

Chapter 8: Financial Market Infrastructures

As the pandemic entered into its second year, the resilience of Financial Market Infrastructures (FMIs) remained intact during CY21 amid significant growth in payments and settlement activity. Pakistan Real Time Interbank Settlement Mechanism (PRISM) operations observed a significant hike in transactions both in terms of value and volume. The consistent and strong growth in e-banking exhibited growing customers' preference to use digital channels for conducting financial transactions. SBP launched P2P and bulk payment under its flagship initiative Raast, an instant retail payment system and issued licensing and regulatory framework to establish digital banks as a separate and distinct category of banks in Pakistan. This will usher in a new era of banking and payment options with a whole range of affordable digital financial services under regulatory oversight. 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 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 FMI institutions make them centric to the clearance and settlement of transactions in the financial institutions as well as in the flow of money and securities. Smooth functioning of payment systems is thus critical 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*.¹⁸⁰ 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.¹⁸¹ As such SBP is responsible for ensuring the sound and efficient functioning of the national payment and settlement systems.

Payment Systems witnessed robust growth as economic activity returned to normalcy with the pandemic receding ...

The national payment systems witnessed robust growth in both PRISM and retail transactions showing increases in volumes and value of transactions during CY21. This highlights the return to normalcy and increased economic activity being generated in the country compared to the last year which was severely affected by the pandemic. Both PRISM and E-banking transaction volumes observed double-digit growth while paper-based volumes depicted mere growth of 0.9 percent.

¹⁸⁰ [The SBP Act, 1956 \(amended up to Jan-2022\)](#)

¹⁸¹ [The PSEFT Act, 2007](#)

However, paper-based volumes still remained below pre-pandemic levels. E-banking transactions led the surge in retail payments, reflecting customers' growing inclination towards digital channels which is increasingly becoming ingrained into customers' behavior especially in the wake of the pandemic (**Table 8.1**). Incidentally the pandemic played a key role in breaking the inertia in the preference of customers for traditional modes of payments.

Table 8.1: Profile of Payment System Mechanisms					
Mechanism	CY18	CY19	CY20	CY21	Growth
	(Volume in millions and Value in PKR trillions)				(Percent)
a. PRISM					
Volume	2.2	2.4	3.4	4.4	28.9
Value	375.1	410.6	373.4	577.8	54.7
b. Retail Payments (i+ii)					
Volume	1281.6	1381.6	1382.7	1788.0	29.3
Value	198.7	207.3	209.3	272.9	30.4
i. Paper based					
Volume	464.8	467.5	389.6	393.4	1.0
Value	145.0	142.3	136.0	166.4	22.4
ii. E-Banking					
Volume	816.8	914.2	993.0	1394.7	40.4
Value	53.7	65.0	73.3	106.5	45.1

Source: SBP

PRISM efficiently handled the increasing transactions in both value and volume terms, while maintaining continuous availability ...

PRISM handled higher volume and value of transactions during CY21 compared to decline in value witnessed last year. The robust growth in value depict the return towards normalcy and revival in economic activity. In aggregate, around 67.9 percent of total value of all transactions was settled through PRISM even though it accounted for a meagre 0.2 percent in terms of volume reflecting the fact that PRISM is a LVPS used by financial institutions.¹⁸² PRISM's real time gross settlement (**RTGS**) system runs smoothly, limiting settlement and systemic risks in the interbank settlement process by using delivery-versus-payment

(**DVP**) or payment-versus-payment (**PVP**) mechanisms in transactions.

Detailed analysis shows that the strong growth in value of PRISM transactions during CY21 was across all key heads of payments i.e. 70.5 percent growth in Securities Settlement, 20.4 percent in Clearing transactions pertaining to NIFT, NCCPL and 1-Link, and 26.6 percent in IBFTs with overall growth in PRISM transactions' value of 54.8 percent (**Chart 8.1a**). This particularly large increase in Securities Settlement transactions can be attributed to the increase in the scale of SBP's OMOs, issuance of government securities for meeting the fiscal needs, and increase in interbank repo-lending activity. The growth in volumes primarily stemmed from the significant increase in number of IBFT transactions.¹⁸³ IBFT transactions contributed the highest share in total volume of PRISM transactions with increase of 30.0 percent during CY21 (**Chart 8.1b**).

SBP's measure to waive transaction charges on IBFTs and third-party customer transfers to promote the use of digital channels amid COVID-19 pandemic seems to have remained a factor in the recent surge of transaction volumes during CY20 and CY21.¹⁸⁴ However, this measure was revised in the month of Jun-21, withdrawing fee waiver for transactions exceeding PKR 25,000 per month per account.¹⁸⁵ All Intra Bank Fund Transfers as well as incoming interbank fund transfer services were kept free to incentivize digital transactions. Additionally, it was made mandatory for banks in Oct-21 to provide digital payments and facilitation of financial services to institutional clients.¹⁸⁶

¹⁸² As of Dec-2021, PRISM system has 57 Direct Participants, which include 36 Banks, 8 MFBs, 9 DFIs, and 1 Non-Bank and 3 Special Participants.

¹⁸³ IBFT transactions include bank-to-bank transfers and third party customer transfers. Third party fund transfers

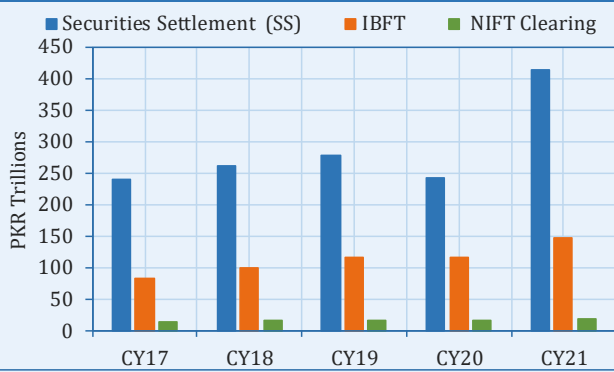
are processed via PRISM by direct participants on instructions of their customers/acountholders.

¹⁸⁴ [PSD Circular No. 02 of 2020](#)

¹⁸⁵ [PSD Circular No. 02 of 2021](#)

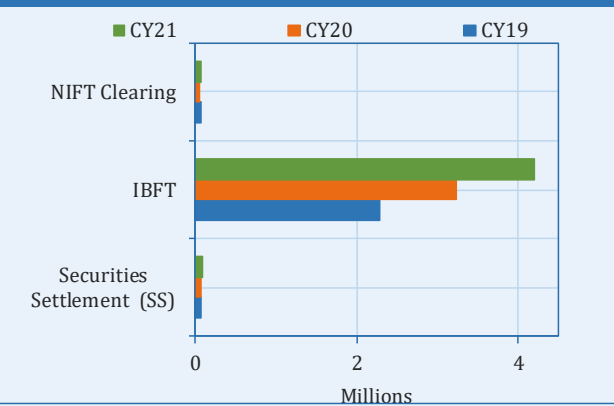
¹⁸⁶ [PSP&OD Circular Letter No. 05 of 2021](#)

Chart 8.1a: Value Profile of PRISM Transactions



Source: SBP

Chart 8.1b: Volume Profile of PRISM Transactions



Source: SBP

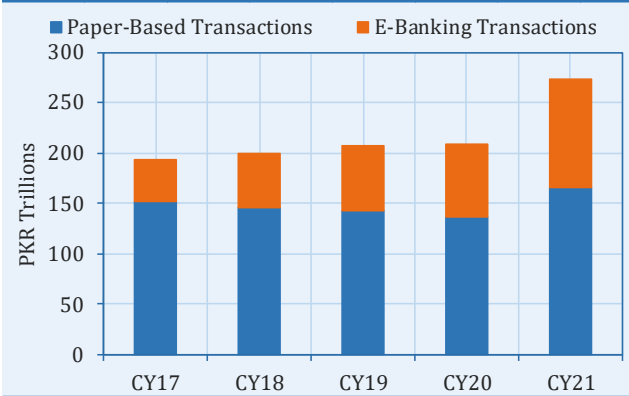
Keeping in view the importance of PRISM, SBP ensured continuous availability of PRISM during the reviewed period by utilizing its business continuity planning framework depicting the resilience of the system to smoothly conduct its daily operations.

Retail transactions bounced back rapidly with e-banking modes of payments continuing to gain traction over paper-based modes of payment ...

The retail payment system is divided into paper-based and electronic mode of transactions. The retail payment system observed a rapid growth of 30.4 percent and 29.3 percent in the value and volume of transactions respectively during CY21. The growth effect was also more profound this year due to relative stagnancy experienced last year due to the pandemic. The acceleration this year was mainly driven by faster adoption of e-banking transactions exhibiting growth of more

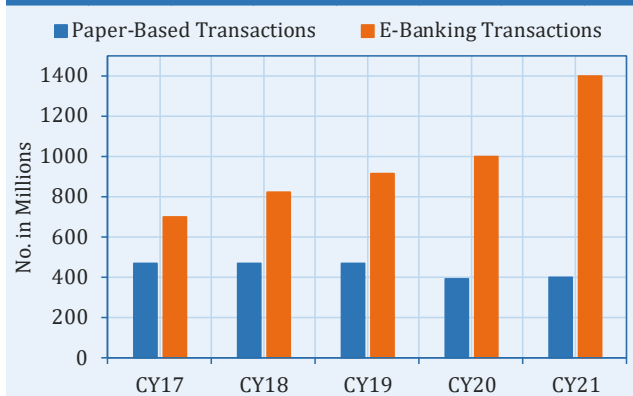
than 40.0 percent in both volume and value terms. However, paper-based transactions still account for 61.0 percent share in terms of value of retail transactions though only 22.0 percent in terms of volume with a downtrend being exhibited over the years. **(Chart 8.2a and 8.2b).**

Chart 8.2a: Value Profile of Retail Transactions



Source: SBP

Chart 8.2b: Volume Profile of Retail Transactions

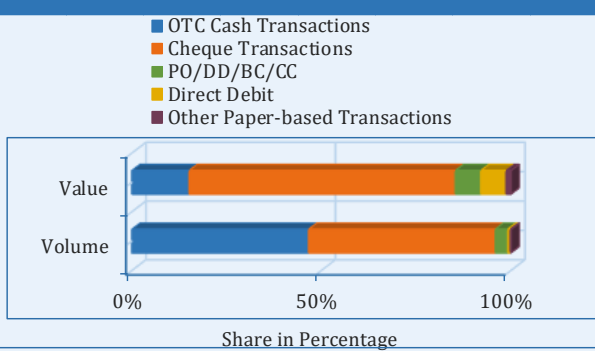


Source: SBP

With static volumes, paper-based transactions remained dominated by cheques and Over-The-Counter (OTC) Cash transactions ...

Paper-based transactions showed muted growth in comparison to e-banking transactions reflecting increased digital preference of customers. Overall, paper-based transactions grew by 0.9 percent in volume and 22.4 percent in value terms in CY21 with cheques dominating the paper-based transactions, contributing 49.2 percent in volume and 70.3 percent in value of these transactions **(Chart 8.3).**

Chart 8.3: Volume and Value wise share of Paper-based



Source: SBP

SBP continued facilitating cheque clearing operations under COVID-19 relief measures ...

SBP encouraged banks to adopt various cheque clearing facilities like direct-cheque deposit, doorstep and drop box cheque collection by banks during CY20 to facilitate the customers and reduce the social interaction so as to check the spread of COVID-19.¹⁸⁷ Use of these measure continued during CY21.

E-banking transactions continued upward trajectory ...

Customers' inclination towards the use of e-banking continued to rise. During the reviewed year, e-banking transactions grew by 40.4 percent in volume and 45.1 percent in value terms. E-banking includes transactions conducted via electronic channels including Real-Time Online Branches, ATMs, mobile banking, internet banking, call center banking, Point of Sale (POS) and e-commerce.

Mobile banking spearheading the growth while doubling its share in e-banking every year ...

As the consumers increasingly embrace digital channels, they have shown a clear preference for internet banking and mobile banking due to its ease of use, convenience and quick accessibility.

However, it is mobile banking which is outpacing other modes and exhibiting tremendous growth. Mobile Banking

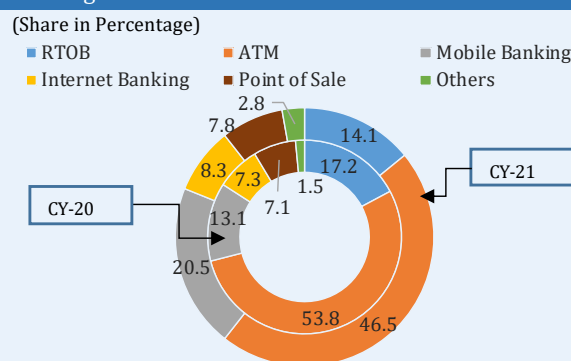
transaction volumes consistently crossed 100 percent annual growth for the last five years and exhibited 119.7 percent growth in CY21. The share of mobile banking volumes rose from 2.0 percent in CY17 to 20.5 percent in CY21 of e-banking transactions (volumes). From these trends, it is becoming apparent that mobile banking will be catalyzing the huge growth in e-banking in the coming years.

Internet-banking transactions' volumes also showed strong growth of 60.7 percent in CY21 and constituted 8.3 percent of the total e-banking transactions.

CY21 also saw significant growth in the number of registered users of internet banking reaching 6.9 million users while mobile banking reached 11.9 million users displaying annual growth rates of 52.9 percent and 26.8 percent, respectively.

In terms of value, however, Real-Time Online Branches (RTOB) continued to be the biggest contributor (Chart 8.4a & 8.4b). This mode exhibited 38.6 percent growth with amount of transactions reaching PKR 81.4 trillion in CY21. Incidentally, double-digit percentage increases in value of transactions was witnessed in all categories of e-banking during CY21.

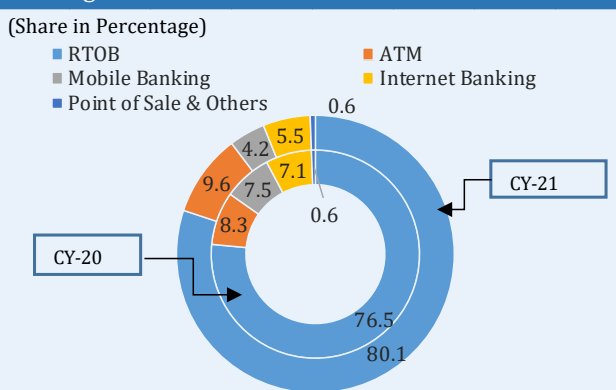
Chart 8.4a: Instrument wise share in total volume of E-Banking transactions in CY20 and CY21



Source: SBP

¹⁸⁷ PSD Circular No. 04 of 2020

Chart 8.4b: Instrument wise share in total value of E-Banking transactions in CY20 and CY21



Source: SBP

SBP encouraging the utilization of digital financial services as a preferred means of banking...

With the onset of the pandemic, SBP took various initiatives to facilitate customers. In addition rationalization of IBFT charges discussed earlier, SBP issued *Customers' Digital Onboarding Framework (CDO Framework)* to implement a seamless and standardized process for digital opening of bank accounts of resident Pakistanis.¹⁸⁸ Additionally, banks were asked to develop integrations to enable fully interoperable digital payment options for their customers, to facilitate repayments against consumer financing facilities.¹⁸⁹ Another key initiative launched by SBP included issuance of *Licensing and Regulatory Framework for Digital Banks* which provides details for setting up digital banks as a separate and distinct category in Pakistan.¹⁹⁰ This framework will usher in a new era of banking with a whole range of affordable digital financial services under regulatory oversight.

¹⁸⁸ [BPRD Circular No. 02 of 2021](#)

¹⁸⁹ [PSD Circular Letter No. 01 of 2021](#)

¹⁹⁰ [SBP Press Release, January 3, 2022](#)

¹⁹¹ [PSD Circular No. 01 of 2021](#)

¹⁹² [PSD Circular No. 01 of 2020](#)

These measures include, prescribed set range (1.5 to 2.5 percent) of Merchant Discount Rate (MDR) for all new and

E-banking infrastructure continued to grow to cater the increased usage of digital channels ...

In line with SBP's vision to promote digitization in the banking sector, the commercial banks and microfinance banks are increasing their outreach of e-banking infrastructure. SBP encouraged banks to deploy Interoperable Cash Deposit Machines (CDMs) and made it mandatory to issue a debit card per account while allowing banks to authenticate customers through chip-and-pin cards at bank counters.¹⁹¹ These measures have resulted in rapid expansion in the growth of cards and e-banking infrastructure (**Table 8.2**). POS machines posted a robust growth of 47.5 percent in CY21 primarily due to various facilitation measures taken by SBP in the previous year while social welfare cards exhibited rapid increase due to the Government's *Ehsaas* Program initiative.¹⁹²

Table 8.2: E-Banking Infrastructure

Description	CY17	CY18	CY19	CY20	CY21
	Number				
Online Branches	14,610	15,346	15,930	16,165	16,571
ATMs	13,409	14,361	15,252	16,041	16,709
POS	52,506	49,621	47,567	62,480	92,153
	Number in Thousands ('000)				
Total Payment Cards	39,361	41,708	42,083	44,285	48,677
of which:					
Credit Cards	1,374	1,522	1,644	1,691	1,740
Debit Cards	19,848	23,303	26,440	27,592	30,934
ATM Only Cards	8,385	8,805	7,650	7,246	4,782
Social Welfare Cards	9,501	7,848	6,180	7,624	11,096
Pre-paid Cards	253	230	168	133	125

Source: SBP

SBP launched "Raast" for retail transactions as a potential game-changer for the rapid adoption of digital payments

To realize the objective of a modern and efficient national payment system, SBP launched its flagship initiative 'Raast' – an instant payment system for retail transactions – at the start of 2021.¹⁹³ Raast would contribute

existing merchants, cap on Interchange Reimbursement Fee (IRF) for debit and pre-paid cards, and that, card issuers shall offer SBP approved Domestic Payment Scheme (DPS) Card as the default card at the time of issuance or renewal of debit cards.

¹⁹³ [SBP Press Release, January 11, 2021](#)

towards achieving the policy objectives of increasing digitization, convenience and affordable payments, and financial inclusion in the country.

The 'Raast' system would enable faster and cost effective payments, increase payment system efficiency, and support interoperability across payment services operating in the country. It envisages providing access to all players in the financial services industry (banks, Electronic Money Institutions (**EMIs**), etc.) and acting as a secure medium for transactions between customers, businesses and government entities. It would offer the features of real-time settlement of transactions, alias based payments, bulk transfer of funds, and the capability to on-board participants through Application Programming Interfaces (**APIs**).

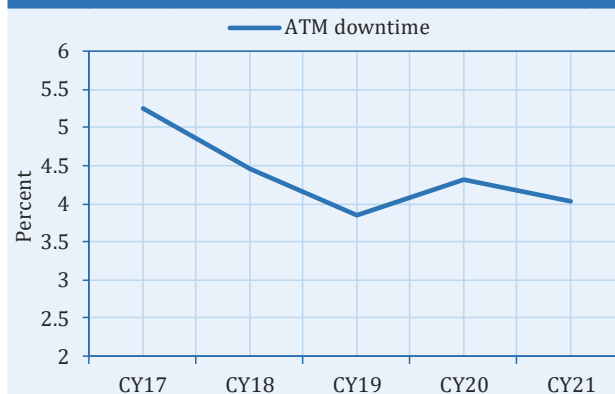
The system aims to achieve end-to-end digitization of payment transfers between individuals, government entities and businesses. In the first phase, already implemented, bulk payment module enabled the digitizing of transfers including dividend payments, salaries and pensions of government departments, etc. Whereas, the second phase was recently launched in the start of 2022 whereby person-to-person payments were enabled.¹⁹⁴ This is expected to catalyze in ushering an era of digital payments usage in daily life by enabling person-to-merchant payments in future and hence developing an ideal ecosystem for the digitization of the whole economy by minimizing the use of cash for daily transactions.

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

Operational efficiency of ATMs remained under control and the yardstick for measuring efficiency i.e. the downtime slightly improved from 4.3 percent in CY20 to 4.0 percent in CY21. Since the ATM transactions take up the highest

share in e-banking volumes therefore it is critical that ATMs are kept functioning 24/7 for the facilitation of public to manage operational and reputational risk of banks (**Chart 8.5**).

Chart 8.5: ATM Downtime



Source: SBP

Pandemic propelled Branchless Banking towards higher growth ...

BB by providing increased convenience for customers has flourished in Pakistan as an easy conduit for offering financial services in the far flung areas of the country with its huge agent network as compared to bank branches. It has transformed the banking sector and emerged as the preferred way of banking by the low-income segment thus playing a key role in improving financial inclusion in Pakistan.

The onset of the pandemic acted as a catalyst in propelling the growth of BB. During CY21, the sector showed rapid growth as BB accounts surged by 25.6 percent, while, deposits surpassed the all-time high of previous year by reaching PKR 65.6 billion. The total transactions in volume and value terms increased by 37.5 percent and 32.2 percent, respectively. BB accounts seems to have reached a tipping point wherein a common person of low-income segment has become highly aware of the convenience offered by these services.

¹⁹⁴ [DI&SD Circular No. 1 of 2022](#)

Table 8.3: Key Highlights of Branchless Banking

Description	CY19	CY20	CY21	Growth in CY21 (%)
No. of Agents	437,182	481,837	587,547	21.9
No. of Accounts (thousands)	46,103	62,755	78,810	25.6
No. of Active Accounts (thousands)	24,530	37,020	44,905	21.3
Deposits at period end (PKR million)	28,770	51,671	65,580	26.9
No. of Transactions (millions)	1,309	1,819	2,501	37.5
Value of Transactions (PKR billion)	4,505	6,786	8,971	32.2
Average Daily Transactions (thousands)	3,637	5,053	6,948	37.5
Average Size of Transactions (PKR)	3,445	3,715	3,577	(3.7)
Average deposit in accounts (PKR)	649	726	799	10.1

Source: SBP

Accordingly, average daily transactions showed robust growth of 37.5 percent during CY21. Despite strong growth in the number of active accounts, their share in total accounts slightly declined to 57.0 percent (**Table 8.3**).

With the increased digitization in financial services, cyber security risk has emerged as a leading risk requiring strenuous efforts on the part of industry and policy makers...

Keeping in view the importance of cybersecurity and its attendant risks, a detailed assessment of the same is covered in the Box 8.1 i.e. “Cybersecurity – Emerging Trends, Challenges and Policy Response”.

8.2 FMIs other than Payment Systems

NCCPL is a licensed clearing house which provides clearing, settlement and risk management services to PSX through fully automated National Clearing and Settlement System (NCSS). After assuming the role of Central Counter Party (CCP), the Company 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 the investors of the capital market.

During CY21, NCCPL took various measures to improve the operational efficiencies and strengthen risk management regimes.

NCCPL implemented enhanced business continuity measures in the wake of COVID-19 pandemic ...

NCCPL continued to provide robust business continuity measures in the second and third waves of the pandemic in order to ensure provision of seamless service to the capital market through provision of remote connectivity for staff to facilitate work from home, formation and distribution of teams critical for operations to separate physical locations and ensuring that all NCSS services can be rendered through fully operational alternative processing site.¹⁹⁵

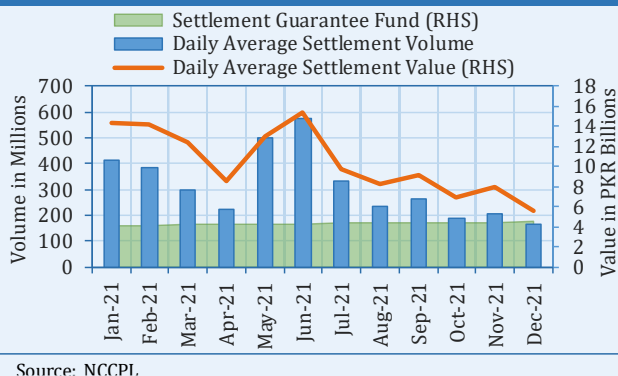
Mechanism to diminish Settlement Risk worked efficiently albeit daily settlement values started to trend above Settlement Guarantee Fund (SGF) values ...

To mitigate the settlement risk arising from a potential default of any settlement party, NCCPL has in place mechanisms involving a SGF which stood at PKR 4.5 billion by end of Dec-21.

In CY21, the daily average settlement value stood at PKR 10.33 billion which was almost double the figure recorded for CY20. Similarly, trading volumes also showed an uptrend increasing from daily average settlement trading volume of 151.28 million in CY20 to 310.19 million in CY21 due to economic recovery and opportunities in the equity 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 8.6**).

¹⁹⁵ NCCPL's Annual Report 2021

Chart 8.6: Comparison of Settlement Guarantee Fund with daily average of settlement



Source: NCCPL.

Development of Cyber Security Solution to enhance its cyber security architecture ...

NCCPL collaborated with a local partner in developing a customized product i.e. Security and Threat Intelligence Platform (STIP). This platform is designed to cater information security related requirements of Pakistan’s Capital Market. STIP will provide in-depth threat intelligence including Asset Discovery, Network Vulnerability, and Customized Workflows at a centralized location with interactive dashboards.

CDC performed its functions efficiently despite the pandemic ...

CDC acts as the sole 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. Number of investor accounts stood at 69,147 at the end of CY21, showing an increase of 15.4 percent from CY20. The CDC handled 170.29 billion shares with a market capitalization of PKR 5.51 trillion during the reviewed period.¹⁹⁶

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. This facility can play an important role in the further growth of money market, and enable investors to optimize their returns by exploring the opportunities in both money and capital markets.

CDC and NCCPL conducted a joint exercise to ensure smooth continuity of operations in pandemic...

In line with this resolve to maintain readiness of operations, CDC and NCCPL jointly conducted the first ever Joint BCP and Disaster Recovery (DR) exercise from their respective alternate processing sites. The testing of business continuity plans helped in assessing the effectiveness of current BCP arrangements as well as the capability to activate the alternate plans and respond to events that can potentially disrupt operations. The effectiveness of these arrangements and the institutional effectiveness to implement these arrangements was also well reflected by the smooth continuity of operations during the pandemic.

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

To bring transparency and efficiency in the market, the new PCM regime was successfully implemented after the introduction of the relevant regulatory framework by SECP and capital market infrastructure entities, leading to the launch of M/s EClear Services Limited. Under the new broker regime introduced by SECP, trading only brokers can now avail the 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.

¹⁹⁶ CDC Newsletter, Oct-Dec 2021