An Analysis of Automated Trading system of Dhaka Stock Exchange Ltd

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Abstract

The research paper is a complete analysis of automated trading system of Dhaka Stock Exchange Ltd. In this research paper I focused on Dhaka stock exchange situation before and after starting electronic trading. I analysis the trading system of Dhaka Stock Exchange Ltd. in aspect of software and hardware. Also I discuss the benefits of electronic trading system over traditional cry out system and security and also reliability of trading in stock market. In the end I proposed a new idea i.e. which is basically current system (MSA APPLICATION) upgradation and it's shown verbally in several process one after another.

Keywords: Automated Trading System, MSA Application, Cry out System, Dhaka Stock Exchange.

1.1 **Introduction**

a stock exchange is a corporation or mutual organization which provides "trading" facilities for stock brokers and traders, to trade stocks and other securities. Stock exchanges also provide facilities for the issue and redemption of securities as well as other financial instruments and capital events including the payment of income and dividends. The securities trades on a stock exchange include: shares issued by companies, unit trusts, derivatives, pooled investment products and bonds. To be able to trade a security on a certain stock exchange, it has to list there. Usually there is a certain location at least for record keeping, but trade is less and less linked to such physical place, as modern markets are electronic networks, which provides them advantages of speed and cost of transactions. Trade on an exchange is by members only. The initial offering of stocks and bonds to investors is by definition done in the primary market and subsequent trading is done in the secondary market. A stock exchange is often the most important component of a stock market. Supply and demand in stock markets is driven by various factors which, as in all free markets, affect the price of stocks.

There is usually no compulsion to issue stock via the stock exchange itself, nor must stock be subsequently traded on the exchange. Such trading is said to be off exchange or over the

counter. This is the usual way that derivatives and bonds are traded. Increasingly, stock exchanges are part of a global market for securities.

1.2 Rational of the study

Here is this study the focus is on –

- Dhaka stock exchange situation before and after starting electronic trading with the help of information technology.
- Analysis of automated trading system of Dhaka stock exchange Ltd. In aspect of software, hardware and network
- Benefits of electronic trading system over traditional cry out system and security and reliable trading in stock market.
- The scope of the study is, discussing the total process of stock market in both traditional papers based on trading and electronic trading. In this study, it has been also proposed a new idea i.e. upgrading online system and it's shown technically with several process one after another.
- To a great sort, this study depends on secondary data like reviews, articles online discussion, forums, Case study and primary data like survey. So the study itself has a scope to move on.

1.3 Objective of the study

- Finding out some difficulties for using cry out system of stock market. For example, time consuming, costly and security problem. These findings tell about the criteria by which people are attracted to electronic trading system.
- Why Dhaka stock exchange switch cry out system to automated system and the common patterns and symptoms of fraud or forgery are tried to figure out – no matter whether the source is.

1.4 Methodology

A historical statistics from DSE publications and different discussion published in online about the benefits of electronic share rather than physical share and analysis of automated trading system of DSE conducted by ICT division. Whole process has been shown the technical perspective.

Reports previous studies on similar topics and some useful statistics are collected from different website and yearly statistics of Dhaka stock exchanges Ltd.

Some useful and tricky information was collected from online live seminars and slide presentation by DSE press conferences and different print and electronic media.

1.5 Limitation

It is vivid and clear from the methodology that this type of study strongly depends on secondary data is a bit rare to find out. The limitation can be listed as follows:

- Due to time constrains I could not be spent satisfactory time to make an in-depth study on such topic.
- Due to some official restriction it was unable to get data from the electronic platform.

2.1 History of DSE

The necessity of establishing a stock exchanges in the East Pakistan was first decided by the government when early in 1952. It was learnt that the Calcutta stock exchanges had prohibited the transaction in Pakistani shares and securities. The provincial industrial advisory council soon thereafter set up an organization committee for the formation of a stock exchanges in Pakistan. A decisive step was taken the second meeting of the organization committee held on the 13th march, 1953. In the cabinet room, Eden building, under the chairmanship of Mr. A. Khaleeli, secretary government of East Bengal, commerce, labor and industrial department at which various aspects of the issue were discussed in detail. Then central government proposal regarding the Karachi stock exchange opening a branch at Dhaka. But they did not find favor with the meeting and felt that East Pakistan should have an independent stock exchange. It was suggested that Dhaka Narayanganj chamber of commerce and industrial should approach its member for purchase of membership cards at Rs.2000 each for the proposed stock exchange. The location of the exchange it was thought should be either Dhaka Narayanaganj or Chittagong. An organization committee was appointed consisting of leading commercial and industrial personalities of the province with Mr. Mehdi Ispahani as the convener on order to organize exchange.

The chamber informed its members and members of affiliated associations of the proceedings of the above meeting, requesting them to intimate whether they were interested in joining the proposed stock exchange. This was followed by a meeting at the chamber of about 100 persons interested in the formation of the exchange on 07.07.1953. The meeting invited 8 gentleman to become promoters of the exchange on with Mr. Mehdi Ispahani as the convener and authorized them to draw up the memorandum and article of association of the exchange and proceed to obtain register under the company's act 1913. It was also decided that membership fee was to be Rs.2000 And subscription rate at 15 per month. The exchange was to consist of not more than 150 members. A meeting of the promoters was held at the chamber on 03.09.1953. When it was decided to appoint or diagram and co., Solicitors to draw up the memorandum and articles of association of the stock exchanges based on the rules of stock exchange existing in other countries and taking into account local condition.

The 8 promoters in incorporated the formation as the East Pakistan stock exchange association ltd on 28.04.1954. As public company on 23.06.1962 the name was AWS revised to East Pakistan

stock exchange ltd. Again on 14.05.1964 the name of East Pakistan stock exchange limited was changed to "Dhaka Stock Exchange Limited".

At the time of incorporation the authorized capital of the exchange was Rs.300000 divided into 150 shares. Of Rs.2000 each and by an extra ordinary general meeting adopted at the extra ordinary general meeting held on 22.02.1964 the authorized capital of the exchange was increased to Tk.500000 divided into 250 shares of TK.2000 each. The paid up capital of the exchange now stood at Tk.460000 divided into 230 shares of TK.2000 each. However 35 shares out of 230 shares were issued at Tk. 80, 00,000 only per share of Tk.2000 with a premium of TK.79, 98,000.

Although incorporated in 1954, the formal trading was started in 1956 Narayanaganj after obtaining the certificates of commencement of business. But in 1958 it was shifted to Dhaka and started functioning at the Narayanaganj chamber building at Mothijheel C/A.

On 1.10.1957 the stock exchange purchase a land measuring 8.75 kattah at 9F Mothijeel C/A form the government and shifted the stock exchange to its own location in 1959.

DSE at glance

1. Incorporated as East Pakistan Stock Exchange Association Ltd	28th April 1954
2. Start of Formal Trading:	1956
3. Renamed as East Pakistan Stock Exchange Ltd.:	23rd June 1962
4. Renamed as Dacca Stock Exchange Ltd.:	13th May 1964
5. Trading Suspended under new State Policy:	16th December 1971
6. Trading Resumed in Bangladesh:	16 August 1976
7. Starting Of All Share price Index calculation:	16th September 1986
8. Share price Indices calculation on basis of IFC Designed formula	1st November 1993
9. Starting of Automated trading:	10th August 1998
10. Starting Of DSE-20 Index calculation:	January 2001
11. Starting Of DSE General Index calculation:	27th November 2001
12. Start of CDS through CDBL	24th January 2004
13. DSE All share price Index (DSI) Re introduced	28th March 2005
14. Regulations 2006 Introduced	12th April 2006
15. DSE Chittagong Office Inaugurated	22nd November 2007
16. DSE Sylhet Office Inaugurated	30th March 2008
17. Book-Building Method Introduced	2010
18. Web Based Trading Software-MSA Plus Introduced	10th June 2012
19. DSE became Correspondent member of World Federation of Exchanges	14th October 2012
20. Starting DSE Broad Index (DSEX) & DSE 30 Index DS30 (by S&P)	28th January 2013
21. Bangla Website Introduced	18th February 2013
22. The Exchanges Demutualization Act 2013 passed by the Parliament	29th April 2013
23. Effective date of the Exchanges Demutualization Act 2013	2nd May 2013
24. Signed an agreement with S&P Dow Jones Indices to launch Shariah Index	25th September 2013

25. Transformed into a Demutualized Exchange:	21st November 2013
26. Starting DSEX Shariah Index (DSES)	20th January 2014
27. Go-live Ceremony for Instant Watch Market Surveillance Software	11th February 2014
28. Signed an agreement with NASDAQ OMX and Flex Trade Systems to provide the world leading trading system	21st March 2014
29. Next Generation Automated Trading System Inaugurated	11th December 2014
30. World Federation of Exchanges Correspondent membership upgraded to affiliated	3rd March 2015
31. Inauguration of Upgraded Version of DSE Official website	12 April 2015
32. Standardization of Circuit Breaker in Trade	30 April 2015
33. Discussion on launching Exchange Traded Fund:	12 August 2015
34. Symposium on "Recent Developments in DSE and Regulatory Reforms for Capital Market":	15 September 2015
35. Bangladesh Capital Market Conference	21 September 2015
36. Launch of Mobile App "DSE INFO":	25 November 2015
37. Inauguration of "DSE-Mobile":	09 March 2016
38. Inauguration of "New Book Building Software":	26 May 2016
39. Achievement of ISO 9001:2008	30 October 2016
40. Agragatir Obhijatray DSE	23 January 2017
41. Memorandum of Understanding between DSE and BSE	12 May 2017
42. DSE has achieved full membership of the WFE	06 June 2017
43. Agreement Signing Ceremony of Strategic Investment	14th May 2018
44. Achievement of ISO 9001:2015	5th July 2018
45. DSE received money from Chinese consortium for selling its 25% Share	3rd September 2018
46. 25% Share of DSE has been transferred to Chinese consortium, DSE's Strategic Partner	4th September 2018
47. Inauguration of DSE SME Platform	30th April 2019

2.2 Legal control

The Dhaka stock exchange is registered as a public limited company and its activities are regulated by its articles of association rules and regulation and bye-laws along with the securities and exchange ordinance, 1969 companies act 1994 and Securities and Exchange Commission act, 1993.

2.3 The major function

- Providing the screen based automated trading of listed securities.
- Settlement of trading (As per settlement of transaction regulations).
- Gifting of share/ granting approval to the transaction/ transfer of share outside the trading system of the exchange (As per listing regulation 42).
- Market administration and control.
- Market surveillance.

- Publication of monthly review.
- Monitoring the activities of listed companies (As per listing regulation).
- Investor's grievance cell (Disposal of complaint bye laws 1997).
- Investor's protection fund (As per investor protection fund Regulations 1999).
- Announcement of price sensitive or other information about listed companies through online.

2.4 Clearing and Settlement

The clearing and settlement module provides the management of trade from the point of entry into the settlement pool trade database until it has been delivered, settled and removed from the settlement pool. It consists of three major business process.

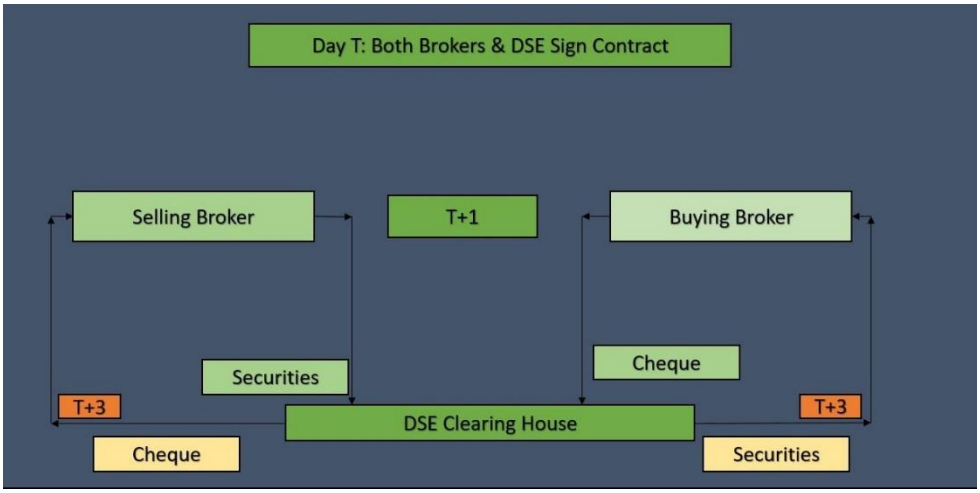
Clearing: Participants trade reporting, affirmation, billing and assigning settlement instructions.

Settlement: The process of overseeing that delivery of all instruments to the buyer and payment of all moneys to the seller has occurred before removing the trade from the settlement instructions.

Regulation 4 of the settlement of stock exchange transaction regulation 1998 has been given effect time to time. A new directive was made by SEC dated 18th march 2003 "Adjusted due position mechanism for settlement of scrip only as provided by regulation 4(1) of settlement of stock exchange transaction regulation, 1998 shall remain suspended from 19th march 2003 until further order"

Here is a complete picture of the settlement system for all of 444 instruments in five (5) group in the four (4) markets.

A Group: Number of instruments are 323 (163+8D+17M+135TB), Here D for Debentures, M is for Mutual funds, and TB is for Treasury Bonds. "A" and "DA" are marked in bases columns for non-demat and demat instruments respectively in our TESA (Trading-software).



The above cycle is valid for A, B, G and N category instruments traded in public, Block and odd-lot market.

B group: Number of instruments are 27 (Trading in public, block and odd-lot market with trade for trade settlement facility through DSE clearing house on T+1, T+3 basis). “B” and “DB” are marked in bases columns for non-demat and demat instruments respectively in our TESA (Trading-software).

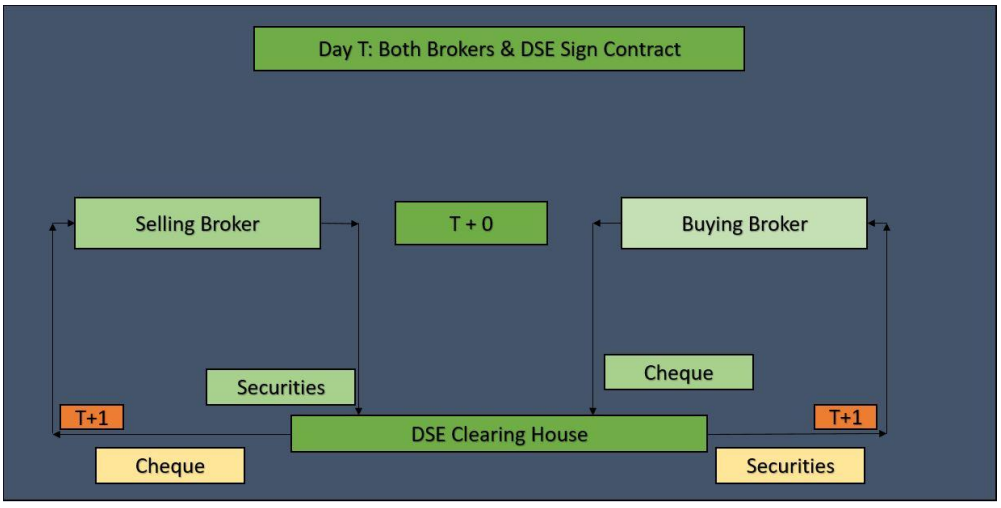
G group: Number of instruments are 0 (Trading in public, block and odd-lot market with trade for trade settlement facility through DSE clearing house on T+1, T+3 basis). “G” and “DG” are marked in bases columns for non-demat and demat instruments respectively in our TESA (Trading-software).

N group: Number of instruments are 11 (Trading in public, block and odd-lot market with trade for trade settlement facility through DSE clearing house on T+1, T+3 basis). “N” and “DN” are marked in bases columns for non-demat and demat instruments respectively in our TESA (Trading-software).

Z group: Number of instruments are 83 (Trading in public, block and odd-lot market with trade for trade settlement facility through DSE clearing house on T+3, T+7 basis). “Z” and “DZ” are marked in bases columns for non-demat and demat instruments respectively in our TESA (Trading-software).

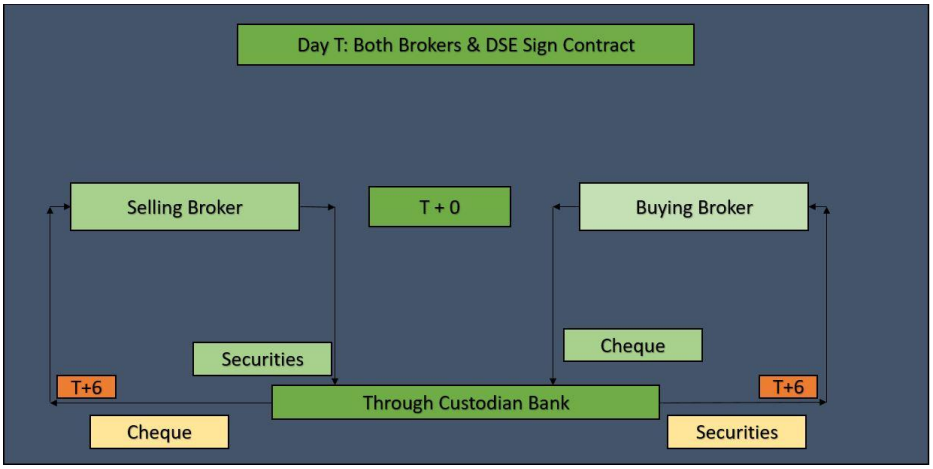
This cycle is valid only for z group instruments traded in public, Block and odd-lot market.

Instruments of all groups traded in spot market



The above cycle is valid for A, B, G, N and Z category instruments traded in spot market.

Instruments of all groups traded in spot market



The above cycle is valid for A, B, G, N and Z category instruments of foreign trade

Remarks:

- If any instruments declared as compulsory then trades of block and odd-lot market of that instruments will be settled like spot market.
- Howla charge. Laga charge, and Tax are always payable to DSE at pay-in date for both buyer and seller trade in public, Block and odd-lot market.
- Howla charge. Laga charge, and Tax are always payable to DSE at T+1 day for both buyer and seller trade in spot market.
- Outside-of-netted settlement for "A" group instruments has been withdraw from 10th December 2006.
- DVP trades are off market settlements (Broker to Broker).

0.1 For A group instruments

Market Name	Trade for trade system	Settlement and settlement period
Public	Trade for trade*	T+1 and T+3
Odd + Block	Trade for trade	T+1 and T+3
Spot	Trade for trade	T+0 and T+1

0.2 For B group instruments

Market Name	Trade for trade system	Settlement and settlement period
Public	Trade for trade*	T+1 and T+3
Odd + Block	Trade for trade	T+1 and T+3
Spot	Trade for trade	T+0 and T+1

0.3 For G group instruments

Market Name	Trade for trade system	Settlement and settlement period
Public	Trade for trade*	T+1 and T+3
Odd + Block	Trade for trade	T+1 and T+3
Spot	Trade for trade	T+0 and T+1

0.4 For N group instruments

Market Name	Trade for trade system	Settlement and settlement period
Public	Trade for trade*	T+1 and T+3
Odd + Block	Trade for trade	T+1 and T+3
Spot	Trade for trade	T+0 and T+1

*As netting system for shares has withdrawn, A, B, G, and N group instrument, member will have to deposit the full shares at the DSE on T+1 after selling the share, In case of purchasing such shares, the buyer will have to deposit the balanced (Netted) money traded in public, block and odd-lot market at the DSE on T+1.

0.5 For Z group instruments

Market Name	Trade for trade system	Settlement and settlement period
Public	Trade for trade*	T+1 and T+9
Odd + Block	Trade for trade	T+1 and T+9
Spot (Before book-closer)	Trade for trade	T+0 and T+1

** Under the trade for trade settlements system, member will have to deposit the full money at the DSE on T+1 after purchasing the shares, In case selling such shares, the seller will have to deposit the full shares at the DSE on T+9.

** Under the trade for trade settlements system, member will have to deposit the full money at the DSE on T+3 after purchasing the shares, In case selling such shares, the seller will have to deposit the full shares at the DSE on T+3.

2.5 Vision of DSE

Dhaka Stock Exchange Ltd. Country's prime and oldest capital market, has started its journey in 1954 and to reach a new height it has set another visionary target DSE vision 2013 (a 5-year plan)

Through adopting this mission and target-based approach DSE virtually heralds its arrival into the new era of serving the country's economy.

Market Based Target

- To increase market capitalism from US $13 billion to US $30 billion.
- Market capitalization to GDP ratio shall increase to 35 percent from its present contribution of 19.74 per cent.
- Daily trade volume to increase from Taka 300 core to Taka 2,000 crore.
- Trading facilities to expand across the country
- Introduction of financial Derivatives.
- Fixed income investment market to be activated.
- Introduction of internet trading.
- 3 million families to integrate with the trading.

Internal vision of DSE

- To set up true on-line National clearing house.
- Review necessary rules and regulations to match vision 2013.
- Strengthening investor's awareness program.

SEC-DSE and Govt. collaboration to achieve targets set as vision 2013 (5-year plan) concerned efforts of DSE, SEC and Govt.

3.1 What is Information Technology?

Information Technology (IT) as defined by the information technology association of America (ITAA) is "The study, design, development, implementation, support, or management of computer- based information system, particularly software applications and computer hardware. "IT deals with the use of electronic computers and computer software to convert, store, protect, process, transmit, and securely retrieve information.

Today, the term information has ballooned to encompass many aspects of computing and technology and the term has become very recognizable. IT professional perform a variety of duties that range from installing applications to designing complex computer networks and information databases. A few of the duties that IT professionals perform may include data management, networking, engineering computer hardware, database and software design, as well as the management and administration of entire system. Information technology is starting to spread farther than the conventional personal computer and network technology, and more into integration of other technologies such as the use of cell phones, televisions, automobiles and more which is increase the demand for such jobs.

When computer and communication technologies are combined, the result is information technology or InfoTech. Information technology is a general term that describes any technology that helps to produce, manipulate, store, communicate, and disseminate information.

3.2 Definition

We use the term information technology or IT to refer to an entire industry. In actuality, information technology is the use of computers and software to manage information. In some companies, this is referred to as management information services or simply as information services. The information technology department of a large company would be responsible for storing information, protecting information, processing the information, transmitting the information as necessary, and later retrieving information as necessary.

In a very broad sense, the term information system is frequently used to refer to the interaction between people, process, data and technology. In the sense, the term is used to refer not only to the information and communication technology and organization uses, but also to the way in which people interact with this technology in support of business process.

Some make a clear distinction between information system, ICT and business processes. Information system are distinct from information technology in that an information system is typically seen as having an ICT component. Information system are also different from business processes. Information system help to control the performance of business processes.

Alter argues for an information system as a special type of work system. A work system is a system in which humans and machines perform work using resources (including ICT) to produce specific products or services for customers. An information system is a work system whose activities are devoted to processing (capturing, transmitting, storing, retrieving, manipulating and displaying) information.

Part of the difficulty in defining the term information system is due to vagueness in the definition of related terms such as system and information. Beynon-Davies argues for clearing terminology based in systemic and semiotics. He defines and information system as an example of a system concerned with the manipulation of signs. An information system is a type of socio-technical system. An information system is a mediating construct between actions and technology.

As such, information system inter-relate with data system on the hand and activity systems on the other, AN information system is a form of communication system in which data represents and are processed as a form of social memory. An information system can also be considered a semi-formal language which supports human decision making and action.

Information and communication technology allow to participate in a rapidly changing world in which work and other activities are increasingly transformed by access to varied and developing technologies.

ICT tools can be used to find, explore, analyze, and present information responsibly and without discrimination. ICT can be employed to give users quick access to ideas and experiences form a wide range of people, communities and cultures.

3.3 History of information Technology

The term “information technology” evolved in the 1970. Its basic concept, however, can be traced to the World War II alliance of the military and the industry in the development of electronics. Computers, and information theory. After the 1940s, the military remained the major source of research and development funding for the expansion of automation to replace manpower with machine power.

Since the 1950s, four generations of computers have evolved, each generation reflected a change to hardware of decreased size but increased capabilities to control computer operations. The first generation used vacuum tubes, the second used transistor, the third used integrated circuits and the fourth used integrated circuits on a single computer chip. Advances in artificial intelligence that will minimize the need for complex programming characterize the fifth generation of computers, still in the experimental stage.

The first commercial computer was the UNIVAC I, developed by John Eckert and John W. Mauchly in 1951. It was used by the census bureau to predict the outcome of the 1952 presidential election. For the next twenty-five years, mainframe computers were used in large corporation to do calculation and manipulate large amounts of information stored in databases. Supercomputers were used in science and engineering, for designing aircraft and nuclear reactors, and for predicting worldwide weather patterns. Minicomputers came on to the scene in the early 1980 in small business, manufacturing plants, factories.

In 1975, the Massachusetts Institute of Technology developed microcomputers. In 1976, Tandy Corporation’s first Radio Shack microcomputer followed; the apple microcomputer was introduced in 1977. The market for microcomputers increased dramatically when IBM introduces the first personal computer in the fall of 1981. Because of dramatic improvements in computer components and manufacturing, personal computers today do more than the largest computers of the mid-1960s at about thousands of the cost.

Computers today are divided into four categories by size, cost and processing ability. They are supercomputers, mainframe, minicomputer, and microcomputer, more commonly known as a personal computer. Personal computer categories include desktop, network, laptop, and handheld.

Although long-term investors and institutional investors consider a company’s fundamentals before investing, the share price of a company often does not correspond to the fundamentals – which can represent enormous investment opportunities. A company’s long-term growth is driven primarily by fundamentals, while a company’s share price can be driven by short-term news and investor sentiment, which can be extremely volatile. Every investor must consider a company’s fundamentals before investing into stock if you want to gain stable returns over the long term.

3.4 Information Technology's Role Today

Everyday. People use computers in new ways. Computers are increasingly affordable; they continue to be more powerful as information-processing tools as well as easier to use.

Computers in Business

One of the first and largest application of computers is keeping and managing business and financial records. Most large companies keep the employment records of all their workers in large databases that are managed by computers programs. Similar programs and databases are used in such business function as billing customers, tracking payments received and payments received and payments to be made, and tracking supplies needed and items produced, stored, shipped, and sold. In fact, practically all the information companies need to do business involves the use of computers and information technology.

On a smaller scale, many business have replaced cash register with point-of-sale (POS) terminals. These POS terminals not only print a sales receipt for the customer but also send information to a computer database when each item is sold to maintain an inventory of items on hand and items to be ordered. Computers have also become very important in modern factories. Computer-controlled robots now do tasks that are hot, or hazardous. Robots are also used to do routine, repetitive tasks in which boredom or fatigue can lead to poor quality work.

Computers in medicine information technology plays an important role in medicine. For example, a scanner takes a series of picture of the body by means of computerized axial tomography (CAT) or magnetic resonance imaging (MRI). A computer then combines the picture to produce detailed three-dimensional images of the body's organs. In addition, the MRI produces images that show changes in body chemistry and blood flow.

Computers in science and engineering using supercomputers, meteorologists predict future weather by using a combination of observations of weather conditions from many sources, a mathematical representation of the behavior of the atmosphere, and geographic data.

Computer-aided design and computer aided manufacturing programs, often called CAD/CAM, have led to improve products in many fields, especially where tend to be very detailed. Computer programs make it possible for engineers to analyze designs of complex structures such as power plants and space stations.

Integrated information systems with today's sophisticated hardware. Software, and communications technologies, it is often difficult to classify a system as belonging uniquely to one specific application program. Organization increasingly are consolidating their information needs into a single, integrated information system. One example is SAP, a German software package that runs on mainframe computers and provides an enterprise-wide solution for information technologies. It is a powerful database that enables companies to organize all their data into a single database, then choose only the program modules or tables they want. The freestanding modules are customized to fit each customer's needs.

Software

Computers software consists of the programs, or lists of instruction, that control the operation of a computer. Application software can be used for the following purposes.

- As a productivity/business tool.
- To assist with graphics and multimedia projects.
- To support household activities, for personal business, or for education.
- To facilitate communication.

Productivity software is designed to make people more effective and efficient when performing daily activities. It includes applications with such as word processing, spreadsheets, database, presentation graphics, personal information management, graphic and multimedia, communications, and other related types of software. Word processing software is used to create documents such as letters, memos, reports, mailing labels, and newsletters. This software is used to create attractive and professional looking documents that are stored electronically, allowing them to retrieved and revised. The software provides tools to correct spelling and grammatical mistakes, permits copying and moving text without rekeying, and provides tools to enhance the format of documents. Electronic spreadsheet software is used in business environments to perform numeric calculations rapidly and accurately. Data are keyed into rows and columns on a worksheet, and formulas and functions are used to make fast and accurate calculations. Spreadsheets are used for "What-if" analyses and for creating charts based on information in a worksheet.

A database is a collection of data organized in manner that allows access, retrieval and use of that data. A database management system (DBMS) is used to create a computerized database, add, change, and delete data, sort of retrieve data from database, and create form and reports using the data in the database. Presentation graphics software is used to create presentation, which can include clip art images, pictures video clips, and audio clips as well as text. A personal information manager is a software application that includes an appointment calendar, address book, and notepad to help organize personal information such as appointments and task list. Engineers, architects, desktop publisher, and graphic artist often use graphics and multimedia software such as computer-aided design, desktop publishing, video and audio entertainment, and web page authoring. Software for communicating includes groupware, email, and web browsers.

Hardware

Information processing involves four phases:

1. Input
2. Process
3. Output
4. Storage

Input devices
Input devices include the keyboard, pointing devices, scanners and reading devices, digital cameras, audio and video input devices, and input devices for physically challenged users. Input devices are used to capture data at the earliest possible point in the workflow, so that the data are accurate and readily available for processing.

Processing
After data are captured, they are processed. When data are processed they are transformed from raw facts into meaningful information. A variety of processes may be performed on the data, such as adding, subtracting, dividing, and multiplying. Sorting, organizing, formatting, comparing, and graphing. After processing, information is output, as a printed report, for example, or sorted as files.

Output devices
Four common types of output are text, graphics, audio, and video, once information has been processed, it can be listened to through speakers or a headset, printed onto paper, or displayed on a monitor. An output device is any computer component capable of conveying information to user. Commonly used output devices include display devices, printers, speakers, headset, data projectors, fax machines, and multifunction devices. A multifunction device is a single of piece of equipment that looks like a copy machine bit provides the functionality of a printer, scanner, copy machine, and perhaps a fax machine.

Storage device
Storage devices retain items such as data, instructions, and information for retrieval and future use. They include floppy disks or diskettes, hard disks, compact discs (both read-only and disc-recordable), tapes, pc cards, smart cards, microfilm, and microfiche.

Information and data processing
Data processing is the input, verification, organizing, storage, retrieval, transformation, and extraction of information of data. The term usually associated with commercial applications such as inventory control or payroll. An information system refers to business applications of computers and consists of the databases, application programs, and manual and machine procedures and computer systems that process data. Databases store the master files of the business and its transaction files. Application program provide the data entry, updating, and query and report processing. Manual procedures document the workflow, showing how the data are obtained for the input and how the system output is distributed. Machine procedures instruct the computers how to perform batch-processing activates, in which the output of one program is automatically fed into another program. Daily processing is the interactive, real-time processing of transactions. Batch-processing programs are run at the end of the day (or some other period) to update the master files that have not been updated since the last cycle. Reports are printed for the cycle's activities. Periodic processing of an information system involves updating of the master files – adding, deleting, and changing, the information about customers, employees, vendors, and products.

4.1 Dematerialization Definition

Dematerialization is the process of converting physical shares into an electronic form. Shares once converted into dematerialized form are held in a demat account.

Dematerialization is the process by which physical share certificates of an investor are converted to an equivalent number of securities in electronic from and credited into the investor's account maintained with his/her depository participant (DP).

It's like having a bank account where instead of money, you hold securities in account.

Dematerialization securities ('Demat in short') are securities that are not on paper and certificate to that effect do not exist. They exist in the form of entries in the book of depositories. Essentially, unlike that traditional method of processing a share certificate to the effect of ownership of shares, in the demat system, the shares are held in dematerialized form. This system works through a depository who is registered with the Securities and Exchange Commission (SEC).

4.1.1 Background

Bangladeshi capital market has seen unprecedented boom in its activity in the last 15 years in terms of number of stock exchanges, listed companies, trade volumes, market intermediaries, investor population, etc. However, this surge in activity has brought with it numerous problems that threaten the very survival of the capital markets in the long run, most of which are due to the large volume of paper work involved and paper based trading, clearing and settlement.

Until the late nineties, the common man kept away from capital market and thus the quantum of funds mobilized through the market was meager. A major problem, however, continued to plague the market. The Bangladeshi markets were drowned in shares in the form of paper and hence it was problematic to handle them. Fake and stolen shares, fake signatures and signature mismatch, duplication and mutilation of shares, transfer problems, etc. the investors were scared and were under compensated for the risk borne by them. The century old system of trading and settlement requires handling of huge volumes of paper work. This has made the investors, both retail and institutional, wary of entering the capital market. However, lack of modernization become a hindrance to growth and resulted in creation of cumbersome procedures and paper work.

However, the real growth and change occurred from mid-nineties in the wake of liberalization initiatives of the government. The reforms in the financial sector were envisaged in the banking sector, capital market, securities market regulation, mutual funds, foreign investments and Governments control. These institution and stock exchanges experienced that the certificates are the main cause of investor's disputes and arbitration cases. Since the paper work was not matching the rapid growth so there was a need for a better system to ensure removal of these impediments.

Governments of Bangladesh decide to set up a fully automated and high technology based model exchange that could offer screen based trading and depositories as the ultimate answer to all such reforms and eliminate various bottlenecks in the capital market, particularly, the clearing and settlement system in stock exchange. A depository in very simple terms is a pool of pre-verified shares held in electronic mode which offers settlement of transactions in an efficient and effective way.

4.1.2 Meaning of Dematerialization

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. Dematted securities do
Not have any certificate numbers or distinctive numbers and are dealt only in quantity, i.e., the Securities are replaceable.

Investors can dematerialize only those certificates that are already registered in their names and are in the list of securities admitted for dematerialization. These are: shares, scrips, stocks, bonds, debentures, stock or other marketable securities of a like nature in or of any incorporated company or other body corporate, units of mutual funds, rights under collective investment schemes and venture capital funds, commercial paper, certificate of deposit, securities debt, money market instruments and unlisted securities, underlying sharing of American Depository Receipts and Global Depository Receipts issued to non-resident holders. Dematerialization is the process of converting physical holdings into electronic form with the depository where in the share certificates are shredded and corresponding entry of the number of shares is done in the opened with the depository.

The securities held in dematerialized from are fungible; that is, they 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.

Following requisites are necessary for dematerialization of securities:

1. Investors should have a depository account.
2. Securities should be from the eligible list of securities issued by the depositories.
3. Securities must be in the name of the account holders and owned by him.
4. Separate demat requisition form is required for each issuer company.
5. Should be signed by all the holders so as to match specimen signature.

4.1.3 Process of demating shares

The process of opening an account with a depository participant is similar to the opening of a bank account. One has to open an account with a depository participant (DP) by filling up an account opening form and signing a “participant-client agreement”. Then a unique client ID number will be given, which must be quoted in all correspondence with the DP.

Thereafter, one has to fill up and submit a dematerialization request form provided by the DP duly signed by all the holders and surrender the physical shares intended to be dematted to the DP.

The DP upon receipt of the shares and the DRF will issue an acknowledgement and will send an electronic request to the company/Registers and transfer agents of the company through the depository for confirmation of demat. The DP will simultaneously surrender the DRF and the shares to the company/Registers and transfer agents of the company with a covering letter requesting the company to confirm demat.

The registers and transfer agents of the company, after necessary verification of the documents received from the DP, will cancel the physical shares and confirm demat to the depository. This confirmation will be passed on the depository to the DP which holds investors account. After receiving this confirmation from the depository, the DP will credit investors account with the number of shares dematerialized. The DP will hold the shares in the dematerialized form thereafter on behalf of the investor. And hence one becomes the beneficial owner of these dematerialized shares.

When the beneficial owner submits the shares for dematerialization, his DP will deface the share certificates with the stamp “SUPPENDERD FOR DEMATERIALISATION”. This ensures that shares are not lost in transit or misused till credit is received in demat account.

4.2 objective of demat system

Bangladesh has adopted this system in which book entry is done electronically. It is the system where no paper is involved. Physical form is extinguished and shares or securities are held in electronic mode. Before the introduction of the depository system the process of sale, purchase and transfer of shares was a huge problem and the safety perspective was zero.

4.3 Understanding how a demat account functions

A demat account is very similar to a bank account. In bank accounts you electronically hold money, whereas in demat accounts you electronically hold shares. All buying and selling of shares happens through a demat account.

With growing financial awareness, more and more people ow want to dabble in the share market. To do this, one should understand the basic requirements to trade in shares.

A company enlisted in a stock exchange, is under obligation to offer the securities in both physical and dematerialized mode. As the name suggests physical securities mean actual certificates giving information about the shares of a company owned by a person. In the same manner, Dematerlisation is the process of converting physical shares (share certificates) into an electronic form. Shares once converted into dematerialized form are held in demat account. Today, almost all of the shares trading happen using the demat mode of shares.

4.4 The benefits of opening a demat account

Fill up lengthy forms, stand in ques for hours in the bank to deposit the money and thereafter wait for acceptance letter by the firms. These were some of the steps to be taken to grab hold of the few shares of the reputed companies listed in the stock exchange. There were other problems also, like fake shares, theft or loss of shares certificates and untimely payment. Demat account eliminated the endless paperwork and delays and allowed investors to buy, sell and transact shares in a safer secure and convenient manner. With demat, not only will trading become much easier, but the risks of settlement will be reduced to near zero for both the long-term and the short-term investor. There will be no loss through theft, mutilation or forgery, no bad deliveries, and immediate transfer of shares. This is truly a revolution in the offing with soaring volumes in future and greater liquidity.

Demat has the following advantage:

1. A safe and convenient way of holding securities (equity and debt instruments both).
2. Securities can be transferred at an instruction immediately.
3. Increased liquidity, as securities can be sold at any time during the trading hours (between 10:00 AM to 2:00 PM on all working days), and payment can be received in a very short period of time.
4. No stamp duty charges.
5. It eliminates risks associated with forgery, counterfeiting and loss due to fire, theft or mutilation and reduces brokerage charges.
6. Pledging of securities in a short period of time.
7. Reduced paper work and transaction cost.
8. No add lot problem, even one share can be sold.
9. Nomination facility available.
10. Any change in address or bank account details can be electronically intimated to all companies in which investors holds any securities, without having to inform each of them separately.
11. The DP itself, so no need to correspond with the companies, transfers securities.
12. Shares arising out of bonus, split, consolidation, merger etc. are automatically credited into the demat account of the investor.
13. Shares allotted in public issues are directly credited into demat account of the applicants in quick time.
14. Demat system not only provides smooth and hassle-free way of dealing in shares it also does away with all the associated tensions.
15. Bad deliveries are minimized.
16. No stamp duty on transfer.
17. Less paper work (reduction in huge volumes).
18. Faster settlement cycles and payouts.
19. Postal delays and loss of shares in transit is prevented.

20. The demat system totally avoids the associated heartburns arising from theft of shares, mutilation, forgery, counterfeit shares and loss of shares during a natural calamity.
21. Reduction in transaction cost.
22. Nomination facility.
23. Transmission of securities is done by DP eliminating correspondence with companies,
24. Holding investment in equity and debt instruments in a single account.
25. It enables quick ownership of securities resulting in increased liquidity and makes the process like pledging and hypothecation of shares much easier.
26. It reduces time taken to stock trading drastically avoiding problems encountered in case of physical shares like signature mismatch, postal delays and loss of certificates in transit.

4.5 Benefit to different groups:

4.5.1 Benefit to the country

The depository system helps the capital market to be more liquid, attracting more foreign investors and is in compliance with international standards as it creates efficient and risk-free trading environment.

It minimizes the settlement risks and fraud in carrying out transaction in capital markets and thus can restore faith of investors in capital markets. It helps to reduces delay in trading practices creating investors friendly atmosphere in the capital markets.

4.5.2 Benefit of the company

The depository system helps in reducing cost of new issues due to less printing and distribution cost. It increases the efficiency of the registers and transfer agents and the secretarial department of the company. It provides better facilities for communication and timely services with shareholders, investors etc.

4.5.3 Benefit to the investors

The depository system reduces risks involved in holding physical certificated, e.g. loss, theft, mutilation, forgery, etc.

- It ensures transfer settlements and reduces delay in registration of shares.
- It ensures faster communication to investors.
- It helps avoid bad delivery problem due to signature difference, etc.
- It ensures faster payment on sale of shares
- No stamp duty is paid on transfer of shares.
- It provides more acceptability and liquidity of securities.

4.5.4 Benefit to brokers

- The depository system reduces risk pf delayed settlement
- It ensures greater profit due to increase in volume of trading
- It eliminates chances of forgery- bad delivery.
- It increases overall of trading and profitability.
- It increases confidence in investors.

4.6 Disadvantages of electronic share

The disadvantage dematerialization of securities can be summarized as follows:

Trading in securities may become uncontrolled in case of dematerialized securities. It is incumbent upon the capital market regulator to keep a close watch on the trading in dematerialized securities and see to it that trading does not act as a detriment to investors. The role of key market players in case of dematerialized securities, such as stock-brokers, needs to be supervised as they have capability of manipulating the market.

Multiple regulatory frameworks have to be confirmed to, including the depositories act, regulations and the various bye laws of various depositories. Additionally, agreements are entered at various levels in the process of dematerialization. These may cause anxiety to the investor desirous of simplicity on terms of transaction in dematerialized securities.

However, the advantages of dematerialization outweigh its disadvantages and the changes ushered in by SEC and the Government in terms of compulsory dematerialization of securities is important for developing the securities market to a degree of advancement. Freely traded securities are an essential component of such an advanced market and dematerialization address such issues and is a step towards the advancement of market.

4.7 Central depository Bangladesh Limited (CDBL)

Dhaka Stock Exchange with the help of CDBL (Central Depository Bangladesh Limited) do the process of automated trading as demat stock is maintained by CDBL. Here is a brief description of CDBL

CDBL

Central Depository Bangladesh Limited is public limited company that operate and maintain the central depository system of electronic book entry, recording and maintaining securities accounts and registering transfer of securities; changing the ownership without any physical movement or endorsement of certificates and execution of transfer instruments, as well as various other investor services including providing a platform for the secondary market trading of treasury bills and Government bonds issues by the Bangladesh Bank.

Central depository Bangladesh limited was incorporated on 20th august 2000 sponsored by the country's nationalized bank, Investment Corporation of Bangladesh, private commercial banks,

foreign banks, merchant banks, publicly listed companies, insurance companies and Dhaka and Chittagong stock exchanges with the collaboration of the Asian development bank. Legal basis for CDBL's operations is set out in depository's act 1999, depository's regulations 2000, depositories (USER) regulations 2003, and the CDBL by-laws.

CDBL's core services cover the efficient delivery, settlement and transfer of securities through computerized book entry system i.e. recording and maintaining securities accounts and registering transfer of securities; changing the ownership without any physical movement or endorsement of certificates and execution of transfer instruments. The central depository system operated by CDBL has proved to be a convenient and reliable means to settle securities transaction. The investor has been frees from the hassles of physical handling of certificates, error in paper work and the risks associated with damaged, lost and forged certificates.

CDBL's operation are carried out in its main data center which is linked to a remote disaster recovery center operating as a backup with data update taking place simultaneously. Network connectivity to depository participants, issuers, banks, stock exchanges and Bangladesh bank is through front end interfaces accessed by WAN link and dial-up telephone lines.

Live operation of the CDS commenced with the inauguration of the electronic government securities registry by the governor of Bangladesh bank on 20th October 2003. The EGSR also serves as a platform for secondary market sale/purchase as well as repo transaction of government securities to commercial banks linked online to the CDS. Equity market securities dematerialization process i.e. eliminating physical certificate as record of security ownership by substituting it as an electronic book entry record in the CDS commenced on 24th January 2004 with the entry of square pharmaceuticals limited into the CDS.

Since 14th February 2003 CDBL has been acting as a national agency for international securities identification number (ISIN) as partner in Bangladesh of association of national numbering agencies (ANNA) based on Germany. CDBL is a member pf Asia pacific CSD group and an associate member of South Asian Federation of Exchanges (SAFE).

Once a security is eligible for holding in CDBL then all the stock exchange trade must be settled through the depository, this means that sellers must have securities in the depository (i.e. the securities must have been dematerialized) before the broker can execute the sale order.

To dematerialize securities investors should take their share certificates to a participant. The participant will request the investor to complete a dematerialization request from. The participant will take the documents to the issuer who (if the certificate is valid) will update the register by moving the securities form the certificated portion of the register to the depository portion. The issuer will then confirm the dematerialization to the depository will credit the securities to the investor's account.

The participant will be able to see the balances in all the accounts that they control though a computer link with CDBL. Investors do not need to wait until they wish to sell to dematerialize

their holdings. Once a security is eligible, investors may open accounts and lodge securities at any time.

5.1 Automating trading system

DSE had started automating trading system for demat share, ICT division of DSE is a well-organized to do this completely and accurately. The whole process done by ICT division has been discussed below:

5.1.1 Preamble

Globally the developments in information and communication technologies have created a new instance in the securities market operations. Stock exchanges all over the world have realized the potentially of ICT and inclined to the electronic trading system. It was understood by DSE that technology would ensure transparency, timeliness and satisfaction in customer service. Considering those DSE introduced Automated Trading System on the 10th august 1998. In other words, the trading floor moved right into the member's office premises where an investor started to place buy sell order.

Considering market growth the Automated Trading System was an upgraded two times. The recently upgraded Automated Trading System, started from 21st December, 2008 is capable to handle 1, 50,000 trades per day as well as 3000 trading workstations.

5.1.2 Hardware

DSE Automated Trading System (HP nonstop S7804) is running on fault tolerant, high available, scalable and maintainable mainframe server. Previously DSE established the TANDEM nonstop K204 system on September 1998 and on august 2005 it was replaced with highly scale able HP nonstop.

DSE upgrades the trading system again on 21st December, 2008. The existing HP nonstop S7804 server is highly fault tolerant to the fact that no single component failure will halt the system. Its constituent parts are hot swappable, and upward compatible; components can be added or removed while the system is running and any compatible new upgraded will work with the system.

All disk drivers are mirrored so, if any of the disk crashes the exact copy of the data is available at online. Moreover the connecting path for every disk whether it is primary or mirror is also redundant. In every case, minimum two peripheral devices exist. All the component are working active-load balancing procedures. To ensure better power quality first ensured high end UPS's with long durable backup capability, two instant backup generation and other electrical devices.

5.1.3 Network

All the member (230 members) server application (MSA) are connected with NonStop HP S-series server through either DSE Lan or Wan connectivity. Each member has one or more Trader workstation (TWS).

The TWS's are being connected to the trading server via respective MSA through LAN and WAN connection. DSE outsourced MetroNet Ltd, DNS Ltd, X-Net Ltd, Dhaka Com Ltd, Ranks ITT, Link-3, Royal Green Online Ltd, etc. Network Service Providers (NSP under WAN expansion project).

Now a days members can established a main office or branch offices to their remote location and can trade smoothly by using different media ADSL, optical fiber and radio link form Dhaka and other important cities such as gazipur, narayanganj, comilla, hobiganj etc.

In case of trade interruption due to serious hardware, software network failure or telecommunication disruption at the brokerage houses, there is a provision to allow traders to trade at DSE contingency Trading floor.

5.1.4 System Software

The system software is HP proprietary nonstop KERNEL and includes the database as part of the operating system thereby eliminating the layer typically found in most database Management system. Nonstop SQL handles the database functionalities. Which is simply a different operational session for the operating system. The proprietary nature of the system software arguably enhances system security.

The system software treats all its hardware resources as objects and is thus entirely message driven. This then allows application software to be deployed using client/ server architecture providing shared data processing between the central server and the user workstation. The central trading system resides in stock exchange premises, which is running 24 hours in a day and 365 days in a year.

5.1.5 Application software

The application, which runs in DSE form trading is called TESA (The electronic securities architecture). TESA has two parts: MSA (Member's server application) and TWS (Trader workstation). MSA is the gateway between the traders and the stock exchange, which manages all the transactions and database between the traders and the trading engine.

TWS is the front-end application closer to investors, where they can submit buy/sell orders for their desired securities. TESA is the trading software based on HP proprietary O/S and DBMS.

It has developed in view of distributed database system. In the client site it is being using SQL as local database. Trading software is MSA and TWS. In STSD (Signal trader single database) system both MSA and TWS are running on windows 2K professional / XP professional workstation and for MTSD (Multiple trader single database) MSA install in a windows in a windows 2K server and TWS are in different windows 2K professional / XP professional workstation using member in house LAN.

5.2 TESA architecture

TESA software is built for the global securities markets. It uses fault tolerant computers, intelligent workstation and client / server design techniques. This provides co-operative processing, high message integrity, condition operation and fully automatic recovery. This co-operative mechanism enables very high speed processing which is essential for today's electronic markets. TESA\s application programmatic interfaces is the gateway to the TESA system form the outside world. All external devices connect through the API. The API provides the translation between external devices and internal processes. This means that a new process does not need to be written to support each new device, only the API needs to be modified.

5.3 Solution Benefits

The TESA application suite derives significant advantages from being implemented on the HP nonstop platform. The HP nonstop customers have benefited from these advantages.

Fault tolerance: One of the most important automation requirements for any stock exchange system is continuous system availability. With most system fault tolerance is created at the application level. Fault tolerance is a fundamental design feature of the HP nonstop architecture.

Data integrity: Data integrity is an integral feature of HP architecture. TESA employ's standard HP tools to achieve exceptional data integrity.

Scalability: The ability of an exchange to accommodate extraordinary increases in transaction volumes without loss of its capital investment in automation is very important. The HP nonstop server is massively scalable sue to parallel processors.

5.4 TESA functional model

An overview of the TESA functional model

Client/server: TESA's client/server architecture enables an efficient allocation of computing resources and provides easily modified user-friendly interfaces. TESA workstation operate under Windows 95 and can function either as servers on a broker's network or as workstation. These are used to perform trading and settlement activity by the brokers.

5.5 Principal Function of TESA

Market information:

- Suppling all market information needed to formulate the buy and sell decisions.

Order management:

- Accept, validate and store orders and quotes from broker workstation or systems.

Order execution:

- Automatically executes orders when buy and sell prices match.

Trade Reporting:

- Trade execution reports are provided to each trade participant, to the settlement system or the depository or the market.

Index calculation:

- Calculates and publishes market indices (DSE general index and weighted average index).

Market access:

- Provide exchange members with efficient affordable GUI based tools for accessing the market.

5.6 Markets

There are four types of market and they are:

Public market: In this market instruments are traded in normal volume.

Spot market: Instruments are traded in normal volumes under corporate action if any.

Odd lot market: Odd lots of all instruments are trade in this market.

Block market: Instruments are traded in bulk volume.

5.7 Trading session

TESA conducts trading in 5 phases

Enquiry

In this session brokers can login to the system. NO order will be submitted in this session. No trade will be executed. Only previous orders can be withdrawn to this session.

Opening

The opening is a pure, single-price auction. All buy and sell orders are compared and calculate the open-adjust price. No trades will be execute in this session.

Continuous trading

During this phase, participants enters orders and immediate execution or for inclusion in the book. Automation matching and execution takes place base don best price / first in, first out trading rules

Closing

Closing prices are calculated are disseminated to market participants.

Enquiry

Market will be closed in this sessions and other facilities like the previous enquiry session.

5.8 Market control

The market control workstation allows the exchange administrative staff to control the operation of the market e.g.

Session control: opening and closing the market via interactive control or by present timers.

Validation parameters: setting and viewing parameters that control the trading engine validation e.g. tick size, circuit breaker, circuit filter, market lot, price protection percentage.

Messaging: Allows the dissemination of company announcement data and general market administrative massages.

5.9 Market information

Market information is a real-time market data system. It collects, manages, generates and stores information relating to trade instruments and issuing companies. Markets information is responsible for,

Collecting real- time market information: Bids, offers, last sale, book and other data are gathered via trading engine. It supports TESA's automated and manual trading modules and can process the trades of external and off-market system.

Collecting company information: All information supplied by the listed companies are maintained on the TESA database.

Generating Market statistics: TESA generates market indices on a real time basis. It generates other statistical information such as price.

5.10 Broker support

Research and enquiry: This module provides broker's access to the local broker and TESA databases for enquires and research purpose.

- Public order book.
- Broker order book.

The multi window environment allow users simultaneously view orders, market and trades, broker support offers stock exchange members two configuration; standalone and multi-user. Both configuration maintain a database consisting of information generated by the TESA server and the local system.

5.11 Surveillance

The main objective of the surveillance function of the exchange is to promote market integrity in two ways

- By monitoring price and volume movements as well as by detecting potential market at a nascent stage, with a view to minimizing the ability of the market participants to influence the price of the scrip/scrips in the absence of any meaningful information.
- By managing default risk by taking necessary actions timely.

Market abuse is a broad term which includes abnormal price/ volume movements, artificial transaction, false or misleading impression, insider trading, etc. In order to detect aberrant behavior/ movement, it is necessary to know the normal market behavior.

The department carries out investigation, if necessary, based on the preliminary examination/ analysis and suitable action are taken against members involved based on the investigation.

All the instruments traded in the market come under the surveillance umbrella of DSE

Surveillance activities at the exchanges are divided broadly into two major segments.

- Price monitoring: price monitoring is manly related to the price movement/ abnormal fluctuation in prices or volumes etc.
- Position monitoring: The position monitoring relates mainly to abnormal position of members etc. in order to manage default risk.

5.11.1 Price monitoring

The functioning of the price monitoring is broadly divided into following activities

5.11.2 On-line surveillance

One of the most important tools of the surveillance is the on-line real time surveillance system with main objectives of detecting potential market abuse at a nascent stage to reduce the ability of the market participants to unduly influence the price ad volumes of the scripts traded at the exchanges, improve the risk management system and strengthen the self-regulatory mechanism at the exchange. The system provides facility to access trades and orders of members.

5.11.3 Off-line surveillance

The off-line surveillance system compromise of the various reports based on different parameters and security thereof

- High/Low difference in prices.
- % change in price over week/fortnight/month.
- Top N scrips by turnover over a week/fortnight/month.
- Top N scripts by volume over a week/fortnight/month.
- Trading in infrequently traded scripts
- Scripts hitting new high/ low etc.

The surveillance actions or investigations are initiated in the scripts identified from the above-stated reports.

5.11.4 Investigations

Conducting in depth investigations based on preliminary enquiries/analysis made into trading of the scrip. In case of irregularities observed necessary action are initiated or investigation case forward to SEC, if necessary through CEO.

5.11.5 Surveillance actions

- Warning to members the department may issue verbal/ written to member's when market irregularities on the scrip suspected.
- Imposition of penalty/ suspension
  The department, through the CEO, imposes penalty or suspend the members who are involved in market irregularities, based on the input/ evidence available from investigation report.

5.11.6 Rumor verification

- Liaising with compliance officers of companies to obtain comments of the company on various price sensitive corporate news items appearing in selected newspapers.
- Comments received from the companies are disseminated to the market by way of online news bulletin.
- Investigation based on rumor verifications are carried out, if required to detect cases of suspected insider trading.

5.11.7 Position Monitoring

The surveillance department closely monitors outstanding exposure of member on a daily basis for this purpose, it observe various off-line and on-line market monitoring reports. The reports are scrutinized to ascertain whether there is excessive purchase or sale position build up compared to the normal business of the member, whether there are concentrated purchase or sales, whether the purchase have been made by inactive or financially weak members and even the quality of scrips is considered to assess the quality of exposure. The following key areas are examined to assess the market risk involved-

5.11.8 Online monitoring of brokers position

Surveillance closely monitors broker's gross turnover exposure for ensuring margin calls in time.

5.12 B/S statement of trading members

Scrutinizing the statement on daily basis. It is for keeping a watch on the exposure of the members and ascertain the quality of exposures. A detailed on the net outstanding of top purchasers and top sellers in individual scrips, is prepared, if considered necessary.

5.12.1 Concentrated B/S

It is considered a risky issue, in case a situation is noticed, fundamentals of the scrips, their daily turnover, their nature of transaction are ascertained. Thereafter, based on the market risk perception appropriate surveillance action are taken.

5.12.2 B/S of scrips having thin trading

It is closely scrutinized as comparatively high market risk is involved in trading in such scrips. Details of trades in such scrips, if necessary are called from member to assess the market risk involved and decide on the appropriate surveillance action.

5.12.3 Verification of institutional trade

The institutional trades executed by the trading members are verified to ascertain the genuineness of trades.

5.12.4 Verification of foreign trade

The foreign trades executed by the trading members are verified to ascertain the genuineness of trade.

5.12.5 Verification of cross reporting trade

The report crossing trades executed by the trading members are verified to ascertain the genuineness of trades.

5.12.6 Verification of dealers own trades

Trades executed by the trading members are verified to ascertain the genuineness of trades.

5.12.7 Verification of sponsor's trade

The sponsor's trades executed by the trading members are verified to ascertain the genuineness of trades.

5.12.8 Snap investigation

To carry out, wherever considered necessary, preliminary investigation of certain dealings to verify irregularities. Further actions, viz., referring the case for detailed investigation, referring the case to the sec, depending on the findings of preliminary investigation.

5.12.9 Market intelligence

The rumors floating in the market are verified with the data available with DSE, Newspapers, Television news channels and Reuters to ascertain the national and global affecting the market sentiments. This enables the exchange to market problems before it cause a serious damage.

Review block trades

To determine-

- Whether the block was executed as a price, even if at a discount or premium which was in line with other trading of the stock.
- Whether there was any news on the company which caused the price increases or decreases subsequent to the block transaction.

Review list settlement failures

To identify-

- Broker's with frequent failures.
- A particular stock with a pattern.

5.12.10 Verify company accounts

To scrutinize company announcements, company reports, auditors qualifications and other notes of special interest in the published accounts of such company.

6.1 Benefit of automated trading system

Automated Trading System has made the electronic trading possible with the following benefits include:

1. Transparency:

It is a great benefit of electronic trading. Every investor can get exact information form the market that was not possible in previous system.

2. Open to all:

As it is web based, everybody both investors and people out of the market can observe market condition.

3. Circuit breaker:

As a circuit breaker is used in software. So it does not need to check manually when a trader put any price to sell/ buy any instrument it automatically deny if circuit breaker violation occurs.

4. Index, news, price, volume o share is update every time.

5. Free form past cry out system.

6. Monitoring is easier than before.

7. Surveillance team can easily do their work.

8. Market research is possible (as data is available).

9. Violation of rules can easily find out.

10. Company validation can be checked from the system.

11. Invalid trade is not possible.

12. Easy monitoring for SEC.

13. Online trading is possible.

14. Reliable for high technology.

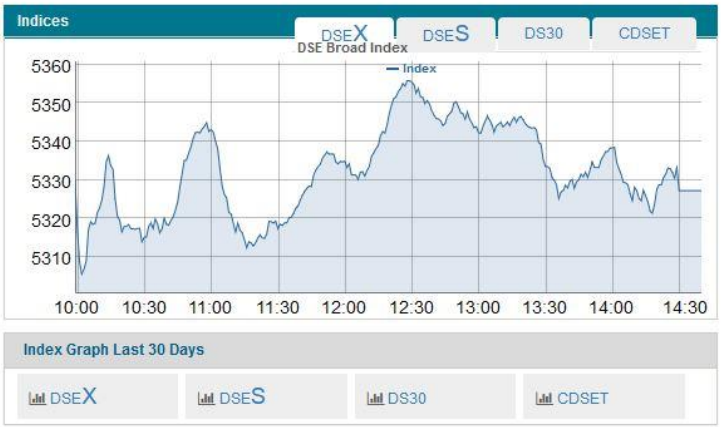
15. Accuracy is hundred percent.

16. Top ten share by Gainer, Looser can be seen every moment.

Last update on Mar 25, 2021 at 3:45 PM			
DSEX Index	5327.21607	-2.90555	-0.05451%
DSES Index	1217.69017	-3.84625	-0.31487%
DS30 Index	2020.90237	-3.76372	-0.18589%

Total Trade	Total Volume	Total Value in Taka (mn)
103099	127417005	4882.349

Issues Advanced	Issues declined	Issues Unchanged
129	81	132



Here is some statistics which proofs that our capital market is increasing both in trading and transaction for the implement of automated Trading System.

Top Twenty Shares by Value On Mar 25, 2021 at 3:45 PM									
#	TRADING CODE	LTP*	HIGH	LOW	YCP*	CLOSEP*	TRADE	VALUE (mn)	VOLUME
1	BEXIMCO	73.1	74.2	69.2	71.5	73.1	5,572	611.8570	8,438,879
2	BXPHARMA	186.2	187.5	180	182.7	186.2	3,000	409.3410	2,217,929
3	ROBI	44.3	45.4	43.4	44.2	44.3	5,929	270.7240	6,106,597
4	LHBL	50.6	52.3	49.8	53.3	50.6	2,461	258.1850	5,072,353
5	SQURPHARMA	200.4	203.6	200	203.6	200.4	3,602	247.9720	1,233,167
6	REPUBLIC	47.2	50.9	47	49.6	47.2	2,063	229.0360	4,740,100
7	LANKABAFIN	28.2	29.2	27.9	28.8	28.2	3,741	201.0390	7,060,700
8	BATBC	542.2	552	539.9	546.8	542.2	4,088	130.2050	240,336
9	NRBCBANK	12.5	12.7	11.4	11.6	12.5	4,579	115.1340	9,399,129
10	PREMIERBAN	13.6	13.7	13.3	13.3	13.6	1,139	91.3650	6,739,252
11	SUMITPOWER	43.3	44.4	42.3	43.1	43.3	1,395	79.1860	1,821,717
12	GBBPOWER	27.8	28.2	25.9	26	27.8	1,424	63.0030	2,301,340
13	NITOLINS	48.8	50.8	46.2	47	48.8	1,265	61.2310	1,242,727
14	RAHIMAFOOD	236.7	242	230	231.2	236.7	2,043	60.2400	255,491
15	BRACBANK	40.3	40.9	38.9	40.7	40.3	674	59.8010	1,497,580
16	WALTONHIL	1,206.8	1,214.8	1,190	1,200.3	1,206.8	1,561	54.5260	45,306
17	LRBDL	37.8	38.8	36.2	36.8	37.8	3,321	53.8930	1,427,526
18	BEACONPHAR	108.9	112	106.3	110.4	108.9	1,341	51.7040	471,225
19	LINDEBD	1,325	1,325	1,310	1,320.2	1,317.2	200	49.4330	37,569
20	CITYBANK	25.7	26.1	25.3	25.8	25.7	600	45.2450	1,756,173

The below statistical data shows that investors are encouraged to invest more in capital market. It was possible for safe, reliable, hassle free trading system for the implementation of information technology in Dhaka stock exchange.

It will increase much more from now if internet trading starts its journey when investors will be able to trade even at their home.

So it is time to take necessary steps for starting this new type if trading to cope up with world's economy. Right now millions of people are involved in share market. So it is a great news for the government that a large number of people are earning with stock market. Dhaka stock exchange ltd. has already started a mission to setup brokerage house in every district in Bangladesh.

Proposal of current system Up-gradation

DSE's volumes have growth exponentially in the last couple years are averaging about 130,000 trades per day. The number of members trading has crossed 250 in number and the number of trader's workstation (TWS) has crossed 1500. DSE system had clocked trades above 200,000 already.

DSE's medium term plan is to achieve 300,000 trades / day and provide up to 5,000 trader workstation. Currently about 300 securities and above are listed in DSE trading system. It was planned to go for 400 securities in near term. The dealer ID's would be around 250.

I propose to upgrade its current MSA application. The upgraded MSA will offer the following benefits to DSE:

- Restriction of number of traders per broker will be removed.
- The proposed upgrade would provide platform for enabling internet trading.
- Enable industry standard interfaces for order collection in future such as FIX, Mobile.
- Ability to access data from any other type of information container using open ware database such as MySQL, Postgress.
- No local installation for trader work station will be required – this would ease deployment process.

Proposed solution

Solution Description

- Host/ exchange adapter
- Order management
- Trader and system administration
- Mark dissemination
- User session and security management
- Trade management

- Reports
- Download management

7.1.1 Host/exchange adapter

- This adapter will have all the API's which the trader application invokes on the trading engine.
- Adapter sends the request to the trading engine.
- Adapter receives the responses, confirmation and broadcast from the trading engine.

7.1.2 Order Management

- This components will receive the submitted orders and persist it in the local database as local orders.
- The response will be send back to the trader workstation upon persistence.
- Submitted orders will be sent to the trading engine through the adapter immediately.
- Upon receiving the response/confirmation from the trading engine, the status of the local order will be updated in the database and published back to the trade workstation.

7.1.3 Market data dissemination

- This component will receive, process the market depth (buy and sell) information and publish it to the trade workstation.
- Similarly it will receive and process the news, index, phase changes, market halt and publish it to the trader workstation.

7.1.4 Trade management

This component will receive the trade confirmation and performs the following

- Persist the status in the local database.
- Publish the status to the client application.

7.1.5 Download management

- This components will receive all the static data (master and user) and maintains in the local database which will utilized by the client application.
- This also receives and processes the transaction data like pending orders, confirmation and market data.

7.1.6 Reports

- The reports will be generated against the data available in the local database.
- This component also provides the user with export and import facility.
- Reports generated for dealer Trader will not contain trades performed by other traders and vice-versa.

7.1.7 Trader, client and system administration

- This component performs the following activities:
- Registration of client.
- Setting the client limit.
- Setting the trader limits.
- Local logoff and suspension of traders.

7.1.8 User session and security management

- Maintain the user session with respect to the trading engine.
- Authentication of user in local database and in trading engine.

7.1.9 Trader Terminal (Trader Workstation)

- The following details the workflow to the from the trader workstation:
- The trader can access the application by specifying the URL in the browser.
- Trader workstation will log in locally to MSA plus and then login remotely to the TESA application.
- The browser based trader workstation will have similar information that was available in the earlier version of trader workstation.

7.1.10 Investor Terminal

The following will be available as part of the investor's terminal:

- The investor can access the application by specifying the URL in the bowser.
- Investor will log in locally to MSA plus.
- The investor will have only the following option in the terminal.
- An order book to know the status of submitted orders.
- An option to place the public orders into the system.

7.1.11 Broker terminal

The following will be available as part of the broker terminal:

- The broker can access the application by specifying the URL in the browser.
- Broker will login locally to MSA plus and then login remotely to the TESA application.
- The current admin activities performed by broker with respect to this user will remain the same.

7.1.12 I-trader Terminal

The activities of the I-trader terminal related to the investor orders are as follows:

- The I-trader of member firm will be able to view all the orders submitted to MSA plus by his investors.

- The I-trader of member firm can edit each individual investor order, fill in the necessary details like the trader id, client id and the order can be submitted to host.
- The I-trader of member firm can reject the order submitted by the investor of found invalid.

7.1.13 Dealer terminal

The following details the workflow of the dealer terminal

- One dealer trader can exist for each broker.
- Dealer trader uses the trader terminal to perform trading activities.
- Dealer trader will not have any restriction with respect to the instruments being traded.
- BCOC and BCOT functionalities will be applicable to the dealer.

7.1.14 Non trading terminal

The following are the activities performed in the non-trading terminal:

The non-trading terminal will be similar to the trading terminal with the following restrictions:

- User will not be able to place/modify/cancel any orders.
- User will be restricted only to view the public order book, Odd lot book, block book, market depth, index, news and general information.

What benefit we will get if we use my proposed Up-gradation

01. Browser base system that's why it requires minimum system resource.

02. Since it is a browser based application, there is no need to download the data as this activity is performed by the MSA 2.0 application.

03. No need to maintain the database connection.

04. Only the specific information will be pushed from MSA plus which reduce the load on the network.

05. Facilities investor to place orders using investor terminal over internet.

06. Number of trader workstation are unlimited (necessary hardware should be scaled as per volume requirement).

07. Support for most standard database offering in the market.

08. Supporting framework for developing and deploying additional industry standard protocol.

- Provides basis for internet trading in future.

09. Connectivity between MSA and trader workstation would be through VPN tunnel over internet, provides easier, low cost, secure.

Conclusion

Over the last decade, the Bangladeshi capital market has been growing by leaps and bounds, number of listed companies increasing day by day. There also a large number of shareholders, paradoxically, the problem associated with transaction, clearing and settlement were also on the rise, simultaneously, they expose the investors to greater risks.

Capital market thus required a new system that would eliminate all problems of investors and would give them healthy environment, and would strengthen their faith in the capital market, which was very low due to scams. Inordinate delay in investigation of these scams and escape of wrongdoers form law – created doubts in the minds of investors. The position has substantially improved after the introduction of the depository system.

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