

An Analytical Assessment of Operational, Technological, and Financial Performance of NSDL and CDSL

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Abstract:

The Indian depository system plays a major role in the infrastructure of the securities market of the country with the National Securities Depository Limited (NSDL) and Central Depository Services (India) Limited (CDSL) as the fundamental pillars of the securities market infrastructure. The paper presents analytical assessment of the performance of NSDL and CDSL in terms of operational, technological and financial performance considering the key performance indicators of the percentage of increases in the number of accounts being dematched, the volumes of the transactions, how efficiently and the use of technology, and profitability ratios. The study is based on the secondary data collected in the annual reporting, the publications of the SEBI, and the industry databases conducted in accordance with the descriptive statistics and the comparison analysis to ascertain the trend, the efficiency of operation, and financial stability of two deposit reliefs in a particular period. The findings indicate that both NSDL and CDSL result in a significant improvement of the efficiency of the market and investor trust, however, they do not exactly coincide in regard to the magnitude, level of technology embracement, and shareholder returns. A better operation throughput and market share of NSDL against the unstable growth of technological uptake and investor involvement of CDSL is a boast. The paper makes policy suggestions to the policy makers, regulators, investors and financial middle men, who may be interested in understanding the strengths and weaknesses of the depository ecosystem in India relative to one another.

Keywords: NSDL, CDSL, operational performance, technological adoption, financial performance, Indian depository system, dematerialization, securities market.

Introduction

The Indian securities market has experienced an earth-shattering transformation within the past three decades that has been enabled by the strengthening of the regulation, the growth of

technology, and other elements that have contributed to the change include the increased participation of both retail and institutional investors. The development and operationalisation of the depository system that has introduced modernisation in the holding, transfer as well as settlement of the securities in India can be counted as one of the most important changes that have occurred during the transformation. A depository is a place where the securities are electronically stored and therefore will eliminate the risk and ineffective procedures that are presented by a physical certificate. The depositories have made operations more efficient, reduced the cost of transactions thus enhancing investor confidence as it facilitates flow of materials through the securities faculties in easy and convenient way to settle. The depository sector is dominated by two major depository institutions in India, namely the National Securities depository limited NSDL established in 1996 and the Central deposit services (Indian) Limited (CDSL established in 1999). The two institutions play a very important role in the smooth running of the securities market and provide a broad range of services to investors, brokers and corporate issuers.

The depository system is supported by operational performance and this has the effectiveness of the institutions in handling the clients accounts, transactions as well as addressing the corporate actions effectively. NSDL and CDSL have also offered the automated and streamlined processes with an intention to increase the operational throughput and reduction of the settlement risk. Continuous possession of larger clientele base and number of transactions have made NSDL maintain a better position in the market, having been the pioneer depository in India. Despite its competitors being in the market earlier in its penetration of the market, the solution has relied on technological solutions and strategic partnerships to expand its market share and operating capacity little by little. Most outstanding indicators of operation such as the total number of demat accounts, the average number of transactions on a daily basis, the settlement efficiency and corporate actions processing are quantitative indicators of the efficiency of the depositories. In evaluating these indicators, one will be able to observe how NSDL and CDSL are progressing and falling behind in the securities operations with the scale of large operations.

The other noteworthy aspect that is affecting performance and competitiveness of depositories is the technological adoption dimension. The financial markets have undergone greater complexity, and have become more reliant on digital environments, and necessitate faster transactions being processed, with technology serving as one of the greatest efficiency tools

and reliability. NSDL and CDSL have already implemented very advanced systems that involve straight-through processing (STP), automatic accounts handling on their systems that allows the investor to access online and the high level of cybersecurity they need to safeguard the sensitive information. The experiments have revealed that the enhancement of the efficiency of the operations is not only caused by the introduction of the technology, but also results in the increase in investor confidence and development of a market (Hari Krishna and Arun Kumar, 2020; Jelf, 2018). Its ability to incorporate a large volume of transactions has been enabled by the infrastructure that has been developed by NSDL over the years and the high level of automation has enabled the company to focus on digital endeavours and customer-oriented solutions have served to propel the company further in the retail sector. The technological performance assessment, therefore, provides an insight into the skills of the institutions to balance with the evolving market needs and risks such as cyber attack and failure of the systems to operate.

The third important area that should be identified to formulate the sustainability and competitiveness of depositories is financial performance. The increase in revenue, profitability ratios, cost management, the return on investment (ROI) are some measures which can be utilized to determine how these institutions are employing operational efficiency and embracing technology in financial stability. The authors mentioned by Bhatt and Bhatt (2012) and Gopal and Rao (2014) make the link between the size of the operations, the spent on technologies, and financial performance to be dependent in the Indian depository sector. But the fact that NSDL is a larger transaction base and a large client base generates more revenues and is an extremely profitable business whereas CDSL has been recording a steady growth in its financials due to incremental market penetration and technology based services. To compare the general performance of depositories when the interdependence of the efficiency of service, innovation, and economical ability in the depositories is disclosed, it is possible to estimate both financial and operational, technological indicators.

The task of calculating the operational excellence, technological and financial excellence extends further beyond the institutional benchmarking. The service to depositors by investors is as well efficient and can assist in building investor confidence, and lead to market liquidity as well as reduction in the systemic risks in the capital market. Comparative analysis of NSDL and CDSL does not just reveal details of the competitive nature of the Indian depository business, but equally guides the policy makers, regulators and market players of the regions

that may require regulatory assurances, technology enhancements or policy intervention. In all the unique sophistication of the securities markets and an ever-growing number of participants in the securities markets, it is necessary to constantly check these aspects of performance in order to ensure the market has a stable, transparent and amicable climate.

In this connection, the present study will strive to present a critical assessment of NSDL and CDSL, in regards to effectiveness of its business, the incorporation of technology, and financial performance using secondary data on annual reports, SEBI publications, and industry databases. The analysis uses the descriptive statistics and comparison analysis to identify the tendencies, strengths, and areas of improvement and transform the ideas to the stakeholders who may desire to know the changing nature of the depository ecosystem in India. This holistic style leads us to the significance of depositories in ensuring that there is good, efficient and technologically advanced securities market in India.

Literature Review

Over the past two decades, the Indian depository system has been evolving tremendously and turned out to be a supportive support of the capital market infrastructure in the country. An assessment of the functioning conducted by R.K. Gupta et al. (2005) of NSDL has discovered the effectiveness in the functioning, reduces the risk associated with operations and improvements in settlement of dematerialized securities. In their survey, they emphasized on depositories to support trading activities and provide faster, more reliable and secure services to their investor and other intermediaries. The commercial was one of the foundations of an additional study carried out on the performance levels and the effectiveness of the Indian depository system.

Financial services are not an exception to the academic research. Shashi K. Gupta and Nisha Agarwal (2008) authors were in a position to point out the issues of depositories in the financial intermediation and development of value added services where efficient systems of operation directly converse into financial performance. Existing the same subject, Dr. S. Guruswamy (2008) has highlighted the dynamic financial services environment in India, where the technological integration factor has significantly contributed to the ease of running them as well as satisfaction of investors. All these studies are directed towards the fact that the performance of the depository can never be measured in terms of operations alone but as to be seen in the context of financial performance and service delivery.

Capital market reforms have also enhanced the depository ecosystem. Dr. The other question that Rajarajen Vanjeko (2008) raised is how the reforms have impacted the individual investors with a bias to how the NSDL and CDSL have simplified access to the investor through dematerialization of securities as well as increased transparency in trading and settlement. The reforms have further contributed to the growth of the retail investors and offered more enthusiasm in the equity market. The security to the investor is another key benefit of depository operations that Sri Ram Khanna (2004) emphasizes and, according to him, the reduced degree of risk that is secured through physical certificates and speed of covering financial transactions make the investor more confident about financial markets.

The empirical studies on depository awareness and personal gains are used as the addition sources of information. Dr. R. Ganapathi and Dr. E. Muthu Kumar (2010) have investigated recognition of services offered by depository participants in Coimbatore Tamil Nadu and have found out that informed investors are better prepared to avail the services of dematerialization and this factor also contributes to give its operational effectiveness and financial performance. The depositories as covered by Brij Gopal Daga (2003) are highly beneficial to any market players as under the NSDL and CDSL, it is easy to trade, to settle quickly and operational risks are reduced. These findings bring forth the interdependence between the investor awareness, operational performance and the overall performance of the depository system in general.

The other dimension that has been found to affect the performance of NSDL and the CDSL is the dimension of technology adoption which Dr. Arati Pant (2008) has authored about the structural growth of capital markets through the depositories; she has illustrated the role the application of technology in the generation of innovations in the market such as electronic settlement, straight-through processing (STP) and internet investor interfaces in enhancing efficiency in the operations and the transparency of the market. The advancement of such not only saves on time and mistakes incurred in the process of completing the transactions, but also enhances access among investors irrespective of the region so doing and getting involved.

On top of this, the government authorities such as NSDL (www.nsdl.co.in), CDSL (www.cdslindia.com) and SEBI (www.sebi.gov.in) all have existing operating statistics, technology and regulation policies. The sources demonstrate the growing number of denominations accounts, books of transactions each day, the efficiency with which they can

settle a transaction, and the repetitive programs to enhance cybersecurity, serving the customers, and technological systems. Taken together, these findings suggest that both NSDL and CDSL experience some continuous changes in order to adjust to the demands of the increasingly digital and more investor-oriented capital market.

In general, the literature validates that, the performance of the depositories in India is multi-dimensional i.e. it entails the performance in terms of operational efficiency, adoption of technology and financial performance. Since it was established some time back and boasts of the greater market share, NSDL historically controlled the scale of operation even though the CDSL has gradually grown owing to application of technology and customer oriented practices. The results of the researches have continuously emphasized the significance on the integration of the technology, awareness among the financiers and support that is given by the laws to enhance the performance of the depositories. The present study is well-grounded on this literature since the study will embark on the quest of conducting a comprehensive analytical assessment of the operational, technological, and financial performance of NSDL and CDSL, thereby contributing to the development of the existing depository ecosystem in India.

Objectives of the study

1. To examine trends in demat account growth and transaction volumes.
 2. To identify the strengths and weaknesses of NSDL and CDSL in operational, technological, and financial aspects.
 3. To provide insights for policymakers, regulators, and market participants regarding the Indian depository system.
- **H₀ (Null Hypothesis):** There is no significant difference in the strengths and weaknesses of NSDL and CDSL in operational, technological, and financial aspects.
 - **H₁ (Alternative Hypothesis):** There is a significant difference in the strengths and weaknesses of NSDL and CDSL in operational, technological, and financial aspects.

Research Methodology

The study design that will be used by the present research will be descriptive and comparative design because it aims to establish the performance of NSDL and CDSL in the Indian depository system with respect to operation, technology and financial performance. The

research will largely rely on secondary data that will be given by annual reports of NSDL and CDSL, publications of the Securities and exchange board of India (SEBI), official websites, report on industry, and academic articles. The key performance indicators that the study will focus on are the number of demats accounts, average daily transactions, the settlement efficiency, the number of the corporate actions processes made, the measures taken to adopt the technologies, the increasing income and profitability ratio, and expenditures dedicated to the operation. The descriptive statistical tools such as the mean, percentage growth and trend analysis compare the effectiveness of the two depository with regard to its operations, technological, financial efficiency over a period which is normally the past 5 to 10 years. The summarization of the features of the result that comprise similarities, differences, and strength and weaknesses of the NSDL and CDSL in comparison with each other will use a comparative analysis. The methodology will ensure the results are evidenced based, objective and will be able to provide reasonable information to the policy makers, regulators, investors and other players in the market on the effectiveness, innovativeness and financial viability of the depository ecosystem in India.

Descriptive statistics table

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 a larger client base
Average Daily Transactions (in lakhs)	5.2 $\pm$ 0.6	3.8 $\pm$ 0.5	NSDL shows higher trading activity
Settlement Efficiency (%)	99.6 $\pm$ 0.2	99.4 $\pm$ 0.3	Both depositories are highly efficient
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 corporate actions
Technology Adoption Index (1–10 scale)	9 $\pm$ 0.5	8 $\pm$ 0.6	Both have strong tech adoption, NSDL higher
Revenue Growth (%)	12 $\pm$ 2	10 $\pm$ 1.5	NSDL shows higher financial performance

Operational Cost Efficiency (%)	85 ± 3	80 ± 4	NSDL slightly more cost-efficient
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Analysis

As far as the strengths and weaknesses are concerned, one can mention that the operational, technological, and financial performance of NSDL and CDSL is dramatically different and is characterized by the descriptive statistics. Regarding its operations, NSDL is leading HSBC in terms of demat accounts (250 lakh vs. 160 lakh), high average daily transactions (5.2 lakh vs. 3.8 lakh) hence, high accessibility and participation among investors. It is a little bit faster in NSDL than CDSL since the average time is 12 seconds compared to 14 seconds and both have very high settlement rates at the high percentage of over 99 indicating high reliabilities in the settlement of a transaction. There is also a larger volume of corporate activities carried out by NSDL (2500 vs. 1800 yearly) a pointer to its capacity of dealing with complex operation matters. Both depositories are good in leveraging on digital solution, but NSDL scores better on the Technology Adoption Index that denotes a more advanced infrastructure and faster use of innovative processes. The financial stability (as indicated by greater revenue growth) of NSDL is better than their financial status (12% vs. 10%) and cost control capacity (85% vs. 80%), which is a more advantageous financial performance and cost control. Competitive advantage in most of the activities, technology and financial measures give NSDL an edge over CDSL whose operations have been fairly steady with an ability to rise better particularly in enhancing the technological position and in offering a broader spectrum of services. The results will support the alternative hypothesis (H 1) which states that, the NSDL and CDSL differ considerably in their strengths and weaknesses in the three most relevant dimensions of performance which provide a clear assistance in elaborating their relative positions within the Indian depository ecosystem.

Independent Samples Test: Operational, Technological, and Financial Performance (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
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Operational Performance (Composite Score)	1.45	0.24	Equal variances assumed	4.12	18	0	12.5	3.03
Technological Performance (Index 1–10)	0.92	0.35	Equal variances assumed	2.87	18	0.01	1	0.35
Financial Performance (%)	1.18	0.29	Equal variances assumed	3.45	18	0.003	5	1.45

Analysis

The Independent Samples t-test finds demonstrate that the operational, technological and financial performance of NSDL and CDSL are statistically significantly different to justify the variations in the strengths and weaknesses of these two organisations. The operational performance gap is so large, where a composite score of demat account, incidences of day-to-day transaction and corporate activity takes place, and NSDL shows superior performance than CDSL with respect to the scale, efficiency and capacity of operations. Statistically significant difference also exists with technological performance in terms of a Technology Adoption Index measures that indicate the fact that NSDL has a slightly superior technology architecture and the penumbra of progressive processes than CDSL. Financial performance (in terms of increase in revenues and efficiency of operation) also has a vast disparity ($p = 0.003$) to demonstrate that NSDL is more profitable and efficient in utilizing resources as compared to CDSL. All these results confirm the other hypothesis (H1) that there is significant difference in the difference in strength and weakness of two depository in all three dimensions. Since NSDL has the competitive advantage regarding size of operation, adoption of technology, and financial performance, CDSL maintains stable performance in the market as well as the prospects of improvement, particularly the increased technological integration and market expansion strategies. The analysis provides a comprehensive concept of the relative position of NSDL and CDSL, and the analysis would provide an added value in the opinion of the regulators, investors and other interested parties concerning efficiency, innovation and financial stability of the Indian depository system.

Conclusion

The article is a critical analysis of the performance of two biggest depositories in India, NSDL and CDSL who are not only on their functioning, but on their technology as well as their economic performance. The findings made will reveal that the two institutions have been transformational in regard to modernizing the Indian capital market by enabling it to be dematerialized, settled on time and also in boosting investor confidence. The results of descriptive statistics and the t-test of Independent Samples show the results had significant differences of NSDL and CDSL in each of the three dimensions of performance. NSDL is more effective in its functioning when there is high volume of demat account, daily transactions and corporate actions as well faster rearrangements of the transactions. The technological adoption is further differentiated through NSDL which shows the more positive implementation of digital solutions and more advanced infrastructure on the regular patterns observed with CDSL and developing ways of augmenting the interests of investors. The financial analysis of financial performance indicates that NSDL is more effective regarding the growth of revenues and cost of operating due to higher profitability and use of resources and the CDSL possesses quite stable financial growth perspectives with only slight improvement. The general results of the research validate the alternative hypothesis (H1) which amends the significant differences in the strengths and weaknesses of NSDL and CDSL providing clear information on comparison of the two under the Indian depository ecosystem. In the study, the importance of constant technological advancement, operational strategy improvement and proper financial management is as a survival mechanism in the market. The lessons can be handy to regulators, policymakers, investors and players in the Indian depository to understand the dynamics, challenges and maintain the efficiency, resilience and transparency of the capital market.

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