificates

CDC is working on its objective of dematerializing all financial instruments in Pakistan. The pilot project for digitization of national saving certificates will enable Central Directorate of National Savings (CDNS) to release national saving certificates in electronic format instead of physical certificates. This initiative will reduce physical process flows and increase operational efficiency and make the process environment friendly by eliminating the use of paper. This project will facilitate investors to invest in multiple securities and maintain their entire portfolio in a single account in CDC.¹²

Raast payment gateway used for mutual funds investment

CDC has decided to use SBP's micro gateway initiative, Raast, to facilitate investors in accessing mutual funds market. CDC will act as a "Payment Aggregator" by using Raast's P2P function to facilitate investors in mutual funds industry. The investor can enter its payment using Raast in their bank portal. This payment will be forwarded to a payment aggregator, which in return will transfer units to the Asset Management Company (AMC). The most important advantage of using Raast for funds

¹² CDC Newsletter 89 for Jan-March 2023 available at: <https://www.cdcpakistan.com/downloads-category/publications/>

¹³ CDC Newsletter 91 for July-September 2023 available at: <https://www.cdcpakistan.com/downloads-category/publications/>