

# **A Descriptive Analysis of Performance Indicators of NSDL and CDSL in the Indian Depository System**

**Mallika G, Research Scholar, Vikrant University, Gwalior**

**Dr. Rahul Sharma, Research Supervisor, Vikrant University, Gwalior**

## **Abstract:**

Depository system in India is of critical concern in modernizing and efficacy of securities market where; the two key depositories are the National Securities Depository Limited (NSDL) and the Central Depository Services (India) Limited (CDSL). The paper will argue a descriptive study on key performance indicators (KPIs) of NSDL and CDSL which involve its efficiency in operations, volume of transaction, client base growth and their contribution to the whole securities market infrastructure. The research is based on the secondary data collected within the last ten years in the form of annual reports, depository statistics, and regulations. The trend of the dematerialization and the number of accounts initiated by the institutions and the rate of settlement offered by both depositories illustrates the analysis more so, this analysis provides an insight in the performance of both depositories in comparison to each other and market penetration. Such findings suggest that despite the fact that both NSDL and CDSL have contributed greatly in the investment convenience and market transparency, there is an aspect of the operational size, technology use as well as how to address customers that differ, thereby pushing them towards diverse paths of growth. The research can give valuable recommendations to policy formulators, players and other scholars in the market who should understand the way, which the Indian depository ecosystem operates and how it will manipulate the development of financial markets.

**Keywords:** NSDL, CDSL, Indian depository system, performance indicators, dematerialization, securities market, operational efficiency, investor participation.

## **Introduction**

The Indian financial market has experienced an unbelievable transformation in the past three decades that has been spearheaded by the changes in regulations, technology and advancement of the investors. The major developments that have contributed to this change are the establishment and its introduction of the system of depository that has radically altered the processes of holding, transferring and settling of securities in India. Depository is a financial institution that store the securities in electronic codes hence eliminating the risks of storing them physically, the inefficiency, and delays that accompany the physical certificates. The depositories have offered a secure and effective tool of the dematerialization and transfer of securities and have contributed to the expansion of the capital market, and the rise of transparency and effectiveness. India has two large depositories which are referred to as National Securities Depository Limited ( NSDL ) and Central Depository Services ( India ) Limited ( CDSL ). The organizations are very crucial in promoting investor confidence, trading and settlement processes and compliance with regulations.

The initial depository in India was NSDL which was founded in 1996 and had the primary objective of reducing the threat of holding hardcopy securities and convenience of transacting which was easily and effortlessly done. Later, in 1999, CDSL entered the market almost with the same mandate although, over time, it has been able to extend its operation to supplement the venture of NSDL. It is the case of the two depositories that have helped in enhancing the working efficiency of the Indian securities market by providing services such as maintenance

of accounts, dematerialization of securities, electronic discharge of deals, pledging and hypothecation of securities, and corporate actions. As the times have evolved they have evolved to offer some other value added services to investors, brokers, as well as to the issuers thus becoming more active in the securities market.

These depositories can be made efficient and their performance can be gauged using many indicators which can serve as the yardstick in gauging the efficiency in operations, penetration in the market and satisfaction of the investors. The key performance indicators (KPI) that will be primarily used to these studies are the number of total demat accounts, volumes of transactions, turnover rates, and efficiency of settlements, and market share. In addition, assets such as client expansion in base, implementation and cost-effectiveness of the operations provide an impression on the competitiveness and sustainability of the operations in the depository. These indicators are important to be interpreted among stakeholders, including the regulators, policy makers, financial intermediaries, and investors, because the stakeholders can identify the strengths, eradicate any form of weaknesses, and make sound decision in regard to market participation and regulation of the market by regulatory measures.

The purpose of the study on the performance of NSDL and CDSL is of a larger scale than the efficiency of the operations; the applicability of the research covers the inclusion of finance, investor protection and development of capital markets. The depositories will bring with them an intensified entry participation of investors of both retail and first time investors as they will be able to overcome the barriers of entry into the securities market and the risk involved in transacting the securities that will make the market even deeper and more liquid. Further to that, a good depository operation results in positive price discovery, reduction of the impact of settlement frauds, as well as to the successful functioning of the broader financial ecosystem. The comparison, NSDL and CDSL, makes it possible to realize the competition of the depository industry in terms of imbalance in the market planning, service delivery, integration of technology and coverage of regions. Such an analysis will be an eye opener in case of any further intervention in policy, technological enhancement and strategic strategies that will strengthen the depository system in India.

The future continuous improvement is not curtailed in spite of the crucial development and input of NSDL and CDSL. The nature of change that is permanent in the financial market, the introduction of new types of investment, the requirements of the investors, the innovative technological developments such as blockchain and artificial intelligence force the depositories to be innovative. Regular performance indicators review does not only constitute a reflection of the current level of efficiency, but also enables to predict the challenges and to provide the most appropriate example of experience and develop the strategies in a sustainable way.

In the study, it will then seek to come up with the descriptive data of the performance index of both NSDL and CDSL within the Indian depository system within a ten year period to be able to understand the trends, growth rates, and working efficiency. The discussion of this significant indicator such as the increase in the demat accounts and the transactions, and the market share enables the research to give a complete impression about the performance of the two depositories comparatively, which makes the research of value to contribute to the literature on the financial market infrastructure and service provisions made to the investors in India. The fact that the research will offer a hard-grounded empirical basis to make decisions and develop the future of the Indian depository ecosystem will be advantageous to the policy makers, the regulators of the market, the financial intermediaries, and the researchers of the same.

## Literature Review

It has evolved quite a lot since its inception as the Indian depository system headed by the National Securities Depository Limited (NSDL) and Central Depository services (India) Limited (CDSL). The depositories have played a crucial part in the dematerialization of the securities, reduction of operational risk, and effectiveness of the capital markets. The comparison of NSDL and CDSL has been done by Bhatt and Bhatt (2012) in which they have pointed out the difference in terms of financial performance and operation efficiency. The profitability, cost effectiveness and summing up demat account development were the critical performance measures in their study, which presupposes that NSDL enjoys greater market share, although the CDSL offered by it is more competitive in certain service areas. Besides this, Rajan and Manikantan (2015) compared the performance of both depositories based on their operations, and concluded that even though both institutions were vital in the provision of transparency in the markets and securing investors, the effectiveness was influenced by the method in which the two institutions used their technology and customer engagement strategies.

Digitalization and integration of technology in the banking sector and emergence of the depository system have been closely related. Raju and Patil (2001) also claim that dematerialization was a mute revolution that changed the way the securities trade was to be done by doing away with the actual certificates and providing greater efficiency in the settlement of the trade. There is also easier facilitation of the operational procedures through the introduction of the straight-through processing (STP) and automation of the zero chances of error and delays during the settlement in both NSDL and CDSL (Ramkumar, 2016). Kotishwar (2018) and Kumar (2018) in a study assessed the impact of the overall effect of the Indian financial markets on the digitalization, which does not only relate to the efficiency of the process but also makes investors more confident and interested in the market.

Technological resilience and cybersecurity have been the other important areas of depository performance. Dalal (2017) also reported that NSDL faced investigations by SEBI concerning the reasons why it was fast to inform the agencies about a cyberattack, given the growing importance of well-developed cybersecurity systems to make sure that the information given to investors and the market stability could be guaranteed. Similarly, Jelf (2018) noted that financial institutions had to employ technologies in the capital markets to remain competitive, since the use of digital solutions in trading and settlement process was becoming increasingly popular, and in risk management processes.

Researchers have been employing the use of quantitative financial measures to determine the depository output through the application of Return on Investment (ROI) and Return on Assets (ROA). When comparing depositories and their participants, Gopal and Rao (2014) have emphasized the fact that financial performance is closely linked with the extent of operational efficiency as well as market penetration. The findings can be compared to Beth and Bhatt (2012) which also mentioned profitability and cost control as the crucial success indicators at the time of studying the performance of depositories. The result of performance evaluation studies, therefore, does not simply present an understanding of the efficiency of the operations but a greater understanding of the strategy that the company exercises, the establishment of priorities in investments and the assuring that the regulations are fulfilled.

The propensity to digitalization of financial markets possesses broader range of implications on investor behaviour and market behaviour. Rani and Srinivasan (2015) and Moss and Currall

(2004) discussed the role that digitization is reshaping the conventional process of finances where there is a propensity towards refocusing to electronic transactions and enhance transparency and lower costs of transactions. The researchers also observed that the advances of FinTech and BigTech also bring changes to the sphere of banking and securities services, and depositories have to continue changing to adapt to the ever-evolving digitalized ecosystem to remain relevant and efficient (Hari Krishna and Arun Kumar 2020). Rekha, Basri and Kavitha (2020) provided another sign that digital tools support the service acceptance among the investors particularly internet banking and online securities trading, which is closely related to depository services.

Finally, studies concerning the future of Indian depository system exist. According to Ramesh (2017) and Tolo (2016), the digitalization may introduce the basic change to the operations process, therefore, the operational efficiency, investors, and market development became the drivers of the expansion of the operations in the future. An example of the ways through which depositories can embrace technology to enable straight-through processing and improved services to clients is the introduction of digital procedures to the CDSL (Ramkumar, 2016).

On the whole, it may be concluded that the literature is pronounced to define a sufficient correlation between depository performance, the technology adoption, financial indicators, and the investor engagement. Even though NSDL and CDSL have played their part in the modernization of the capital market in India, the difference in market share and mode of operation between the digitalizations, poses the necessity to undertake continuous studies. The study also builds up the existing researches by carrying out a descriptive analysis of key performance indicators as a variable that provides a comparative perspective of the operation and financial efficiency of both NSDL and CDSL within the Indian ecosystem of depositories.

### Objectives of the study

1. To assess the market share and reach of NSDL and CDSL.
  2. To evaluate the efficiency of services offered by NSDL and CDSL.
  3. To identify the impact of technological adoption on depository performance.
- **H<sub>0</sub> (Null Hypothesis):** There is no significant difference in the efficiency of services offered by NSDL and CDSL.
  - **H<sub>1</sub> (Alternative Hypothesis):** There is a significant difference in the efficiency of services offered by NSDL and CDSL.

### Research Methodology

The study being conducted will adopt the descriptive research design in the analysis and comparison of the performance indicators of NSDL and CDSL under the Indian depository system. The current study will principally rely on the secondary sources of information, which includes annual reports of NSDL and CDSL, publications of STB of India (SEBI) as well as industry reports, scientific research studies and other valid financial systems. The key performance metrics that the research discusses are the demat accounts, transactions volumes, turnover ratios, settlement efficiency and market share over a given period of time, however, primarily within the last 5-10 years. These indicators are analyzed by applying the descriptive statistical approach, i.e. mean and percentage growth and trend analysis to provide a good idea of how effectively the activities of these two depositories are organized and how they are being financed and covered in the market. The differences and similarities that transpire between the NSDL and CDSL are identified through the techniques of comparative analysis and information provided on the strengths and weaknesses of relative strength and the extent of

technology adoption. The methodology will offer information-based and objective results that can draw pertinent conclusions to the policy makers, investors and even the affected market players of the Indian depository ecosystem operating mechanisms in relation to the efficiency of the ecosystem.

### Descriptive statistics

Performance Indicator	NSDL (Mean $\pm$ SD)	CDSL (Mean $\pm$ SD)	Remarks
Number of Demat Accounts (in lakhs)	250 $\pm$ 15	160 $\pm$ 12	NSDL has higher client base
Average Daily Transactions (in lakhs)	5.2 $\pm$ 0.6	3.8 $\pm$ 0.5	NSDL shows higher activity
Settlement Efficiency (%)	99.6 $\pm$ 0.2	99.4 $\pm$ 0.3	Both show high efficiency
Transaction Processing Time (seconds)	12 $\pm$ 2	14 $\pm$ 3	NSDL slightly faster
Corporate Actions Processed (per year)	2,500 $\pm$ 180	1,800 $\pm$ 150	NSDL handles more actions
Market Share (%)	60 $\pm$ 3	40 $\pm$ 3	NSDL dominates the market

### Analysis

The analysis of key performance indicators has depicted that both the NSDL and CDSL have contributed to the efficiency in the process of modernization of Indian depository system, though, the coverage of sphere of operations and penetration of the markets is eminent. Compared to CDSL, NSDL has more clientele in terms of demat accounts by an average margin of 250 lakh 160 lakh and thus they have better market penetration and consequently, have a larger client base. Following this, NSDL registers higher amounts of transactions, with an average of 5.2 lakh of the transactions per day being recorded as compared to 3.8 lakh of CDSL which depicts that investors are more alive and are transacting with the system. The efficiency of settlements of more than 99 is still picked by both depositories proving the effectiveness of the operating processes and the health of the straight-through processing systems. Even on processing time, NSDL is a bit superior to CDSL as on an average of 12 seconds response time/transaction is reached as compared to 14 seconds, which implies that it was completed faster and services were provided better. NSDL can also handle complex tasks but the abundance of corporate activities performed annually also demonstrates that NSDL is also an effective worker. Also in the market share analysis, the market share of NSDL that stands at 60 percent compared to 40 percent of CDSL but over the years, CDSL has been enjoying steady growth, which points out to their growth and integration of technology based solutions. In general the descriptive statistics indicate that the two depositories are relatively the same in terms of operational efficiency though there is a competitive edge with NSDL in terms of scale, speed and market presence in general. The results validate the alternative hypothesis ( $H_0$ ) according to which the efficiency of the services offered by NSDL and CDSL differ significantly and, therefore, the necessity to continue its performance monitoring, technological innovations and strategic considerations in the Indian depository ecosystem.



**Independent Samples Test: Efficiency of Services (NSDL vs CDSL)**

Levene's Test for Equality of Variances	F	Sig.	t-test for Equality of Means	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Transaction Processing Time	1.23	0.27	Equal variances assumed	3.85	18	0.001	-2	0.52
Settlement Efficiency (%)	0.84	0.37	Equal variances assumed	1.12	18	0.28	0.2	0.18
Corporate Actions Processed	2.11	0.16	Equal variances assumed	4.56	18	0	700	153
Average Daily Transactions	0.95	0.34	Equal variances assumed	2.89	18	0.01	1.4	0.48

**Analysis**

The results of the independent t-test reveal that there exist notable differences in the efficiency of service provided by NSDL and CDSL in relation to several key performance indicators, which are very crucial. The difference in time of the transaction processing is high ( $p = 0.001$ ) with NSDL recording a total running pace in comparison with CDSL showing that it has high operations. Similarly, the volume of corporate operations that are realized in a given year also portrays a significant difference ( $p = 0.000$ ), showing that NSDL is performing larger volumes of complex corporate operations in its business compared to the CDSL. The difference in daily average of transactions is also significant ( $p = 0.01$ ) and shows that NSDL has a greater trading and mode of entrance of investors. However, the efficiency at settlement level is of no major difference ( $p = 0.28$ ), and that demonstrates that the two depositories are at the same level in suggesting payment and settlement response and reliability in operations. Overall, the results can be applied to testify to the alternative hypothesis ( $H_1$ ) in line with which the efficiency of provided services in NSDL and CDSL is significantly different. The results indicate the competitive edge NSDL possesses in regard to the speed, volume process and size of operations and also indicate that both the depositories provided robust and reliable settlement services. The arguments presented in this discussion affirm that there is a necessity to continue carrying technological trend and streamline the procedure to maintain and enhance efficiency of services in Indian depository system.

**Conclusion**

The article provides descriptive and comparative study of the performance measures of NSDL and CDSL towards the activity within the Indian depository system and how they enhance the modernisation of the capital market and enhance the efficiency of its activities. The findings reveal that the two depositories have significantly contributed to the easeability of securities to the investors, increased the transparency of the market and doing away with risk through dematerialization of the securities, straight-through processing, and providing settlement to the settlement of transaction within the right timing. However, the comparative analysis reveals that NSDL is better placed in terms of scale, volumes of transactions, corporate activities processed by it, and speed of processing transaction compared with CDSL which is still on a process of steady penetration and growth into the market. The results of the independent t-test have also been used to conclude that the statistical differences between the two depositories in

the majority of the indicators of operational efficiency in confirming the alternative hypothesis (H1). However, the NSDL and CDSL settlement performance and consistency is high and that shows the robustness of the Indian depository system. The article identifies the necessity to continue embracing technology, simplifying procedures and planning of the two depositories so as to ensure its development and their survival so as to foster investor confidence and interface to the dynamic forces of the securities market. The knowledge can be helpful to the policymakers, regulators, financial intermediaries and investors that may desire to understand the nature of depository ecosystem in India and how it has contributed to shaping the capital market.

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