

## Chapter 8: Financial Market Infrastructures

*While the economy witnessed buildup of challenges and slowdown in economic activity during CY22, the Financial Market Infrastructures (FMIs) remained resilient. Pakistan Real Time Interbank Settlement Mechanism (PRISM) operations observed a moderate hike in transactions both in terms of value and volume. Growth in paper-based transactions stagnated, while e-banking transactions maintained the strong growth momentum of previous years, showing double digit growth in all key segments. Mobile and Internet banking uptake enhanced tremendously further clarifying the trend of shifting customers' preference towards digital modes of payments. SBP launched P2P payment system under the flagship initiative Raast-2nd Phase, which received an overwhelming response from customers in a short span of time. The introduction of licensing and regulatory framework for digital banks was another leading development. The performance of National Clearing Company of Pakistan Limited (NCCPL) and Central Depository Company (CDC) improved over the year under review and their resilience also remained intact. These institutions took a number of measures to further strengthen their operational resilience and risk management framework, and to facilitate investors.*

**FMI** is defined as a multilateral system among participating institutions, which are used for clearing, settling, or recording of payments, securities, derivatives, or other financial transactions.

FMIs of Pakistan consist of (i) a Large Value Payment System (**LVPS**) i.e. **PRISM**, (ii) a Retail Value Payment System (**RVPS**) or Instant Payment System i.e. Raast, (iii) an inter-bank and ATM switch i.e. 1-Link, (iv) a clearing house of paper-based instruments i.e. National Institutional Facilitation Technologies (**NIFT**), (v) a corporate securities settlement company i.e. **NCCPL**, and (vi) a corporate securities depository i.e. **CDC**.

Systemic nature of FMIs' institutions make them centric to the clearance and settlement of transactions of the financial institutions as well as in the flow of money and securities. Smooth functioning of payment systems is thus crucial for the 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 *operate and exercise oversight over payment systems*.<sup>174</sup> Further, The Payment Systems and Electronic Funds Transfer (**PSEFT**) Act, 2007 empowers SBP to regulate, operate and facilitate the national payment systems of the country.<sup>175</sup> As such, SBP is responsible for ensuring the sound and efficient functioning of the national payment and settlement systems.

*Payment Systems' performance moderated with decline in economic activity and growth slowdown ...*

The national payment systems witnessed strong growth in both PRISM and retail transactions during CY22, specifically, more pronounced in case of retail payments. The growth in volume of large value transactions through PRISM moderated when compared to the previous year. In terms of retail payments, volumes of E-banking transaction observed double-digit growth while paper-based volumes decreased slightly. Evidently, in line with ongoing trends in the market, E-banking

<sup>174</sup> [The SBP Act, 1956 \(amended up to Jan-2022\)](#).

<sup>175</sup> [The PSEFT Act, 2007](#).

transactions drove the growth in retail payments during the year under review, highlighting customers' growing preference for digital channels instead of traditional modes of payments. Encouragingly, this trend has gotten stronger in recent years especially in the wake of the pandemic, as the lockdowns and social-distancing policies played a key role in changing the preferences of customers and helped them to adopt digital modes of payments (**Table 8.1**).

Table 8.1: Profile of Payment System Mechanisms					
Mechanism	CY19	CY20	CY21	CY22	Growth in CY22
	(Volume in millions and Value in PKR trillions)				(Percent)
<b>a. PRISM</b>					
Volume	2.4	3.4	4.4	4.5	3.7
Value	410.6	373.4	577.8	647.0	12.0
<b>b. Retail Payments (i+ii)</b>					
Volume	1381.6	1382.7	1788.0	2206.2	23.4
Value	207.3	209.3	272.9	371.7	36.2
<b>i. Paper based</b>					
Volume	467.5	389.6	393.4	384.2	(2.3)
Value	142.3	136.0	166.4	210.8	26.7
<b>ii. E-Banking</b>					
Volume	914.2	993.0	1394.7	1822.0	30.6
Value	65.0	73.3	106.5	160.8	51.1

Source: SBP

*PRISM worked efficiently, while maintaining continuous availability ...*

PRISM handled a higher volume and value of transactions during CY22 compared to the previous year. However, in terms of growth, momentum of volume and value of transactions moderated compared to CY21, as economic activity slowed down especially during second half of CY22. In value terms, PRISM handled around 63.5 percent of all transactions, highlighting its importance in settlement of economic contracts and being the conduit for large value payments.

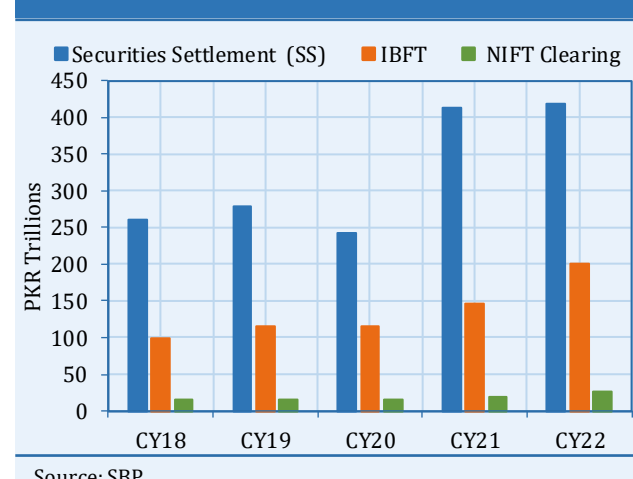
Further analysis in terms of value of PRISM transactions depicted that during CY22 growth remained higher than last year in heads of

<sup>176</sup> IBFT transactions include bank-to-bank transfers and third-party customer transfers. Third party fund transfers are processed via PRISM by direct participants on instructions of their customers/accountholders.

clearing transactions (pertaining to NIFT, NCCPL and 1-Link), and Inter-Bank Funds Transfer (IBFTs) which increased year on year by 35.4 percent and 37.9 percent, respectively. While growth in value of transactions of securities settlements moderated to 1.7 percent (**Chart 8.1a**). The reduced growth in Securities Settlement transactions was only visible in the value of transactions while the volume of transactions grew by 6.8 percent compared to 6.1 percent in CY21.

On aggregate basis, growth in volume of transactions made through PRISM moderated during the year under review. Growth in volumes of transactions through IBFT significantly reduced to 3.6 percent from 30.0 percent during CY21.<sup>176</sup> IBFT transactions constituted the highest share of 96.6 percent in total volume of PRISM transactions. Growth in the number of clearing settlements transactions increased by 4.4 percent during the year (**Chart 8.1b**).

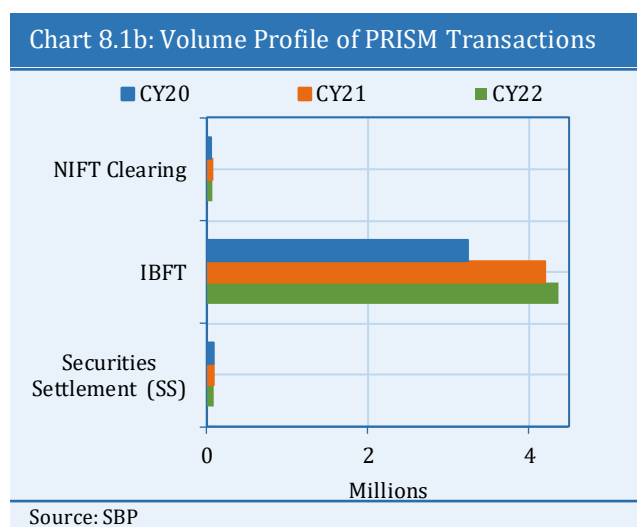
Chart 8.1a: Value Profile of PRISM Transactions



Source: SBP

SBP's implementation of second phase of Raast at the start of CY22, which enabled instant and free Person-to-Person (P2P) fund transfers using either International Bank Account Number (IBAN) or Raast ID, provided an

alternate channel to customers for fund transfers and thus contributed to reduction in usage of PRISM for IBFT transactions.<sup>177</sup> Additionally, SBP made mandatory for banks in Oct-21 to provide digital payments and facilitation of financial services to institutional clients.<sup>178</sup> Moreover, broad slowdown in economic activity in the country could have also contributed towards reduced growth of IBFT transactions in PRISM.



Utilizing its business continuity planning framework and already in place alternate operation arrangements, SBP ensured continuous availability of PRISM during CY22. PRISM’s real time gross settlement (RTGS) system functioned steadily, thereby limiting settlement and systemic risks in the interbank settlement process.<sup>179</sup> Encouragingly, participating financial institutions expanded during CY22: direct participating institutions in PRISM increased to 59 from 57 institutions at end of CY21.<sup>180</sup>

*Retail transactions maintained strong growth as e-banking modes of payments continued to gain traction ...*

Retail payments demonstrated robust growth during CY22. The value and volume of transactions grew by 36.2 percent and 23.4 percent, respectively. The double-digit growth in retail payments in CY22 was consistent with last year’s trend. The continuous growth momentum marked a sharp turnaround from the pandemic-stricken stagnation seen during CY20. With strong growth of 51.1 percent and 30.6 percent in terms of value and volume of transactions, e-banking transactions primarily supported the growth in retail payments during CY22. Though, paper-based transactions in terms of value grew by 26.7 percent but the volume of transactions reduced during the year by 2.3 percent.

On a positive note, a significant shift is underway towards electronic modes of payment away from paper-based modes of payment. The share of e-banking transactions in total retail transactions has been on a consistent rise over the years and is expected to rise more sharply in coming years. Since CY18, their share in terms of value and volume increased from 27.0 percent and 63.7 percent to 43.3 percent and 82.6 percent, respectively (Chart 8.2a and 8.2b).

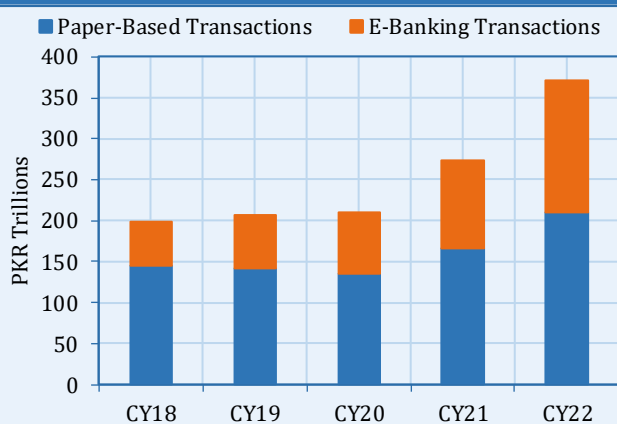
<sup>177</sup> [DI&SD Circular No. 1 of 2022.](#)

<sup>178</sup> [PSP&OD Circular Letter No. 05 of 2021.](#)

<sup>179</sup> PRISM uses delivery-versus-payment (DVP) or payment-versus-payment (PVP) mechanisms in transactions to limit settlement risk.

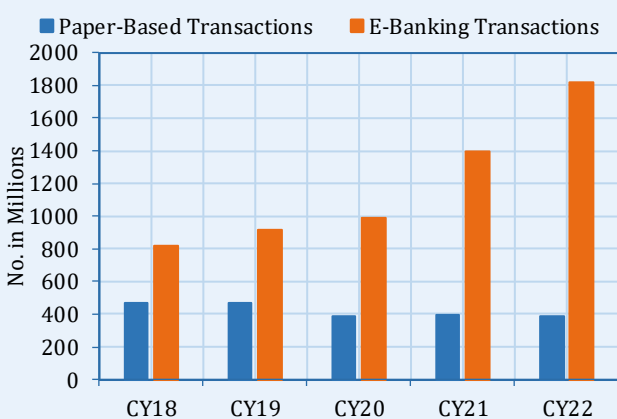
<sup>180</sup> As of end Dec-22, PRISM system has 59 Direct Participants, which include 45 Banks and MFBS, 9 DFIs, and 2 Non-Bank and 3 Special Participants.

Chart 8.2a: Value Profile of Retail Transactions



Source: SBP

Chart 8.2b: Volume Profile of Retail Transactions



Source: SBP

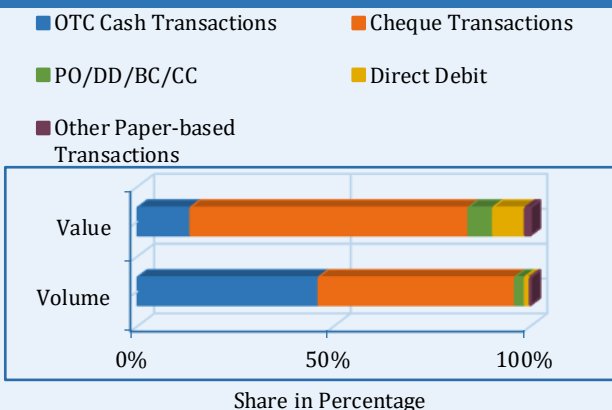
*With static volumes, paper-based transactions continued to be dominated by cheques and over-the-counter (OTC) cash transactions ...*

Paper-based transactions showed subdued growth in comparison to e-banking transactions during CY22. The stagnating growth in paper-based transactions echoed the consumers' increasing inclination towards digital modes of payments. The volume of paper-based transactions significantly reduced (by 16.6 percent) during CY20 and have not been able to recover to pre-pandemic volume of 467 million transactions achieved in 2019. Likewise, in CY22, quantum of paper-based transactions reduced by 2.3 percent when compared to CY21. However, the value of these

<sup>181</sup> E-banking includes transactions conducted via electronic channels including Real-Time Online Branches,

transactions increased by 26.7 percent over the year, indicating that such transactions were still the preferred mode for making payments of larger values.

Chart 8.3: Volume and Value wise share of Paper-based retail transactions during CY22



Source: SBP

Detailed analysis showed that cheques dominated the paper-based transactions, contributing 49.9 percent and 70.7 percent of value and volume of these transactions, respectively. Further, over-the-counter cash transaction was also a favored mode typically being used for smaller payments by customers as it contributed 46.1 percent in volume but only 13.4 percent in value of transactions **(Chart 8.3)**.

*Mobile banking spearheaded the growth in E-banking transactions ...*

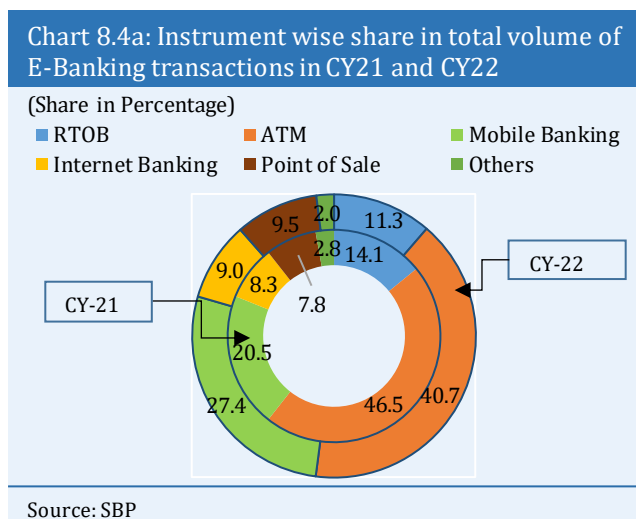
The increasing use of E-banking modes for retail payments witnessed in recent years sustained its growth momentum this year too. The volume of E-banking transactions recorded a robust growth of 30.6 percent in comparison to CY21.<sup>181</sup>

More customers utilized payment services offered through digital channels of mobile banking, internet banking and point of sale (PoS). In particular, mobile and internet banking has displayed strong growth in recent years and outpaced other modes of payment.

ATMs, mobile banking, internet banking, call center banking, Point of Sale (POS) and e-commerce.

This trend indicated robust shift in consumers' preference towards digital channels as they provide more convenience and efficiency.

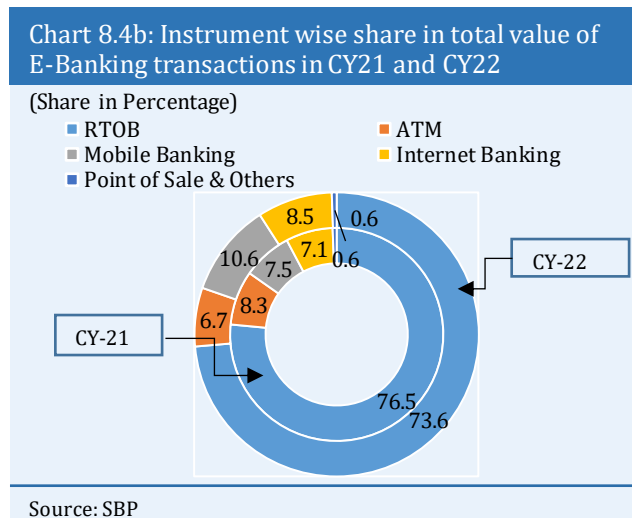
Within overall e-banking payments, the volume of transactions conducted through ATMs held the majority share (40.7 percent) followed by mobile banking (27.4 percent). Mobile banking has consistently increased its share in the total number of e-banking transactions over the years, and attained the highest growth (74.7 percent) among key segments of e-banking in CY22. Resultantly, mobile banking improved its share to 27.4 percent from 20.5 percent in CY21. In a similar vein, transactions conducted using internet banking posted strong growth of 41.5 percent and increased its share in the total number of e-banking transactions to 9.0 percent (Chart 8.4a).



This uptake in transactions was spurred by the surge in registered users of mobile banking and internet banking to 15.0 million and 10.1 million, respectively. At end of CY21, the users of mobile and internet banking stood at 11.9 million and 6.9 million, respectively.<sup>182</sup>

<sup>182</sup> SBP – Payment Systems Quarterly Review, Oct-Dec CY22.

<sup>183</sup> SBP Press Release, January 11, 2021.



The transactions conducted using Real-Time Online Branches (RTOB) contributed the highest share in terms of value, holding 73.6 percent share in total value of e-banking transactions. However, the share of RTOB and ATM transactions decreased during CY22, while the share of mobile banking and internet banking increased (Charts 8.4b). The trends suggest that adoption of digital mode of payments would pick up more pace going forward due to advancements in digital infrastructure, an increasing proportion of young and tech savvy population, and improving financial and digital literacy.

*SBP enabled Person-to-Person transactions under the Second Phase of "Raast" which got heartening response from users ....*

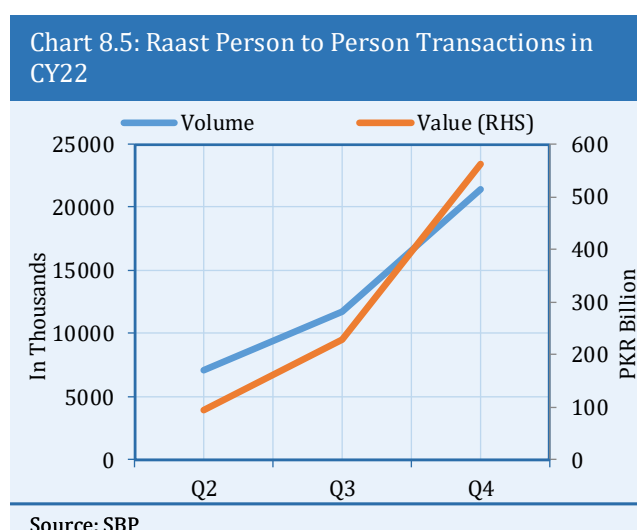
SBP launched its flagship initiative 'Raast' – an instant payment system for retail transactions – at the start of 2021 as a part of the plan to develop a modern and efficient national payment system.<sup>183</sup> The first phase comprised of bulk payment module, which enabled the digitizing of transfers including dividend payments, salaries and pensions of government departments, among others. The more important second phase was implemented at the start of 2022, which enabled instant P2P



fund transfers in a cost-effective manner by using either the IBAN or Raast ID.<sup>184</sup>

Since the implementation of Raast's P2P system during Q1CY22, strong growth has been seen in the number of registered users which surged to 25.8 million by end December 2022.

Simultaneously, the transactions volume has also grown steadily as more users registered with each passing quarter. Total P2P transactions worth PKR 883.5 billion were carried out through Raast during Q2 to Q4 of CY22, of which 63.5 percent were carried out in Q4 (Oct-Dec) period **(Chart 8.5)**.



Moreover, to facilitate the users of Raast services, SBP removed the transactional limits on Raast system in April 2022, and advised Banks/ MFBs/ EMIs that they may set transaction limits for their customers based on their risk profile in compliance with the relevant AML/ CFT requirements.<sup>185</sup>

The encouraging customer response to Raast services helped in the efforts for digitization of retail payments, and it also highlighted that consumers enjoyed better accessibility and improved digital experience while using Raast system for financial transactions.

The full implementation of the system would enable end-to-end digitization of payment

<sup>184</sup> [DI&SD Circular No. 1 of 2022.](#)

<sup>185</sup> [DI&SD Circular Letter No. 02 of 2022.](#)

transfers between individuals, government entities and businesses, and could provide major impetus to developing a comprehensive ecosystem for furthering the digitization of the entire economy.

*SBP is making efforts for development of digital banks in the country ...*

SBP is committed to facilitate the stakeholders for further digitization of banking and financial services in the country. In January 2022, SBP issued comprehensive Licensing and Regulatory Framework for Digital Banks to facilitate the establishment of digital banks in the country.<sup>186</sup>

This Framework was the first step towards introducing full-fledged digital banks in the country. It could usher in digitization of the banking sector and enhance digital financial services with proper regulatory oversight. By the end of 2022, SBP had reviewed the twenty prospective institutions/ service providers who applied for digital bank license and issued provisional NOCs to five of these institutions/ service providers for opening of digital banks.<sup>187</sup>

**Table 8.2: Banks offering E-Banking Services**

Description	CY15	CY18	CY22
Banks providing internet banking	21	28	28
Banks providing mobile phone banking	16	21	28
Banks providing call center/ IVR banking	16	22	23
Banks issuing credit cards	12	12	13
Banks issuing debit cards	28	32	35
Banks issuing social welfare cards	-	9	4
Banks issuing prepaid cards	-	4	3
Banks acquiring POSs	6	9	9

Source: SBP

In recent years, with the consideration to fulfill consumer needs and to cater for advancement in digital ecosystem more banks have expanded their e-banking services. For instance, the number of banks offering mobile banking services has increased to 28 now, which stood

<sup>186</sup> [SBP Press Release, January 3, 2022.](#)

<sup>187</sup> [SBP Press Release, January 13, 2023.](#)

at 16 and 21 banks at the end of CY15 and CY18, respectively **(Table 8.2)**.

*E-banking infrastructure expanded to support the digitization efforts ...*

The industry wide digitization efforts would fall short of their intended objectives without adequate catering for improvement in e-banking infrastructure. The e-banking infrastructure majorly improved in heads of online branches, ATMs, and POS machines.

Specifically, merchants' acquisition of POS machines carried on the strong growth displayed in CY21 and further increased by 18.2 percent in CY22, primarily due to various facilitation measures taken by SBP in CY20. Within payment cards, ATM-only cards were discontinued and as a result, their numbers significantly declined during the year under review **(Table 8.3)**.

Table 8.3: E-Banking Infrastructure				
Description	CY19	CY20	CY21	CY22
Number				
Online Branches	15,930	16,165	16,571	17,005
ATMs	15,252	16,041	16,709	17,547
POS	47,567	62,480	92,153	108,899
Number in Thousands ('000)				
Total Payment Cards	42,083	44,285	48,677	44,697
<i>of which:</i>				
Credit Cards	1,644	1,691	1,740	1,914
Debit Cards	26,440	27,592	30,934	32,524
ATM Only Cards	7,650	7,246	4,782	-
Social Welfare Cards	6,180	7,624	11,096	10,160
Pre-paid Cards	168	133	125	99

Source: SBP

The four commercially live<sup>188</sup> Electronic Money Institutions (EMIs) steadily expanded their operations and acquired new customers, as customers holding an e-wallet (EMI account) increased by 30 times to 1.2 million during CY22. The e-wallets holders were just 38.6 thousand at the end of Dec-21. Since their launch, a total of 1.8 million payment cards have been issued to the customers by these EMIs.<sup>189</sup>

*Branchless Banking maintained its growth momentum ...*

Branchless Banking (BB) has flourished in Pakistan by providing relatively efficient and cost-effective alternative to low-income population and small firms. In the past decade, this sector has achieved consistently high growth, and, most importantly, has been instrumental in improving financial inclusion by providing critical financial services of credit, savings and payments to the unbanked population.

During CY22, despite weakening economic activity in the country, BB sector displayed significant growth across the key heads, for example opening of new accounts swelled by 23.2 percent, deposits grew by 34.9 percent to PKR 88.5 billion and agent networks expanded by 6.0 percent to more than 622 thousand agents.

BB's volume of transactions increased by 21.9 percent while the value transacted through these transactions surged by 40.5 percent during CY22. The number of active accounts declined by 5.4 percent despite high growth in total accounts **(Table 8.4)**.

<sup>188</sup> As of end Dec-22, 11 EMIs are operating in Pakistan, of which, 4 EMIs are commercially live, 6 EMIs have in-principle approval, and 1 EMI has acquired pilot approval.

<sup>189</sup> SBP Payment Systems Quarterly Review Oct-Dec CY22.

**Table 8.4: Key Statistics of Branchless Banking**

Description	CY20	CY21	CY22	Growth in CY22 (%)
No. of Agents	481,837	587,547	622,884	6.0
No. of Accounts (thousands)	62,755	78,810	97,097	23.2
No. of Active Accounts (thousands)	37,020	44,905	42,484	(5.4)
Deposits at period end (PKR million)	51,671	65,580	88,488	34.9
No. of Transactions (millions)	1,819	2,501	3,049	21.9
Value of Transactions (PKR billion)	6,786	8,971	12,602	40.5
Average Daily Transactions (thousands)	5,053	6,948	8,471	21.9
Average Size of Transactions (PKR)	3,715	3,577	4,129	15.4
Average deposit in accounts (PKR)	726	799	911	14.0

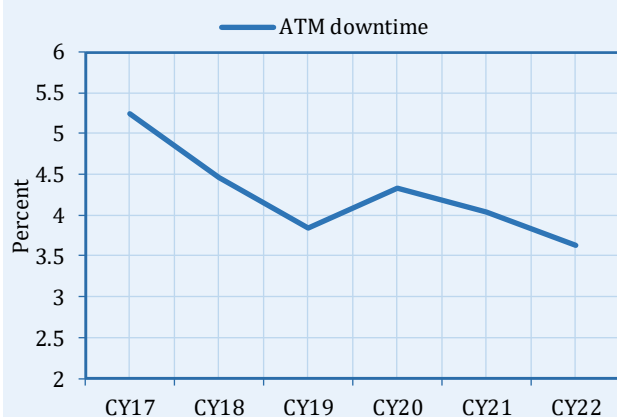
Source: SBP

### ATM efficiency improved under the regulatory oversight of SBP...

ATMs plays a vital role for the smooth functioning of retail payments and other financial services, and in the larger context, functioning of the whole economy. For instance, it holds the highest share in e-banking transactions’ volume, therefore it is critical that ATMs are kept functioning with minimal down time for better consumer experience and to avoid operational and reputational risk for banks.

During CY22, operational efficiency of ATMs further improved, and the ATM downtime minimized to 3.6 percent from 4.0 percent in CY21 (**Chart 8.6**).

**Chart 8.6: ATM Downtime**



Source: SBP

<sup>190</sup> For details, please refer “[Box 8.1 - Cyber Security - Emerging Trends, Challenges and Policy Response](#)” of FSR, 2021.

*With significant uptake in use of e-banking and emergence of cybersecurity as a leading challenge across the globe, cyber security arrangements have gained more importance ...*

Banks have been offering innovative products and services to customers through digital modes including mobile-phone applications. The importance of these mobile apps has grown to become an alternate banking and payment channel for many mobile banking users. As of end Dec-22, mobile banking had 15.0 million registered users in the country. Consequently, vulnerabilities in mobile applications create opportunities for the unscrupulous elements and cybercriminals to exploit and defraud the customers, and such incidents have been occurring with higher frequency as usage of mobile banking increased.

SBP has instituted a comprehensive regulatory and supervisory framework to cope with cyber security risks, and this framework is regularly updated in line with emerging best practices and market dynamics<sup>190</sup>.

With this backdrop, SBP, inter alia, developed comprehensive Mobile App Security Guidelines providing baseline security requirements for app owners to ensure confidentiality of customer data and availability of app services in a secure manner. The app owners shall use these guidelines for the architecture, design, development and deployment of mobile payment apps and associated environment that consumers use for digital financial services. For further details on key measures in cyber security, please refer to Appendix A on regulatory and supervisory developments in CY22.

## 8.2 FMIs other than Payment Systems

NCCPL functions as a clearing house which provides clearing, settlement and risk



management services to PSX through fully automated National Clearing and Settlement System (NCSS) for the settlement of equity stocks and other instruments. Since 2016, NCCPL has assumed the role of Central Counter Party (CCP) and provides guaranteed settlement in respect of trades reported for clearing and settlement in the NCSS. Further, NCCPL also acts as a Centralized Know Your Customer Organization (CKO) for investors of the capital market.

Moreover, NCCPL operates margin trading system (MTS) on their online trading platform and provides margin financing system to participants for recording and settlement of margin financing transactions.

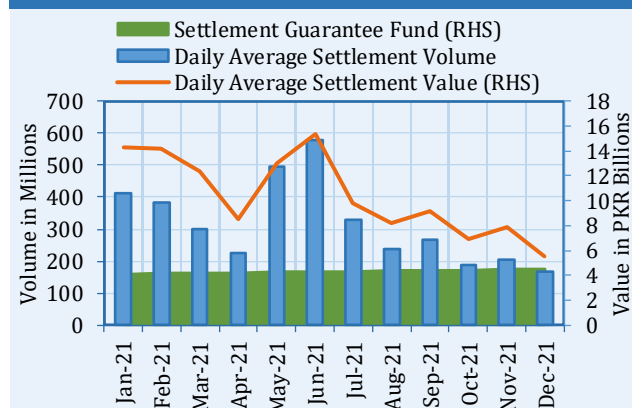
During CY22, NCCPL took various measures to improve the operational efficiencies and strengthen risk management regime.

*Mechanism to mitigate settlement risk worked efficiently as the margins provided by clearing members were sufficient ...*

NCCPL has in place mechanisms involving a Settlement Guarantee Fund (SGF) to mitigate the settlement risk arising from a potential default by any settlement party. The fund stood at PKR 5.1 billion at the end of Dec-22.

In CY22, the daily average settlement value stood at PKR 3.2 billion compared to PKR 10.3 billion in CY21. Similarly, trading volumes exhibited a declining trend as monthly average settlement trading volume decreased from 310.2 million in CY21 to 110.7 million in CY22 as equity investors were reluctant to invest because of deteriorating macroeconomic outlook and high volatility in the market. However, the SGF remained unutilized as the margins provided by clearing members, which are the first line of defense against default risk, worked efficiently (Chart 8.7).

Chart 8.7: Comparison of Settlement Guarantee Fund with daily average of settlement



Source: NCCPL

*NCCPL given status of Special Purpose Primary Dealer ("SPD") by SBP*

NCCPL can mobilize investments of capital market investors as it has been granted the license to operate as a Special Purpose Primary Dealer by SBP. The retail/capital market investors can now participate in the auction of Government Debt Securities (GDS) i.e., Treasury Bills (T-Bills) and Pakistan Investment Bonds (PIBs) through NCCPL.<sup>191</sup> This facility can play an important role in the further growth of the money market and enable investors to optimize their returns by exploring opportunities in both money and capital markets.

*Clearing, settlement and risk management of Growth Enterprise Market (GEM) ...*

NCCPL introduced Growth Enterprise Market (GEM) in November 2021 wherein growth companies and SMEs are listed for trading of securities and raising funds for growth and expansion.

<sup>191</sup> [DMMD Circular No. 14 of 2022.](#)

To facilitate the investors of GEM, NCCPL took various measures regarding registration and eligibility of individual investors, among others. The risk arising from trades is managed through risk measures including VaR margin, liquidity margin and MTM losses.<sup>192</sup>

*CDC performed its functions efficiently ...*

CDC performs the function of a securities depository in the country. It handles transactions like deposit of securities, transfer of securities, pledging of securities and handles electronic settlement of transactions carried out in the stock market. By end CY22 the number of investor accounts stood at 73,466 which increased by 5.8 percent from CY21. The CDC handled 186.6 billion shares, higher by 9.6 percent from CY21, and with a market capitalization of PKR 4.8 trillion as of December 31, 2022.<sup>193</sup>

*CDC took various measures to facilitate the investors ...*

CDC introduced dividend disbursement through *Raast*, investment facilitation for RDA holders,

and digital onboarding of customers through shared KYC. Furthermore, CDC was also granted the status of “Special purpose Primary Dealer” (SPD) by SBP. Accordingly, CDC clients can now directly participate in primary auctions of government securities.

*Pakistan’s first Professional Clearing Member (PCM) - M/s EClear Services Ltd - was launched as a subsidiary of CDC ...*

To bring transparency and efficiency in the market, a new PCM regime was successfully implemented after the introduction of relevant regulatory framework by the SECP and capital market infrastructure entities. In this connection M/s EClear Services Limited was launched as a subsidiary of CDC. Under the new broker regime introduced by SECP, trading-only-brokers can now avail independent third party custodial, clearing and settlement services of PCM. This initiative aims to ensure adequate investor protection, enhance capital market outreach, and further strengthen compliance with the FATF regime.

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<sup>192</sup> [NCCPL – Annual Report, 2022.](#)

<sup>193</sup> [CDC Newsletter, Oct-Dec 2022.](#)