

## 7. Financial Market Infrastructures

*Financial Market Infrastructures (FMIs) remained efficient, effective and resilient. Pakistan Real-Time Interbank Settlement Mechanism (PRISM) handled larger volumes and values of transactions during CY19, with growing share of third-party fund transfers. Growing electronic banking transactions took the spotlight in the retail segment, as digital modes brought relief to the consumers. Automated Teller Machine (ATM) downtime reduced further, lowering the operational risk. A significant development, in recent times, took place in national payment settings as SBP and World Bank launched National Payment System Strategy (NPSS), a roadmap for broad transformation of the national payment system to bring greater efficiency and accessibility. In area of Fintech, regulations were issued for the promotion of Electronic Money Institutions (EMIs) to ensure that the retail payments segment of the country received innovative payment options. Furthermore, the securities clearing, and settlement institutions of the country continued to function effectively to ensure efficient working of financial markets.*

For the stability of the financial system, the smooth functioning of critical institutions, instruments and channels involved in the Financial Market Infrastructures (FMIs) is essential. It ensures efficient and secured flow of payments and smooth working of the financial intermediation process in the economy.

The FMIs, mostly, involve the Payment Systems, Central Securities Depositories (CSD), Securities Settlement Systems (SSS), Central Counter Parties (CCPs) and trade repositories.<sup>287</sup> In Pakistan the core FMIs include large value payment system (LVPS) i.e. Pakistan Real-Time Interbank Settlement Mechanism (PRISM); Retail Value Payment System (RVPS); one inter-bank switch (1-Link); one clearing house of paper-based instruments (NIFT); one corporate securities settlement company (NCCPL); and one corporate securities depository (CDC).

### Payment Systems and their Performance

*SBP is the regulator of the payment system*

Payment Systems and Electronic Funds Transfer Act (PSEFT), 2007 provides the main regulatory framework for payment systems and electronic funds transfers. It entrusts SBP with the powers to regulate, operate and facilitate the national payment systems. The Act empowers SBP with the

authority to alter the regulatory framework to achieve any of the objectives including a) maintaining the soundness of the payment system, b) minimizing the emergence of systemic risk and c) protecting the consumers' interest.

*Higher activity recorded under both the LVPS and RVPS...*

During CY19, there was consistent growth in both the volume and value of PRISM and retail transactions. PRISM grew in terms of both the volumes and the values, though, at a slower pace than last year. The retail segment growth, on the contrary, was consistent with preceding years due to significant contribution by the e-banking transactions (Table 7.1).

<sup>287</sup> An FMI is defined as a multilateral system among participating institutions, including the operator of the system, used for the purposes of clearing, settling, or recording payments, securities,

derivatives, or other financial transactions. Committee on Payment and Settlement Systems of BIS, (2012). "Principles for Financial Market Infrastructures".

Table 7.1: Profile of Payment System Mechanisms

Mechanism	CY16	CY17	CY18	CY19
(Volume in thousands and Value in PKR trillion)				
<b>PRISM</b>				
Volume	985.4	1,384.9	2,210.1	2,425.3
Value	238.1	336.9	375.1	410.6
<b>Retail Payments</b>				
Volume	962,610.7	1,161,655.1	1,281,618.5	1,381,607.2
Value	170.8	192.6	198.7	207.3
<b>Paper based</b>				
Volume	392,499.5	463,602.6	464,839.8	467,455.5
Value	134.1	152.0	145.0	142.3
<b>E-Banking</b>				
Volume	570,111.2	698,052.5	816,778.7	914,151.6
Value	36.8	40.6	53.7	65.0

Source: SBP

*PRISM—the LVPS—efficiently handled growing activity...*

PRISM dominates the payment system in terms of value. Its transactions accounted for almost two third (66.46 percent) of the total value of the payment system during CY19. The daily average value of settled transactions reached PKR 1,604 billion (CY18: PKR 1,465 billion) during the year. The volume of daily average transactions also increased (9,473 in CY19 against 8,633 in CY18). However, growth of both the value and volume of transactions decelerated. The value deceleration, partially, resulted from the slowdown in securities settlement transactions following the shift in government borrowing to SBP<sup>288</sup>, which led to a decrease in the OMOs activity and banks repo borrowings from the SBP.

The volume deceleration, primarily, resulted from the slackness in growth of Inter-bank Funds Transfer (IFT) transactions, which constitutes the major share.<sup>289</sup> The volume of IFT transactions increased by 9.90 percent in CY19 against 65.68 percent in CY18. Though average value per transaction of IFT improved, suggesting the possible reason in slowdown could be a general drop in banking transactions due to subdued economic activity in the country (**Chart 7.1a and**

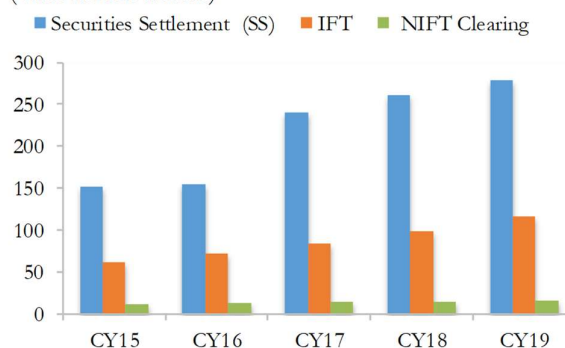
<sup>288</sup> This trend pertains to Q1 and Q2 quarters of CY19.

<sup>289</sup> IFT transactions consist of bank-to-bank transfers and third-party customer transfers.

Chart 7.1b).

Chart 7.1a: Value of PRISM transactions

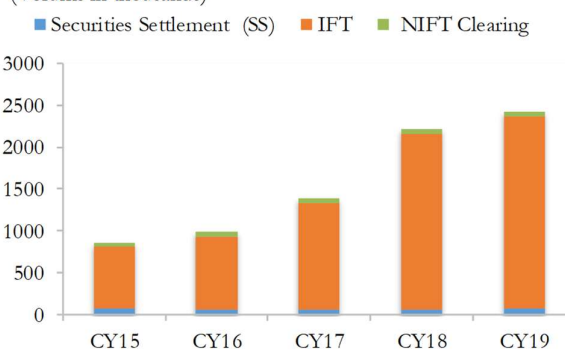
(Value in PKR trillions)



Source: SBP

Chart 7.1b: Volume of PRISM transactions

(Volume in thousands)



Source: SBP

*...as the structural changes introduced earlier were paying dividends...*

Since its inception, significant development in PRISM processes have been carried out for enhancing productivity, such as, the introduction of straight through processing, allowing third party fund transfers, transfer of home remittances, and membership for institutions etc.<sup>290</sup>

*And the business continuity plans are in place ...*

The continuous availability of critical system, like PRISM, is imperative for efficient working of the payment system. To mitigate risk arising from any potential disruption in its availability, SBP has in place comprehensive backup arrangements

<sup>290</sup> As per the PS Review Q2 FY20, PRISM has 50 direct participants as of December 2019. Includes banks, MFBs, DFIs, CDC, NCCPL, etc. <http://www.sbp.org.pk/PS/PDF/PS-Review-Q2FY20.pdf>

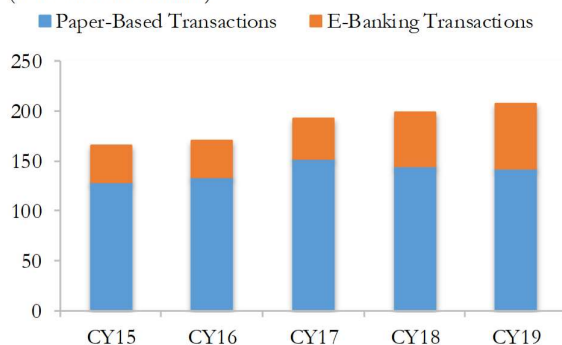
comprising disaster recovery sites that could be utilized in case the primary sites goes offline. In this regard, SBP in collaboration with banks had conducted a drill in CY19 to test the readiness of the systems in place **(See Box 3 in Overview)**.

*E-Banking transactions continued to gain increasing share....*

Retail payment systems observed a moderate growth of 4.31 percent and 7.80 percent, respectively, in the value and volume of transactions during CY19. The deceleration was mainly due to declining trend in paper-based transactions. Electronic modes of transaction, on the other hand, contributed the major part in the growth of total retail payments **(Chart 7.2a and Chart 7.2b)**. Though, paper-based transactions still hold majority portion with respect to value transacted, that is 68.64 percent of total retail transactions.

Chart 7.2a: Value profile of retail transactions

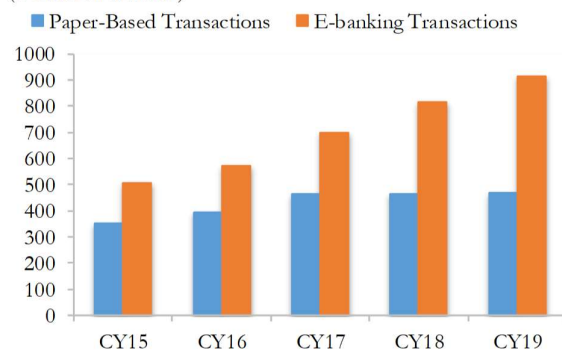
(Value in PKR trillions)



Source: SBP

Chart 7.2b: Volume profile of retail transactions

(Volume in millions)

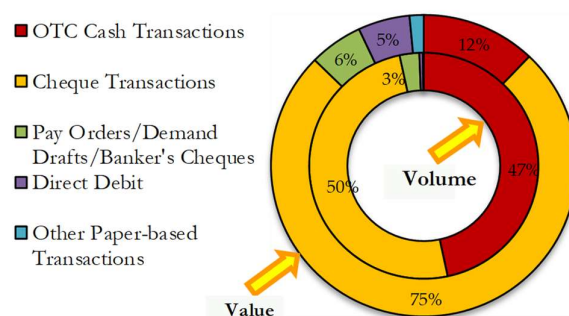


Source: SBP

*While the paper based transaction stagnated, cheques remained dominant...*

In parallel to preceding years, the volume and value of paper-based transactions stagnated during CY19. They accounted for 0.56 percent growth in the volume, while they did not contribute positively to the growth in value of transactions (negative 1.90 percent growth). Among the commonly used instruments, cheques remained the most preferable, contributing 49.94 percent of the volume and 75.23 percent of the value **(Chart 7.3)**.

Chart 7.3: Volume and Value wise share of paper-based retail transactions during CY19



Source: SBP

Customer's behavior regarding use of cheques remained in line with the trend experienced in the previous years. Large value cheques were used for transfers and clearing transactions. Cash withdrawals took up 50.09 percent of the volume, but only 12.37 percent of the value transacted. **(Table 7.2)**.

Table 7.2: Chequing Transactions in CY19

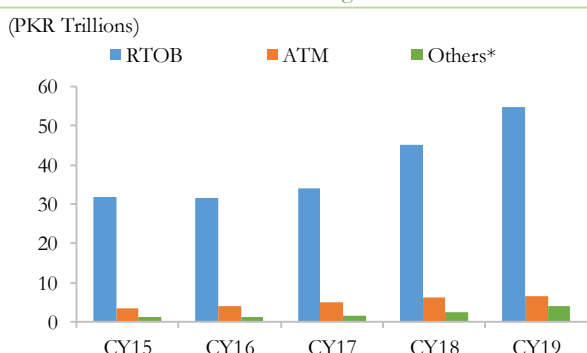
Type	Number (Million)	Amount (PKR billion)	Volume share (Percent)	Value Share (Percent)
Cash Withdrawals	172	19,382.9	50.1	12.4
Transfers	114	104,678.4	33.1	66.8
Clearing	58	32,588.1	16.8	20.8

Source: SBP

*E-banking transactions in mobile and internet banking improved....*

The consumer's preference for electronic modes of payment remained strong as per the trend witnessed in recent years. The e-banking transactions achieved growth of 21.10 percent in value and 11.92 percent in volume. Notable enhancements were observed in transactions conducted through internet and mobile banking, signifying the consumers growing interest in utilizing the latest available facilities (**Chart 7.4**).

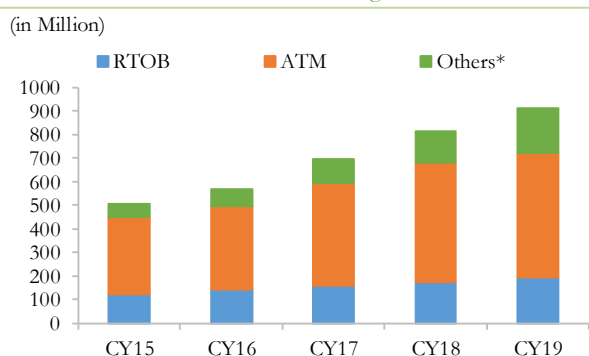
Chart 7.4 Value Profile of E-banking transactions



Source: SBP  
\*Other include POS, Internet banking, Mobile Banking, others

Since CY17, the comparably newer services of mobile banking and internet banking have quickly gained increasing share in the total volume of transactions.<sup>291,292</sup> However, ATMs and Real Time Online Branches (RTOBs) still hold the lion's share of 58.02 percent and 21.23 percent, respectively (**Chart 7.5**).

Chart 7.5: Volume Profile of E-banking transactions



Source: SBP  
\*Other include POS, Internet banking, Mobile Banking, others

*The expansion in digital networks continued...*

To cater to the consumers growing demand for electronic modes of payment, commercial and microfinance banks improved their network of e-banking infrastructure for better service delivery during CY19. There was expansion in essential networks of RTOB and ATM (**Table 7.3**). The prevalence of Paypak, the first domestic payment scheme, continued to gain traction in the national payment system.<sup>293</sup> Until end CY19, its total adoption through banks and consumers had reached more than 2.0 million cards.

Table 7.3: EBanking Infrastructure

Description	CY15	CY16	CY17	CY18	CY19
Online Branches	12,442	13,926	14,610	15,346	15,930
ATMs	10,736	12,352	13,409	14,361	15,252
POS	50,072	52,062	52,506	49,621	47,567
	Number in Thousands ('000)				
Total Payment Cards	32,744	36,202	39,361	41,708	42,083
of which:					
Credit Cards	1,394	1,209	1,374	1,522	1,644
Debit Cards*	26,489	17,470	19,848	23,303	26,440
ATM Only Cards	4,861	6,806	8,385	8,805	7,650
Social Welfare Cards	-	10,358	9,501	7,848	6,180
Pre-paid Cards	-	359	253	230	168

Source: SBP  
\* Prior to CY16, Debit cards also included social welfare and pre-paid cards.

<sup>291</sup> As of June 30, 2019, registered mobile phone banking users more than doubled to 5.6 million from 2.5 million in June 2017.

<sup>292</sup> As of June 30, 2019, registered internet-banking users increased by more than 50 percent to 3.3 million from 1.9 million in June 2016.

<sup>293</sup> This alternative scheme provides a low-cost and efficient payment solution.

*In the wake of growing e-banking transactions, cyber security is paramount...*

In accordance with the prospects, adoption of digital solutions for payment needs witnessed a healthy growth in recent years. This phenomenon also brought concerns for potential challenges in the areas of electronic fraud and cyber security.

Being aware of these challenges, SBP has made consistent efforts towards improvement in the regulatory regime of digital payment. In this backdrop, SBP introduced additional measures to enhance the standardization in digital instruments in CY19 (See Box 3 in Overview).

*SBP encouraged Standardization and Interoperability of payment instruments...*

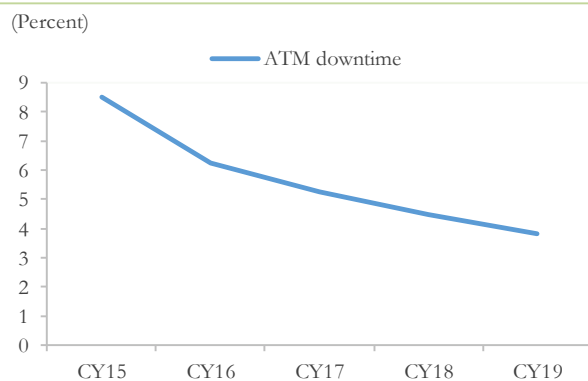
Mobile based payment system like Quick Response (QR) code provides a convenient, swift, and efficient payment option to consumers, essentially a suitable alternative to replace the POS terminals. The QR Code based payment solutions are actively working in the country, but generally lack in standardization and feature of interoperability. To address such issues, in CY19, SBP issued comprehensive regulations “Standardization of QR Codes for Payments in Pakistan” to promote uniform standards among the services offered by various institutions.<sup>294</sup> Accordingly, all the existing and newly issued and/or acquired QR codes for payments by institutions would adopt standards of Europay, Mastercard, Visa (EMV) QR Code for Specification of Payment Systems (QRCPS).

*ATM Efficiency at all-time high...*

As a key component of the payment system, ATM holds the highest share in e-banking transactions; therefore, its round-the-clock functionality is indispensable for efficiency of the payment system. Being conscious of the reputational and

operational risk for the payment system associated with ATM downtime, SBP and financial institutions efforts resulted in higher ATM availability during the reviewed period (Chart 7.6).

Chart 7.6: ATM downtime



Source: SBP

*Branchless banking supported financial inclusion in the country...*

Branchless Banking (BB) serves as a key pillar for expanding the formal financial services to the excluded population of the country. In recent times, it has been instrumental in meeting the rising demand for financial services in the underserved areas. Significant improvement was witnessed in the volume of agents, active accounts, deposits, and transactions during CY19. The volume and value of branchless banking transactions surged by 1,309.3 million (37.1 percent) and PKR 4,504.8 billion (23.1 percent), respectively. The number of active banking accounts and deposits increased by 23.9 percent and 21.5 percent, respectively, though total accounts witnessed a slight decline by 2.3 percent (Table 7.4).

<sup>294</sup> PSD Circular No. 02 of 2019  
<http://www.sbp.org.pk/psd/2019/C2.htm>

Table 7.4: Key Highlights of Branchless Banking

Description	CY18	CY19	Growth (percent)
No. of Agents	425,199	437,182	2.8
No. of Accounts (thousands)	47,165	46,103	(2.3)
No. of Active Accounts (thousands)	19,800	24,530	23.9
Deposits as on period end (PKR million)	23,678	28,770	21.5
No. of Transactions during the period (millions)	955	1,309	37.1
Average No. of Transactions per Day (thousands)	2,653	3,637	37.1
Value of Transactions during period (PKR billion)	3,659	4,505	23.1
Average Size of Transactions (PKR)	3,831	3,445	(10.1)

Source: SBP

In view of growing financial footprint and outreach of branchless banking network, SBP revised the branchless banking regulations for financial institutions in order to accelerate the outreach of branchless banking operations and strengthen controls against Money laundering (ML)/Terrorist Financing (TF) risks.<sup>295</sup> These regulations are part of a broader strategy to create enabling regulatory environment for growth prospect of the BB.

#### *SBP took initiatives for Promotion of Electronic Money Institutions*

To foster innovation in the payment instruments and promote financial inclusion, during CY19, SBP introduced regulations for the establishment of Electronic Money Institutions (EMIs) explicitly functioning as non-bank entities.<sup>296,297</sup> The regulation aims at removing the critical bottlenecks, minimizing entry barriers, and providing level playing field in the national payment landscape.

<sup>295</sup> BPRD Circular No. 10 of 2019; <http://www.sbp.org.pk/bprd/2019/C10.htm>

<sup>296</sup> EMIs means such nonbanking entities duly authorized to issue means of payments in the form of electronic money.

<sup>297</sup> PSD Circular No. 01 of 2019; <http://www.sbp.org.pk/psd/2019/C1.htm>

<sup>298</sup> Authorized EMIs list. <http://www.sbp.org.pk/PS/PDF/List-of-EMIs.pdf>

<sup>299</sup> The process, by which, acquiring institutions open the accounts of merchants thus enabling them to accept payments via digital means.

The instruments and payment channels offered through EMIs would deliver new payment options for consumers. It could potentially become more convenient and cost effective in comparison to prevalent payment instruments. Consequently, it could make digital payment options more efficient and inclusive for the consumers. Until March 2020, SBP authorized five EMIs for issuance of E-money wallets for consumers and merchants.<sup>298</sup>

#### *Development of digital payment acceptance points*

To facilitate the promotion of digital collection of payments through the establishment of digital payment acceptance points, SBP issued the rules for the digital on-boarding of merchants by the EMIs.<sup>299</sup> The circular outlines the minimum due diligence requirements for on-boarding merchants. It improves the mitigation measures for security of digital payments and helps the merchants' in their utilization of financial services access points and channels.

#### *National Payment Systems Strategy launched...*

National Payment System Strategy (NPSS), prepared by SBP in collaboration with World Bank, sets out a roadmap to structure the National Payments System on the principles of efficiency and safety of the system, universal accessibility and protection of the consumers, and to provide a competitive market environment in the payment landscape.<sup>300,301</sup>

The strategy suggests broad transformation in key areas of legal and regulatory framework, payment infrastructure, retail payments market, government payments, remittance market and oversight

<sup>300</sup> This strategy builds upon the international standards of Principles for Financial Market Infrastructures (PFMIs) given by Committee of Payments and Markets Infrastructures (CPMI) and International Organization of Securities Commissions (IOSCO) as well as the standards of Payment Aspects of Financial Inclusion (PAFI) prepared by CPMI and World Bank.

<sup>301</sup> National Payment System includes a country's entire matrix of institutional and infrastructure arrangements and processes for initiating and transferring monetary claims in the form of commercial bank and central bank liabilities.

framework to bring fundamental improvements in the national payment system.<sup>302</sup>

Further, it aims to promote cost effective and rapidly deployable digital payment options to guarantee universal accessibility and greater financial inclusion. This planned transformation in the national payment landscape resolves critical issues, such as it, eliminates system inadequacies to cater for emerging payment needs and opportunities, promotes the technological footprint and brings innovation, secures compliance with international standards and best practices, and mitigates concerns of safety and security of the consumers and the system.

### FMI's other than Payment Systems

#### *NCCPL performed efficiently during CY19...*

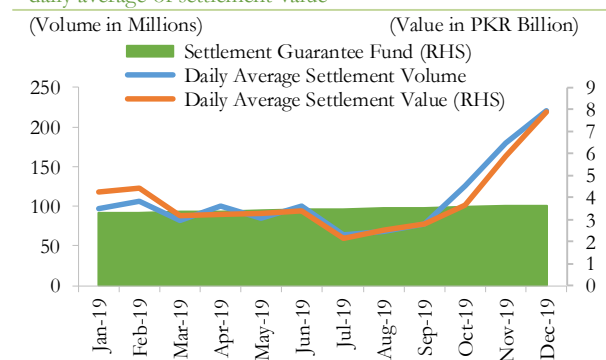
NCCPL, a systemically important FMI dealing with the settlement of trades in the capital markets, took various measures to enhance the efficacy of its operations and strengthened its risk management regime.

In 2019, Securities and Exchange Commission of Pakistan (SECP) granted license to NCCPL as Centralized “Know-your-Customer” Organization (CKO) that ensures a more reliable, efficient, and secure account opening process. Additionally, NCCPL i) underwent a major IT network infrastructure upgrade, and ii) implemented SSL security protocol to ensure a more secure, reliable, and faster connectivity to the market participants.<sup>303</sup> Such measures allowed NCCPL to mitigate the operational risk to a tolerable level and to smoothen day-to-day business operations.

NCCPL maintains a Settlement Guarantee Fund (SGF), a mechanism to mitigate the settlement risk

occurring owing to potential default of any member. At initiation, the fund was valued at PKR 2.75 billion. However, gradually it had risen to PKR 3.65 billion by December 2019. However, the daily average settlement value for the year stood at PKR 7.90 billion, which is still larger than the value of the fund (Chart 7.7). Although the margins provided by clearing members are the first line of defense against the default risk, SGF provides a buffer against emergence of systemic issues in the capital market.

Chart 7.7: Comparison of settlement of Guarantee Fund with daily average of settlement value



Source: NCCPL

The upgrade of IT network infrastructure coupled with reforms in risk management system of Capital Markets, restructured Margin Financing System, Value at risk (VAR) Margin and revised slabs of liquidity margin, all enabled NCCPL to efficiently supervise the risk profile of clearing members and employ adequate safeguards against the emergence of settlement risk, if any. Last year, NCCPL shifted from the previously deployed risk management system, of PSX, to its in-house risk management system.

#### *CDC also performed effectively...*

As a leading FMI, CDC acts as the central securities depository (CSD) of the country.<sup>304</sup> It

two-pronged function i.e. the facilitation of trade in securities and management of the custodial risk associated with it.

<sup>302</sup> It represents the large value payments, electronic retail payments, paper-based payments, and securities settlement.

<sup>303</sup> A networking protocol to secure the connection among clients and server.

<sup>304</sup> It manages and operates the Central Depository System (CDS), which is an electronic book-entry system used to record and maintain securities and register their transfers. Hence, it performs a

continued to hold the trust of the public as evident from the increasing number of investor accounts, which stood at 56,815 at the end of CY19, an increase of 5% from CY18. The CDC handled 146 billion shares with a market capitalization of PKR 4.9 trillion at the end of the reviewed period.<sup>305</sup>

To benefit the consumers and market, in CY19, CDC undertook major measures that included regularization of expired CNIC sub-accounts, reduction of CDS tariff structure, implementation of CKO functions, automation of process for regulatory submission and register, amendments in CDC regulations on margin financing regime and outsourcing of onsite inspection, investigation and enquiry of security brokers.<sup>306</sup>

CDC has effective buffers in place to cater for IT security risk that ensures the security of its network infrastructure. In CY19, it implemented a mandatory hard-drive serial number authentication and new two-factor authentication solution to provide secure access to CDS and other CDC's applications, thus mitigating cyber and operational risk. As an ISO 27001 certified company, CDC has provided adequate controls to establish information security. Similarly, the certifications, such as, ISO 22301 and ISAE 3402, helps in the areas of business continuity management and internal controls.

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<sup>305</sup> CDC Newsletter, Oct-Dec 2019

<sup>306</sup> CDC Newsletters, Jan-Dec 2019