Role of Depositories in Indian Capital Market – A Comparative Study between NSDL and CDSL

Mr.B.Hari Babu*, Prof.B.K.Surya Prakasha Rao**, Dr.B.Srinivasa Rao***

- * Assistant Professor, Department of Business Management, VR Siddhartha Engineering College, Vijayawada, Andhra Pradesh, India.
- *** Professor & Head, Department of Management Sciences, RVR & JC College of Engineering, Guntur, Andhra Pradesh, India.

 *** Associate Professor, Department of Mathematics and Humanities, RVR & JC College of Engineering, Guntur, Andhra Pradesh, India.

Abstract: A Depository is an organization where the securities of share holders are held in the electronic format the request of the share holder through the medium of a depository participant. A depository interfaces with its investors through its agents called Depository Participants (DPs). The main objective of a depository is to reduce settlement risk by minimizing the paperwork involved in trading, settlement and transfer of securities. At present the two Depository Organisations are working in India -National Securities Depository Limited (NSDL) and Central Depository Services (India) Limited (CDSL). The present study is an attempt to know the role and growth of NSDL and CDSL in Indian Capital Market for 16 years i.e. period ending 31st March 2001 to March 2016. On the basis of results, it is concluded that number of beneficiary accounts, number of companies available for DEMAT, number of depository participants, number of depository participants service centers, Quantity of DEMAT Shares/Securities (No. of Dematerialized Securities) and DEMAT Custody in NSDL & CDSL (Value of Dematerialized Securities).

Keywords: National Securities Depository Limited (NSDL), Central Depository Services (India) Limited (CDSL), Dematerialization, Indian Capital Market, Depository, Depository Participants (DPs).

I. INTRODUCTION

The economic development of any country depends upon the existence of a well organized financial system. It is the financial system which supplies the necessary financial inputs for the production of goods and services which in turn promote the well being and standard of living of the people of a country. An efficient functioning of the financial system facilities the free flow of funds to more productive activities and thus promotes investment. Thus, the financial system provides the intermediation between savers and investors and promotes faster economic development. The financial market exists to facilitate sale and purchase of financial instruments and comprises of two major markets namely the capital Market and the money market. The capital market mainly deals in medium and long - term investments (maturity more than a year) while the money market deals in short- term investments (maturity up to a year).

Capital market can be divided into two segments viz., primary and secondary. The primary market is mainly used by issuers for raising fresh capital from the investors by

making initial public offers or rights issues or offers for sale of equity or debt. The secondary market provides liquidity to these instruments through trading and settlement on the stock exchanges. Capital market is, thus important for raising funds for capital formation and investments and forms a very vital link for economic development of any country. The capital market provides a means for issuers to raise capital from investors. (Who have surplus money available from savings for investments). Thus savings normally flow from household sector to business or government sectors that normally invest more than they save.

The first depository in the world was set up way back in 1947 in Germany. Then the total number of depositories in the world was 22 only and the number had crossed 250 by the end of 2004 and 310 by the end of 2014. The move on depository in India was initiated by the Stock Holding Corporation of India Limited (SHCIL) in July 1992 when it prepared a concept paper on "National Clearance and Depository System" in collaboration with Price Waterhouse under a programme sponsored by the U.S. Agency for International Development. Thereafter, the Government of India constituted a Technical Group under the Chairmanship of Shri R. Chandrashekharan, Managing Director, SHCIL, which submitted its Report in December, 1993. The Securities and Exchange Board of India (SEBI) constituted a seven member action squad subsequently to discuss the various structural and operational parameters of Depository System. Considering the various problems and issues, the Government of India promulgated the Depositories Ordinance in September 1995, thus paving the way for setting up of depositories in the country. The Depositories Act was passed by the Parliament in August 1996, which lays down the legislative framework for facilitating the dematerialisation and book entry transfer of securities in a depository. The Act provides that a depository, which is required to be a company under the Companies Act 1956, and depository participants (i.e. agents of the depository) need to be registered with SEBI. The Depository shall carry out the dematerialisation of securities and the transfer of beneficial ownership through electronic book entry. The investors, however, have the option to hold securities in physical or dematerialised form, or to rematerialise securities previously held in dematerialised form. The Depository Related Laws (Amendment) Ordinance, 1997 issued in January 1997 enabled units of mutual funds and UTI, securities of statutory corporations and public corporations to be dealt through depositories.

Objectives of the Study:

- 1. To know the role of NSDL and CDSL in Indian Capital Market.
- To know the growth of NSDL and CDSL in Indian Capital Market for 16 years i.e. period ending 31st March 2001 to 31st March 2016
- 3. To know the features of depository system in India

Research Design and Methodology:

(i) Research Design

Research Design of the study is analytical

(ii) Methodology

The basis of present analysis is comparison of data between NSDL and CDSL on yearly (financial year) basis.

Data Collection and Analysis

The study is based upon secondary data collected from various websites i.e. NSDL, SEBI, CDSL, NSE and Official publications, annual reports of NSDL and CDSL and research articles published in journals for a period of 16 years i.e. from 31st March 2001 to 31st March 2016.

II. ROLE OF NSDL AND CDSL IN INDIAN CAPITAL MARKET

A. NSDL

NSDL carries out its activities through service providers such as depository participants (DPs), issuing companies and their registrars and share transfer agents and clearing corporations/ clearing houses of stock exchanges. These entities are NSDL's business partners and are integrated in to the NSDL depository system to provide various services to investors and clearing members. The investor can get depository services through NSDL's depository participants.

NSDL was registered by the SEBI on June 7, 1996 as India's first depository to facilitate trading and settlement of securities in the dematerialized form. The NSDL is promoted by IDBI, UTI and NSE to provide electronic depository facilities for securities traded in the equity and debt markets in the country. NSDL has been set up to cater to the demanding needs of the Indian capital markets. In the first phase of operations, NSDL will dematerialize scrips and replace them with electronic entries. This depository promoted by institutions of national stature responsible for economic development of the country has since established a national infrastructure of international standard that handles most of the trading and settlement in dematerialised form in Indian capital market. The Depositories Act also provides for multiple depository system. Using innovative and flexible technology systems, NSDL works to support the investors and brokers in the capital market of the country.

NSDL provides numerous direct and indirect benefits like:

- Elimination of bad deliveries
- Elimination of all risks associated with physical certificates
- No stamp duty
- Immediate transfer and registration of securities
- Faster settlement cycle
- Faster disbursement of non cash corporate benefits like rights, bonus, etc.
- Reduction in brokerage by many brokers for trading in dematerialized securities
- Reduction in handling of huge volumes of paper
- Periodic status reports

- Elimination of problems related to change of address of investor
- Elimination of problems related to transmission of demat shares
- Elimination of problems related to selling securities on behalf of a minor
- Ease in portfolio monitoring

B. CDSL

CDSL was promoted by BSE Ltd. jointly with leading banks such as State Bank of India, Bank of India, Bank of Baroda, HDFC Bank, Standard Chartered Bank and Union Bank of India.

CDSL was set up with the objective of providing convenient, dependable and secure depository services at affordable cost to all market participants.

The balances in the investors account recorded and maintained with CDSL can be obtained through the DP. The DP is required to provide the investor, at regular intervals, a statement of account which gives the details of the securities holdings and transactions. The depository system has effectively eliminated paper-based certificates which were prone to be fake, forged, counterfeit resulting in bad deliveries. CDSL offers an efficient and instantaneous transfer of securities.

CDSL was promoted by BSE Ltd. in association with Bank of India, Bank of Baroda, State Bank of India and HDFC Bank. BSE Ltd. has been involved with this venture right from the inception and has contributed overwhelmingly to the fruition of the project. The initial capital of the company is 104.50 crores (INR). The list of shareholders with effect from 5th July, 2010 is as under.

Role of CDSL in Indian Depository System are as follows:

- Maintenance of individual investors' beneficial holdings in an electronic form
- Dematerialization and re-materialization of securities
- Account transfer for settlement of trades in electronic shares
- Allotments in the electronic form in case of initial public offerings
- Distribution of non-cash corporate actions
- Facility for freezing/locking of investor accounts
- Facility for pledge and hypothecation of securities

III. KEY FEATURES OF THE DEPOSITORY SYSTEM IN INDIA

- 1. Multi-Depository System: The depository model adopted in India provides for a competitive multi-depository system. There can be various entities providing depository services. A depository should be a company formed under the Company Act, 1956 and should have been granted a certificate of registration under the Securities and Exchange Board of India Act, 1992. Presently, there are two depositories registered with SEBI, namely:
- National Securities Depository Limited (NSDL), and
- Central Depository Service Limited (CDSL)
 - **2.** Depository services through depository participants: The depositories can provide their services to investors through their agents called depository participants. These agents are appointed subject to the conditions prescribed

under Securities and Exchange Board of India (Depositories and Participants) Regulations, 1996 and other applicable conditions.

- **3. Dematerialisation:** The model adopted in India provides for dematerialization of securities. This is a significant step in the direction of achieving a completely paper-free securities market. Dematerialization is a process by which physical certificates of an investor are converted into electronic form and credited to the account of the depository participant.
- **4. Fungibility:** The securities held in dematerialized form do not bear any notable feature like distinctive number, folio number or certificate number. Once shares get dematerialized, they lose their identity in terms of share certificate, distinctive numbers and folio numbers. Thus all securities in the same class are identical and interchangeable. For example, all equity shares in the class of fully paid up shares are interchangeable.
- **5. Registered Owner/ Beneficial Owner:** In the depository system, the ownership of securities dematerialized is bifurcated between Registered Owner and Beneficial Owner. According to the Depositories Act, 'Registered Owner' means a depository whose name is entered as such

in the register of the issuer. A 'Beneficial Owner' means a person whose name is recorded as such with the depository. Though the securities are registered in the name of the depository actually holding them, the rights, benefits and liabilities in respect of the securities held by the depository remain with the beneficial owner. For the securities dematerialized, NSDL/CDSL is the Registered Owner in the books of the issuer; but ownership rights and liabilities rest with Beneficial Owner. All the rights, duties and liabilities underlying the security are on the beneficial owner of the security.

6. Free Transferability of shares: Transfer of shares held in dematerialized form takes place freely through electronic book-entry system.

IV. GROWTH AND COMPARISON OF NSDL & CDSL

The below tables show that, the growth and development of de-materialization with reference to NSDL & CDSL period ending 31st March 2001 to March 2016 under the study.

Table I: Beneficiary Accounts Growth in NSDL & CDSL during March 2001 to 2016

Year (As on 31 st March)	NSDL Accounts in Lakhs	NSDL Annual Growth Rate (%)	CDSL Accounts in Lakhs	CDSL Annual Growth Rate (%)
2001	37.48	-	0.76	
2002	37.18	(0.80)	1.28	68.42
2003	37.95	2.07	2.47	92.97
2004	52.03	37.10	6.29	154.66
2005	63.00	21.08	10.11	59.21
2006	75.60	20.00	15.51	53.41
2007	79.03	4.54	23.68	52.68
2008	93.72	18.59	47.98	102.62
2009	96.85	3.34	55.27	15.19
2010	105.85	9.29	65.86	19.16
2011	115.44	9.06	74.79	13.56
2012	120.48	4.37	79.17	5.86
2013	126.88	5.31	83.27	5.18
2014	130.57	2.91	87.77	5.40
2015	137.08	4.99	96.10	9.49
2016	145.66	6.26	100.08	4.14
Average Annu	al Growth Rate	9.87		44.23

Source: Monthly Updates and Annual Reports of NSDL and CDSL

Table I shows that the beneficiary accounts growth in NSDL and CDSL period ending March 2001 to March 2016. The beneficiary accounts of NSDL continuously increased from 37.48 lakhs accounts to 145.66 lakhs accounts except a marginal decrease in the year 2002. The percentage of growth was high in 2004 at 37.10% and lowest at (0.80%) in 2002. The average annual growth in accounts in NSDL during 2001 to 2016 is 9.87%. The beneficiary accounts of CDSL also continuously increased from 0.76 lakhs accounts to 100.08 lakhs accounts. The percentage of growth was high in 2004 at 154.66% and lowest at 4.14% in 2016. The

average annual growth in accounts in CDSL during 2001 to 2016 is 44.23%. The average annual growth rate of CDSL is higher than the NSDL. But during 2004 the number of client accounts recorded a sudden jump in the opening of accounts in both NSDL and CDSL due to substantial rise in the prices of shares. Thus it may be concluded that with the familiarisation and compulsorisation of the demat system; the number of clients has recorded tremendous increase over the entire period of study.

Table II: Companies Available for DEMAT in NSDL & CDSL during March 2001 to 2016

Year (As on 31 st March)	NSDL (No. of Companies)	NSDL Annual Growth Rate (%)	CDSL (No. of Companies)	CDSL Annual Growth Rate (%)
2001	2786	-	2789	
2002	4172	49.75	4296	54.03
2003	4761	14.12	4628	7.73
2004	5212	9.47	4720	1.99
2005	5536	6.22	5068	7.37
2006	6022	8.78	4819	(4.91)
2007	6483	7.66	5135	6.56
2008	7354	13.44	5969	16.24
2009	7801	6.08	6233	4.42
2010	8124	4.14	7049	13.09
2011	8842	8.84	8265	17.25
2012	9741	10.17	9983	20.79
2013	10843	11.31	11030	10.49
2014	12210	12.61	12765	15.73
2015	13992	14.59	9069	(28.95)
2016	15605	11.53	9658	6.49
Average Annu	al Growth Rate	12.58		9.89

Source: Monthly Updates and Annual Reports of NSDL and CDSL

Table II reveals that companies available for DEMAT in NSDL and CDSL period ending March 2001 to March 2016. Companies available for DEMAT in NSDL continuously increased from 2786 to 15605. The percentage of growth was high in 2002 at 49.75% and lowest at 4.14% in 2010. The average annual growth in NSDL during 2001 to 2016 is 12.58%. Companies available for DEMAT in CDSL also

continuously increased from 2789 to 12765 except in the financial years 2006 and 2015. The percentage of growth was high in 2002 at 54.03% and lowest at (28.95%) in 2015. The average annual growth in CDSL during 2001 to 2016 is 9.89%. The average annual growth rate of NSDL is higher than the CDSL. But during 2002 the companies available for DEMAT recorded a sudden jump in both NSDL and CDSL.

Table III: Depository Participants Growth in NSDL & CDSL during March 2001 to 2016

Year (As on 31 st March)	NSDL (No. of DPs)	NSDL Annual Growth Rate (%)	CDSL (No. of DPs)	CDSL Annual Growth Rate (%)
2001	186	-	158	
2002	212	13.98	161	1.90
2003	213	0.47	191	18.63
2004	214	0.47	211	10.47
2005	216	0.93	271	28.44
2006	223	3.24	322	18.82
2007	240	7.62	365	13.35
2008	251	4.58	423	15.89
2009	275	9.56	471	11.35
2010	286	4.00	506	7.43
2011	293	2.45	546	7.91
2012	283	(3.41)	568	4.03
2013	282	(0.35)	579	1.94
2014	278	(1.42)	578	(0.17)
2015	273	(1.80)	574	(0.69)

	Average Annu	ial Growth Rate	2.62		9.39
I	2016	270	(1.10)	583	1.57

Source: Monthly Updates and Annual Reports of NSDL and CDSL

Table III shows that Depository Participants growth in NSDL and CDSL period ending March 2001 to March 2016. Depository Participants in NSDL continuously increased from 186 in 2001 to 293 in 2011 and thereafter the number of depository participants were decreased continuously from the year 2012 to 2016 and reached to 270 participants. The percentage of growth was high in 2002 at 13.98% and lowest at (3.41%) in 2012. The average annual growth in NSDL during 2001 to 2016 is 2.62%. Depository

Participants in CDSL also continuously increased from 158 in 2001 to 583 in 2016 except a very marginal decrease in the years 2014 and 2015. The percentage of growth was high in 2005 at 28.44% and lowest at (0.69%) in 2015. The average annual growth in CDSL during 2001 to 2016 is 9.39%. The average annual growth rate of CDSL is higher than the NSDL.

Table IV: DP Service Centres Growth with NSDL & CDSL during March 2001 to 2016

Year (As on 31 st March)	NSDL (No. of DP Service Centres)	NSDL Annual Growth Rate (%)	CDSL (No. of DP Service Centres)	CDSL Annual Growth Rate (%)
2001	1896	-	132	
2002	1648	(13.08)	346	162.12
2003	1718	4.25	414	19.65
2004	1719	0.06	441	6.52
2005	2819	63.99	532	20.63
2006	3017	7.02	586	10.15
2007	5599	85.58	634	8.19
2008	7204	28.67	6000	846.37
2009	8777	21.84	6000	0.00
2010	11170	27.26	6000	0.00
2011	12767	14.30	9200	53.33
2012	14033	9.92	10600	15.22
2013	14641	4.33	12500	17.92
2014	14444	(1.35)	11381	(8.95)
2015	15960	10.50	11000	(3.35)
2016	26765	67.70	16500	50.00
Average Ann	ual Growth Rate	22.07		79.85

Source: Monthly Updates and Annual Reports of NSDL and CDSL

Table IV reveals that DP service centres growth in NSDL and CDSL period ending March 2001 to March 2016. DP service centres in NSDL continuously increased from 1896 to 26765 except a sudden decrease in the year 2002 and a marginal decrease in 2014. The percentage of growth was high in 2007 at 85.58% and lowest at (13.08)% in 2002. The average annual growth in NSDL during 2001 to 2016 is

22.07%. DP service centres in CDSL also continuously increased from 132 to 16500 except in the financial years 2014 and 2015. The percentage of growth was high in 2008 at 846.37% and lowest at (8.95%) in 2014. The average annual growth in CDSL during 2001 to 2016 is 79.85%. The average annual growth rate of CDSL is higher than the NSDL.

Table V: Quantity of DEMAT Shares/Securities (No. of Dematerialized Securities) in NSDL & CDSL during March 2001 to 2016

Year (As on 31 st March)	NSDL In Billions	NSDL Annual Growth Rate (%)	CDSL In Billions	CDSL Annual Growth Rate (%)
2001	37.21	-	1.89	
2002	51.67	38.86	4.82	155.03
2003	68.76	33.08	8.21	70.33
2004	83.69	21.71	14.01	70.65
2005	128.66	53.73	19.08	36.19
2006	174.72	35.80	26.9	40.99

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2007	202.70	16.01	32.01	19.00
2008	236.90	16.87	52.8	64.95
2009	282.87	19.40	70.47	33.47
2010	351.14	24.13	78.56	11.48
2011	471.30	34.22	110.41	40.54
2012	579.80	23.02	137.66	24.68
2013	686.48	18.40	151.81	10.28
2014	795.50	15.88	177.31	16.80
2015	927.36	16.58	206.01	16.19
2016	1100.20	18.64	227.55	10.46
Average Annu	Average Annual Growth Rate			41.40

Source: Monthly Updates and Annual Reports of NSDL and CDSL

Table V shows that Quantity of DEMAT Shares/Securities (No. of Dematerialized Securities) in NSDL and CDSL period ending 31st March 2001 to March 2016. No. of Dematerialized Securities in NSDL continuously increased from 37.21 billion to 1100.20 billion. The percentage of growth was high in 2005 at 53.73% and lowest at 15.88% in 2014. The average annual growth in NSDL during 2001 to

2016 is 25.76%. No. of Dematerialized Securities in CDSL also continuously increased from 1.89 billion to 227.55 billion. The percentage of growth was high in 2002 at 155.03% and lowest at 10.28% in 2013. The average annual growth in CDSL during 2001 to 2016 is 41.40%. The average annual growth rate of CDSL is higher than the NSDL.

Table VI: DEMAT Custody in NSDL & CDSL (Value of Dematerialized Securities) during March 2001 to 2016

Year (As on 31 st March)	NSDL Rs. in Billions	NSDL Annual Growth Rate (%)	CDSL Rs. in Billions	CDSL Annual Growth Rate (%)
2001	3262	-	127.36	
2002	4426	35.68	243.37	91.09
2003	5513	24.56	361.64	48.60
2004	9662	75.26	1039.01	187.31
2005	14477	49.83	1209.59	16.42
2006	24789	71.23	2322.41	92.00
2007	31426	26.77	3150.39	35.65
2008	43770	39.28	6864.65	117.90
2009	31066	(29.02)	5201.48	(24.23)
2010	56178	80.83	8579.21	64.94
2011	66079	17.62	11645.81	35.74
2012	71323	7.94	10150.31	(12.84)
2013	76790.27	7.67	9869.24	(2.77)
2014	89398.76	16.42	10876.03	10.20
2015	117483.15	31.41	13942.64	28.20
2016	117157	(0.28)	13267.97	(4.84)
Average Ann	ual Growth Rate	30.25		45.56

Source: Monthly Updates and Annual Reports of NSDL and CDSL

Table VI shows that DEMAT Custody in NSDL and CDSL (Value of Dematerialized Securities) period ending 31st March 2001 to March 2016. Value of Dematerialized Securities in NSDL continuously increased from Rs. 3262 billion to Rs. 117157 billion except in the financial years 2009 and 2016. The percentage of growth was high in 2010 at 80.83% and lowest at (29.02%) in 2009. The average annual growth in NSDL during 2001 to 2016 is 30.25%. Value of Dematerialized Securities in CDSL also continuously increased from Rs. 127.36 billion to Rs. 13942.64 billion except in the years 2009, 2012, 2013 and 2016. The percentage of growth was high in 2004 at 187.31% and lowest at (24.23%) in 2009. The average annual growth in CDSL during 2001 to 2016 is 45.56%. The

average annual growth rate of CDSL is higher than the NSDL.

V. CONCLUSION

To sum up, there is a sizable increase in terms of number of beneficiary accounts, number of companies available for DEMAT, number of depository participants, number of depository participants service centers, Quantity of DEMAT Shares/Securities (No. of Dematerialized Securities) and DEMAT Custody in NSDL & CDSL (Value of Dematerialized Securities). Positive annual average growth rate shows the growth of Indian Capital Market.

REFERENCES

International Journal of Scientific and Research Publications, Volume 6, Issue 12, December 2016 ISSN 2250-3153

- Gordon, E., & Natarajan, K., "Capital Market in India", Mumbai, Himalaya Publishing House, 2007.
- [2] Raghunathan, V., "Stock Exchange and Investment", New Delhi, Tata McGraw-Hill Publishing Co., 2008.
- [3] Sahoo, M. S., "An Overview of the Securities Market in India", SEBI Bulletin, Volume 3, March 2005.
- [4] George, Philip (1996), "Towards a Paperless Settlement System", Business World, October, pp. 134-135.
- [5] Shah, Mahesh, "A Care for Depositories in India", The Management Accountant, April 1996.
- [6] Shah, Ravi, "Understanding Dematerialization", The Management Accountant, 2002.
- [7] Gopalsamy, N., Capital Market (The Indian Financial Scene), Macmillan India Ltd., New Delhi, 2005, Page no. 386
- [8] Nishanth, P.V., "Dematerialisation in the Indian capital market", Sept. 2000, Page no. 1.
- [9] Prof.B.K.Surya Prakasha Rao and Mr.B.Hari Babu (2013), "Role and Growth of NSDL in Indian Depository System", International Journal of Advance Research in Computer Science and Management Studies, Volume 1, Issue 7, December 2013, pp 190 – 197.
- [10] Prof.B.K.Surya Prakasha Rao and Mr.B.Hari Babu (2016), "Role and Growth of CDSL in Indian Depository System", VR Siddhartha Journal of Business Management, March, 2016, pp 69-74.
- [11] Prof. Kaushal A. Bhatt and Prof. Kinjal Bhatt (2012), "Financial Performance Evaluation of Depositories in India (A Comparative study of NSDL and CDSL)", International Journal of Scientific and Research Publications, Volume 2, Issue 2, February 2012, pp 1-7.
- [12] Dr. Rajnikant Kumar (2016), "Role of National Securities Depository Limited (NSDL) in Growth of Indian Capital Market", International Journal of Multidisciplinary Advanced Research Trends, Volume III, Issue 1(1), 2016, pp 85-108.
- [13] Dr.B.Venu Gopal and Dr. Ch.Rama Prasada Rao (2014), "A Comparative Study on Depository and Depository Participants with Reference ROI and ROA", MITS International Journal of Business Research (MIJBR), July – December 2014, Volume 1, Issue 2, pp 7-15.
- [14] Dr. Pawan Verma and Dr. Shiv Ram Singh Jhajharia, "A Study on Depositories and their Role in the Indian Capital Market", International Journal of Research and Scientific Innovation (IJRSI), December-2015, Volume III Issue I, pp 379-381.

AUTHORS

First Author: Mr.B.Hari Babu, MBA, Assistant Professor, Department of Business Management, VR Siddhartha Engineering College, Vijayawada, Andhra Pradesh, India. Email: bathinihari@gmail.com

Second Author: Prof.B.K.Surya Prakasha Rao, MBA, M.Com, M.Phil, PhD, Professor & Head, Department of Management Sciences, RVR & JC College of Engineering, Guntur, Andhra Pradesh, India. Email: bkspr_rvrjc@yahoo.com

Third Author: Dr.B.Srinivasa Rao, M.Sc, M.Phil, PhD, Associate Professor, Department of Mathematics and Humanities, RVR & JC College of Engineering, Guntur, Andhra Pradesh, India.

Email: boyapatisrinu@yahoo.com

Correspondence Author: Mr.B.Hari Babu, MBA, Assistant Professor, Department of Business Management, VR Siddhartha Engineering College, Vijayawada, Andhra Pradesh, India.

Email: bathinihari@gmail.com
Mobile No: 9985466701