FACTORS INFLUENCING INVESTOR CONFIDENCE IN AUTOMATED TRADING SYSTEM IN THE NAIROBI STOCK EXCHANGE

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A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF BUSINESS ADMINISTRATION; UNIVERSITY OF NAIROBI
DECLARATION

I declare that this is my original work and that it has not been presented for any award at any University.

ANNIE MUTHONI KIHIU

(REG: D61/P/8417/05)

Signature ………………………….. Date. ……………………………………….

This research project has been submitted for examination with my approval as the candidate’s Supervisor.

Supervisor. DR. JOSIAH ADUDA

Signed ………………………………… Date. …………………………………….
DEDICATION

I dedicate this work first to my family, whose encouragement and sacrifice carried me through this MBA programme; and secondly, to all those who believe in me and what I can be.

May God bless you all.
ACKNOWLEDGEMENT

First of all I wish to thank our good Lord for enabling me to complete this research project.

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I appreciate all those respondents who took their time and accepted to fill my questionnaires and assisting me in the process of data collection.
List of abbreviations

**ATS**  Automated trading system

**CDS**  Central depository system

**CDA**  Central depository agent

**CMA**  Central markets authority

**CDSC**  Central Depository System Corporation

**GDP**  Gross domestic product

**NSE**  Nairobi Stock Exchange

**ETS**  Electronic Trading System

**WAN**  Wide Area Network
# TABLE OF CONTENTS

DECLARATION ......................................................................................................................... i  
DEDICATION ........................................................................................................................ ii  
ACKNOWLEDGEMENT ........................................................................................................... iii  
List of abbreviations .............................................................................................................. iv  
LIST OF TABLES .................................................................................................................. vii  
LIST OF FIGURES ................................................................................................................ viii  
ABSTRACT ............................................................................................................................. 1  
CHAPTER ONE ...................................................................................................................... 2  
INTRODUCTION .................................................................................................................... 2  
  1.1 Background .................................................................................................................... 2  
  1.2 Statement of the Problem ............................................................................................... 6  
  1.3 Research Objective ....................................................................................................... 7  
  1.4 Significance of the study ............................................................................................... 8  
CHAPTER TWO ..................................................................................................................... 9  
LITERATURE REVIEW ........................................................................................................ 9  
  2.1 Introduction .................................................................................................................. 9  
  2.2 Review of Theories relevant to the study ................................................................... 9  
  2.3 Composition of institutions trusted with Automated Trading System ...................... 12  
  2.4 Advantages associated with introduction of ATS in NSE ........................................... 13  
  2.5 Factors influencing investor confidents in ATS ......................................................... 17  
  2.6 Empirical studies ......................................................................................................... 20  
  2.7 Conclusion ................................................................................................................... 25  
CHAPTER THREE .............................................................................................................. 28  
RESEARCH METHODOLOGY ............................................................................................. 28
3.1 Introduction.................................................................................................................28
3.2 Research Design..........................................................................................................28
3.3 Target Population.........................................................................................................28
3.4 Sampling Design & Sample Size ..............................................................................29
3.5 Data Collection ...........................................................................................................30
3.6 Data Analysis .............................................................................................................31
3.7 Data Reliability and Validity .......................................................................................31

CHAPTER FOUR..................................................................................................................32
DATA ANALYSIS, PRESENTATION AND INTERPRETATION ..................................32
4.1 Introduction ..................................................................................................................32
4.2 Respondents’ demographic characteristics. ...............................................................32
4.3 The level of investors’ satisfaction with Automated Trading System Management ..........................................................................................................................35
4.4. The level of trust on institutions entrusted with ATS ............................................40
4.5. Advantages associated with introduction of ATS in NSE. .................................41
4.6 Factor analysis .............................................................................................................43
4.7 Summary of Findings And Interpretation ................................................................46

CHAPTER FIVE SUMMARY, CONCLUSIONS AND RECOMMENDATIONS ..........49
5.1 Summary .....................................................................................................................49
5.2 Conclusions ................................................................................................................50
5.3 Policy Recommendations ..........................................................................................51
5.4 Limitations ..................................................................................................................51
5.5 Suggestions for further study ...................................................................................52

REFERENCES......................................................................................................................54

Appendix I: Questionnaire ...............................................................................................60
LIST OF TABLES

Table 4.1: Gender......................................................................................................................... 32

Table 4.2 Investing in Nairobi stock exchange.............................................................................. 34

Table 4.3 Level of satisfaction on various following factors associated with Automated Trading System............................................................................................................. 37

Table 4.4 Type of investment preferred ......................................................................................... 28

Table 4.5 Principles considered in relation to ATS operations. ...................................................... 39

Table 4.6 Views on factors that affect stock exchange, brokers, NSE, and other players. ...................... 40

Table 4.7 Parties that the respondents consulted before making investment decisions ...................... 41

Table 4.8 Advantages associated with introduction of ATS in NSE .............................................. 32

Table 4.9 Communalities .................................................................................................................. 33

Table 4.10 Total Variance explained .............................................................................................. 34

Table 4.11 Rotated Component Matrix .............................................................................................. 35
<table>
<thead>
<tr>
<th>Figure</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 4.1 Age</td>
<td>33</td>
</tr>
<tr>
<td>Figure 4.2 Employment</td>
<td>34</td>
</tr>
<tr>
<td>Figure 4.3 Years in stock market</td>
<td>35</td>
</tr>
</tbody>
</table>
ABSTRACT

This study aimed at establishing the factors that influence investor confidence in ATS at the NSE. Descriptive research study was used as the research design. The population consisted of MBA students as surrogate investors in the Nairobi Stock Exchange different NSE members. Systematic sampling was employed. The sample size of 50 MBA students was selected. The data used for the research project work was primary data collected from the students, and this was collected using questionnaires. The data analysis was based on quantitative approach using descriptive statistics as well as inferential in nature. The study found that the respondents were satisfied with automated Trading System as it had effective policies designed to promote local exchange growth and development and that it had added Liquidity to the Securities Markets. In addition, the respondents were also satisfied that Automated Trading System had specialized services and expanded product ranges shown However, the respondents were dissatisfied with the effectiveness of regulations and institutions that govern information flows and the security and Management of Automated Trading System. The study further established that the respondents considered maintenance of security, transparency of trading and system operations and maintenance of audit trails as the most important principles considered in relation to ATS operations. The study also found that the factors that influence investor confidence in ATS at the NSE were good transparency, better auditing, low corruption and effective regulations that govern information flows.
CHAPTER ONE

INTRODUCTION

1.1. Background

In investment and financial markets, automated trading, also known as algorithmic, algo, automated, black-box, robotic or robo trading, is the use of computer software for facilitating the process of executing trading orders. The computer program/software is responsible for certain aspects of the trade, such as identifying the instrument or security to trade, the timing, price, the size of order, the stop and take-profit levels, etc, (Jiang, et al, 2001).

Automated Trading System

Automated trading system is a controlled Central Depository System (CDS). This is a computer system that facilitates holding of securities in electronic accounts and facilitate faster and easier processing of transactions for NSE securities (shares and bonds). CDS has then authorised central depository agent (CDA) who are either a stockbroker or a custodian bank, to open accounts in CDS on behalf of investors. ATS is a computer trading program that automatically submits trades to an exchange. An example of an early ATS is Instinet, (Theissen, 2002).This allows traders to input trades invisibly to the market, with a crossing price determined by a VWAP measure. Instinet also enables anonymous conversations and negotiations to take place between bidders, and so reduces informational costs to the participants. Automated trading systems are created by converting the trading system's rules into code that the
computer can understand. The computer then runs those rules through trading software, which looks for trades that adhere to the rules. Finally, the trades are automatically placed with a broker, (Jiang, 2001). Automatic Trading is widely used by hedge funds, pension funds, mutual funds, and other institutional trading parties in order to manage market impact, opportunity cost, and risk. It is also used by hedge funds and other investment management bodies to instantly make trading decisions based on market information that is received electronically, before human traders are even aware of the information, (Allen, et al, 2000).

There are many types of ATS operations internationally, (Sioud and Hmaied 2003). They include: electronic bulletin boards; other automated trade matching systems; ATS operated by overseas exchanges; broker-to-client automated linkages; and ATS operated on the Internet. New regulatory requirements have been or are being developed internationally to address ATS operations. ATS operations may provide benefits to the marketplace.

Depending on the system involved, some of the potential benefits include lower costs, specialized services, ease of access, and expanded product ranges, (Venkataraman, 2001). However, ATS operations may also raise concerns, such as the fitness and properness of the system operator, lack of transparency, adequacy of surveillance arrangements, and the maintenance of security and control procedures and back-up arrangements.

A stock market is a public market for the trading of company stock and derivatives at an agreed price; these are securities listed on a stock exchange as well as those only
traded privately. The value of the derivatives market, because it is stated in terms of notional values, cannot be directly compared to a stock or a fixed income security, which traditionally refers to an actual value. Moreover, the vast majority of derivatives 'cancel' each other out (i.e., a derivative 'bet' on an event occurring is offset by a comparable derivative 'bet' on the event not occurring.). Many such relatively illiquid securities are valued as marked to model, rather than an actual market price, (Theissen, 2002)

The stocks are listed and traded on stock exchanges which are entities of a corporation or mutual organization specialized in the business of bringing buyers and sellers of the organizations to a listing of stocks and securities together (Sioud and Hmaied 2003).

The central depository system is a computer base system that facilitates holding of securities in an electronic account.

**Investor Confidence**

Local institutional investors, including pension funds and insurance schemes, are gradually returning to the Kenyan stock market after opting to put their money in fixed-income securities and real estate. For retail investors, the crisis of confidence brought on by the improprieties of some stockbrokers, the sluggish movement of shares and high inflation reversed a growing interest in the stock market over the past few years. Most investors burnt their fingers in the first major bear run since an unprecedented stock market rush that started with energy company KenGen’s initial public offering in 2006. The collapse of three stockbrokers with significant retail
clients is believed to have been the single biggest factor that scared away the majority of retail investors. Though the government has introduced measures to boost confidence, including asking brokers to publish their annual accounts in the press and to reduce ownership by a single shareholder to no more than 25%, investors do not yet feel comfortable. There are still issues to be sorted out in three stock brokerage firms, Omondi (2010)

**Nairobi Stock Exchange**

The Nairobi Stock Exchange (NSE) began in 1954 as an overseas stock exchange while Kenya was still a British colony with permission of the London Stock Exchange. The NSE is a member of the African Stock Exchanges Association. Nairobi Stock Exchange is Africa's fourth largest stock exchange in terms of trading volumes, and fifth in terms of market capitalization as a percentage of GDP. The Exchange works in cooperation with the Uganda Securities Exchange and the Dar es Salaam Stock Exchange, including the cross listing of various equities, (NSE, 2007)

Trading is done through the Electronic Trading System (ETS) which was commissioned in 2006. A Wide Area Network (WAN) platform was implemented in 2007 and this eradicated the need for brokers to send their staff (dealers) to the trading floor to conduct business. Trading is now mainly conducted from the brokers' offices through the WAN. However, brokers under certain circumstances can still conduct trading from the floor of the NSE, (NSE, 2007)

Two indices are popularly used to measure performance. The NSE 20-Share Index has been in use since 1964 and measures the performance of 20 blue-chip companies
with strong fundamentals and which have consistently returned positive financial results. An investor is defined as any party that makes an investment. According to Majnoni, (2001), the term has taken on a specific meaning in finance to describe the particular types of people and companies that regularly purchase equity or debt securities for financial gain in exchange for funding an expanding company. Less frequently, the term is applied to parties who purchase real estate, currency, commodity derivatives, personal property or other assets. The term implies that a party purchases and holds assets in hopes of achieving capital gain or cash flow, not as a profession or for short-term income, (Theissen, 2002)

1.2 Statement of the Problem

In the recent past cry by investors in NSE has often been linked to poor management of fragile automated trading system by players confidence has declined as results as brokers trading of investors shares without their consent and collapse with investors wealth. Mukumu, (2009), in the business daily news paper noted that the image of the local stock market has been battered by revelations that brokers have been manipulating client accounts and entering into transactions with their clients’ money illegally. This has violated the widely held preposition that, participation in any stock exchange is based on perceived trust, confidence, reliability, accountability, transparency and governance of brokers, NSE, and other players.

But these bodies have since failed in this duty, therefore losing their trust and confidence. Although CMA has been criticized for ineffectively managing and regulating activities of stock brokers this proposal has been necessitated by the need
to examine the management of automated trading system and its contribution to declining investor’s confidence in Nairobi stock exchange. Nduati, (1999), examined automation, trading costs, and the structure of the trading services industry in Kenya. He found that automation had led to boosted liquidity of the securities and high turnover and big investment changes while Kaberia, (2009) assessed the perceived benefits and limitations of the automated trading system at NSE, a survey of MBA students at the University of Nairobi in Kenya. He interviewed 50 students and found out that most students were satisfied with automated trading system at NSE. Were, (2001) studied the impact of external debt on economic growth and private investments in Kenya. His results prospected that availability of resource flows can stimulate private investments if used productively. Lorenzo, (1995) studied public confidence and the banking system, and found that a majority of the investors had reduced level of confidence or lost confidence with automated trading systems. Kamau, (2007) examined the Impact of stock exchange automation on volume, volatility & liquidity on stocks at NSE but failed to investigate on the factors influencing the investors’ confidence and gave recommendation that this gap should be filled by another research. This research therefore sought to establish the factors that influence investor confidence with Automated Trading System at the Nairobi Stock Exchange.

1.3 Objective of the study

The objective of the study was to determine the factors that influence investor confidence in ATS at the NSE.
1.4 Significance of the study

The proposed study will be of great importance to various stakeholders.

**Researchers and Academicians**

The researcher will benefit from scholarly materials by other authors for successful completion of the proposed study. The study upon successful completion will add to the existing body of knowledge on investors’ confidence in relation to Automated Trading System in NSE. This will be useful for future scholars on the subject.

**Investors**

The study will identify the level of investors’ satisfaction with Automated Trading System, the level of trust on institutions entrusted with ATS, the advantages associated with introduction of ATS and the factors that contributes to decline in investors’ confidence. The study findings hence will also be of importance to the investors both institutional and individual in the country.

**NSE Board and CMA**

The board of Nairobi Stock exchange and Central markets authority would benefit from the realization how Automated Trading System (ATS) affects the investors’ confidence in the NSE in Kenya.
CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter looks at the existing literature review on the investors’ confidence in relation to Automated Trading System in NSE in Kenya.

2.2 Review of Theories relevant to the study

2.2.1 Dow Theory

Dow Theory is a theory on stock price movements that provides a basis for technical analysis. The theory was derived by Charles H. Dow (1851-1902), journalist, founder and first editor of the Wall Street Journal and co-founder of Dow Jones and Company. There are six basic tenets of Dow theory. Dow theory states that markets have three trends. There is up trend, down trend and original trend. (Brown, 1998)

Dow believed that the stock market as a whole was a reliable measure of overall business conditions within the economy and that by analyzing the overall market, one could accurately gauge those conditions and identify the direction of major market trends and the likely direction of individual stocks. According to the Dow theory, the market reflects all available information. Everything there is to know is already reflected in the markets through the price. Prices represent the sum total of all the hopes, fears and expectations of all participants. Interest rate movements, earnings expectations, revenue projections, presidential elections, product initiatives and all else are already priced into the market. The unexpected will occur, but usually this
will affect the short-term trend. The primary trend will remain unaffected (Brown, 1998).

2.2.2 International Trade Theory

International Trade Theory deals with the different models of international trade that have been developed to explain the diverse ideas of exchange of goods and services across the global boundaries. The theories of international trade have undergone a number of changes from time to time. The basic principle behind international trade is not very much different from that involved in the domestic trade, Leamer, (1995).

International trade involves across border exchange and this increases the cost of trading. Factors like tariffs, restrictions, time costs and costs related with legal systems of the countries involved in trade make the international trade a costly affair; whereas the extent of restrictions and legal hassles are considerably low in case of domestic trade. When it comes to the comparison between international trade and domestic trade, the factors of production assume a crucial role. There is no denying that mobility of factors of production is less across nations than within the domestic territory. The incidence of trade in factors of production like labor and capital is very common in case of domestic trade; while in case of international trade exchange of goods and services contributes the major share of the total revenue. The primary objective of trade is to maximize the gains from trade for the parties engaged in the exchange of goods and services. Be it domestic or international trade, the underlying motivation remains the same. The cost involved and factors of production separate international trade from domestic trade, Leamer, (1995).
2.2.3. Modern Portfolio Theory (MPT)

Modern portfolio theory (MPT) is a theory of investment which tries to maximize portfolio expected return for a given amount of portfolio risk, or equivalently minimize risk for a given level of expected return, by carefully choosing the proportions of various assets, Portfolio, (2001). Elton, (2009) asserts that MPT is a mathematical formulation used with the aim of selecting a collection of investment assets that have collectively lower risk than any individual asset. That this is possible can be seen intuitively because different types of assets often change in value in opposite ways.

The risk in a portfolio of diverse individual stocks will be less than the risk inherent in holding any one of the individual stocks (provided the risks of the various stocks are not directly related). Consider a portfolio that holds two risky stocks: one that pays off when it rains and another that pays off when it doesn't rain. A portfolio that contains both assets will always pay off, regardless of whether it rains or shines. Adding one risky asset to another can reduce the overall risk of an all-weather portfolio. This theory recommends that the risk of a particular stock should not be looked at on a standalone basis, but rather in relation to how that particular stock's price varies in relation to the variation in price of the market portfolio, Portfolio, (2001). The theory goes on to state that given an investor's preferred level of risk, a particular portfolio can be constructed that maximizes expected return for that level of risk.
2.3. Composition of institutions trusted with Automated Trading System

NSE’s has four core stakeholder; the investors, the listed companies, and the members/brokers. The most important stakeholders in any exchange are the investors. In case of Kenya, the number of investors remains very small, though in the recent years substantial number of investors has been attracted to the market. The gross number of investors in all listed companies is approximately 1.5 million based on CDS accounts that have been opened as at April 30, 2008, CDS Preliminary Report, (2008).

NSE has 55 listed companies on Equities board and 2 securities on preference shares board. It also has 9 listed Corporate Bonds and 65 listed Treasury bonds on the fixed income securities board, NSE Weekly Market Statistics, (2008). The NSE has 19 active trading members (brokers) and one dormant member. There are 11 directors on the board of the NSE. 5 of the board members are elected from the brokers, 2 are elected to represent listed companies, 2 to represent institutional interests, 1 to represent the public interest, managing director of the NSE and the legal officer/company secretary.

NSE is operated as a “club of brokers” offering its services as a monopoly. The members of the club enjoy rights of ownership, decision making (one member, one vote), and trading. Essentially it has been operated as a non-profit making organization. There has been a close identity between ownership of the NSE and the direct use of its trading services, NSE Weekly Market Statistics, (2008).
2.4. Advantages associated with introduction of ATS in NSE

There are clearly efficiency gains in the switch to electronic trading which provide a natural focal point for public efforts to support emerging exchanges. But contrary to conventional wisdom, a second aspect of exchange modernization, the shift to automatic trading, may not stimulate efficiency. Young exchanges may need broker-dealer centered trading systems, even at the expense of transparency, until they reach liquidity thresholds, NSE Weekly Market Statistics, (2008).

Electronic exchanges may be more expensive than floor-based exchanges to open, but over the longer term operating costs of an electronic exchange are much lower, Jain, (2003). The conventional wisdom is that electronic exchanges offer lower trading costs than floor-based exchanges. Electronic exchanges can provide direct access to retail customers and cut intermediaries (brokers) out of the market. Electronic exchanges may be accessed from many locations and they can easily be scaled up as the exchange grows. Brazil's Bovespa uses a system that affords 24-hr retail access. Buyers and sellers pay a set fee for each exchange but get a “fair” price determined by supply and demand as clearly evident on electronic exchanges open order book. Electronic exchanges lower the search time and cost involved in trading because the buyer or seller just places an order and waits for a match someone willing to take the other side of the trade, Theissen, (2002).

These advantages can be particularly important in low and middle income countries where broadening access is socially and politically important and transparency can be a crucial antidote to a history of corruption. Jain, 2003 finds that the cost of raising
finance through initial public offerings on local stock exchanges falls considerably more with the introduction of electronic trading in emerging markets than in developed markets.

An attribute distinguishing exchange trading systems is the extent to which trading is automatic, based on orders or quotes, or whether it is negotiated, Ngugi & Njiru, (2005). The central dilemma is that transparency and surveillance capability rises with the extent of automatic trading. But negotiated trading can stimulate volume and liquidity, important measures of stock market success. Dealers, traders who operate for themselves and possibly as brokers to clients also, are the key protagonists in negotiated trading. They play a market-making function that can be very important in young stock exchanges by taking risks that other market participants are not willing to bear.

The Chinese case highlights the role of negotiated trading systems in emerging stock markets, Heilmann, (2002). Several stock exchanges in low and middle income countries allow negotiated trading for infrequently traded securities, Hosseini, (1999). Tunisia, for example, combines an automatic trading system with a quote-driven call auction for relatively illiquid securities. Mauritius also combines both trading systems, having recently introduced a negotiated system called the Alternative Development Market explicitly designed for small and family-owned companies that are not large-enough or sufficiently well-understood to be actively traded through the automatic system.
Negotiated trading also appeals to traders who want to buy or sell quantities of a specific security that are large relative to average trading. Quantity traded translates into volume, one of the indicators that an exchange could be internationally competitive, Huang, & Stoll, (1996a). Many of the low and middle income country stock exchanges have negotiated trading venues for wholesale or large block traders. Morocco, for example, allows “hidden” orders in order to insure price stability. Turkey has a separate negotiated market for wholesale traders. Negotiated trading also reveals non-price information to those who are able to observe the details of the transaction. Exchanges vary according to whether or not they ask that details of negotiated trades be recorded after the fact in the public order book, Theissen, (2002).

Examples of non-price information include; who is selling or buying and in what quantities. These details allow market participants to guess at developments at the company whose securities are being traded or the financial circumstances of specific market participants. In contexts where non-price information is relatively hard to collect, electronic systems do relatively little to increase the informational efficiency of the exchange, Pagano, (1996). Many low and middle income countries are generally less information-rich than their high income country counterparts for many reasons. One of the reasons for the many informal stock exchanges in China is that the dealers help convey non-price information about the companies to potential investors.

Negotiated trading helps expand trading and contributes to stock market success by standard measures such as liquidity and volume, especially in the relatively low liquidity markets of lower income countries, Madhavan, (2002). In another research, Jain, (2001) finds that the presences of market makers has a significantly more
positive impact on stock market performance indicators in emerging than in developed markets. Another study, Bochow et al., (1999) confirms that markets with market makers exhibit better liquidity than those without market makers.

It is well documented that two of the main problems that emerging markets face are capital supply shortage and low liquidity, Comertoe and Rydge, (2006); O'Hara, 2001; Kairys et al., (2000). Market regulators in these countries can consider a number of restructuring measures to alleviate these problems: introduction of market segmentation (i.e. segmenting trading hours, creating main and parallel markets), implementation of trading phases (i.e. offering both continuous and call auction trading in a day), or provision of special incentives for the submission of limit orders (i.e. offering hidden orders and standing orders). In addition, the implementation of a market making system can help boost liquidity, and, in combination with other restructuring measures, can provide important improvements in market quality.

Venkataraman and Waisburd, (2007), Nimalendran and Petrella (2003) and Majnoni and Massa (2001) show that the implementation of a market making system significantly promotes liquidity, lowers transaction costs, reduces volatility and improves daily turnover of listed securities. This study critically evaluates the types of market making systems found in developed capital markets and identifies the factors that stock market regulators in developing countries should consider when deciding which type of system to implement.
2.5. Factors Influencing Investor Confidence in ATS

Good Transparency: Glosten (1989), insider selling, while not a good sign, may not necessarily be as bad as it first seems. Many companies base executive compensation programs on stock, which leaves insiders with no practical way of buying new homes or sending their children to college other than by selling their holdings. Furthermore, insiders often have only a few weeks each quarter in which to accomplish these transactions. This is to prevent them from trading on information that hasn't yet been released to the public. Having said that, insider selling generally does not imply confidence in a company's future; and if they're selling in large quantities, that's a very poor signal indeed, Omondi (2010).

Better Auditing: The collapse of three stockbrokers with significant retail clients is believed to have been the single biggest factor that scared away the majority of retail investors. Though the government has introduced measures to boost confidence, including asking brokers to publish their annual accounts in the press and to reduce ownership by a single shareholder to no more than 25%, investors do not yet feel comfortable. There are still issues to be sorted out in three stock brokerage firms, Omondi (2010). The publishing of their financial statements will ensure that investors have access to information that may influence their decision to invest in a particle stock. Auditing of the same financials will further boost the reliability of the published information. NSE Weekly Market Statistics, (2009)

Effective Regulations that Govern information flow; The Nairobi Stock exchange and Central markets authority has put in place policies aimed at improving reliability and
governance of brokers in the management of the Automated Trading System (ATS) as it has been seen to be a great contributor to the investors’ level of confidence. Automated Trading System should be aimed at promoting local exchange growth and development and increased Liquidity to the Securities Markets, NSE Weekly Market Statistic, (2009)

Efficient markets; In finance, the efficient-market hypothesis (EMH) asserts that financial markets are "informationally efficient". That is, one cannot consistently achieve returns in excess of average market returns on a risk-adjusted basis, given the information publicly available at the time the investment is made.

There are three major versions of the hypothesis: "weak", "semi-strong", and "strong". Weak EMH claims that prices on traded assets (e.g., stocks, bonds, or property) already reflect all past publicly available information. Semi-strong EMH claims both that prices reflect all publicly available information and that prices instantly change to reflect new public information. Strong EMH additionally claims that prices instantly reflect even hidden or "insider" information. There is evidence for and against the weak and semi-strong EMHs, while there is powerful evidence against strong EMH.

Defenders of the EMH caution that conflating market stability with the EMH is unwarranted; when publicly available information is unstable, the market can be just as unstable. Fama (1965)

Improved risk management policies; Financial risk management is the practice of creating economic value in a firm by using financial instruments to manage exposure to risk, particularly credit risk and market risk. Other types include Foreign exchange,
Shape, Volatility, Sector, Liquidity, Inflation risks, etc. Similar to general risk management, financial risk management requires identifying its sources, measuring it, and plans to address them.

Financial risk management can be qualitative and quantitative. As a specialization of risk management, financial risk management focuses on when and how to hedge using financial instruments to manage costly exposures to risk.

In the banking sector worldwide, the Basel Accords are generally adopted by internationally active banks for tracking, reporting and exposing operational, credit and market risks. Raj (1975)

Outstanding company financial performance; A company's earnings are the primary factor in altering market perception and investor confidence, although the direction of the change may not always be what is expected. For example, the just-announced earnings figures could actually be record-setting, but the market may have expected an even larger number, one based on 'whisper numbers' (which are those unofficial earnings estimates that are spoken of by brokers and analysts in phone calls and informal settings a week or two before a company's earnings announcement is released; although unofficial, these figures are the market's true expectations of the company's earnings). Consequently, what appears to be positive news is perceived as negative, and the stock price declines. A company's failure to meet its whisper numbers is often viewed as an early warning that future earnings and the accompanying expected growth rate might not be reached. However, if a company announces earnings that meet or exceed the market’s expectations, especially if it has
a history of doing so, the perception of a strong future along with investor confidence that it can be achieved can boost a stock to record levels of returns, Westerholm, (2003)

2.6. Empirical studies

Rapid advances in information technology and telecommunications, and the internationalization of financial markets, have spurred the development of many new financial market services. The increasing size and global activity of institutional investors have led to new services specifically tailored to their needs, Christie & Huang, (1994). Separately, new investment and risk-transfer products appear regularly. Technology is also being used to provide new services to retail investors through personal computer networks and the Internet. The new services accompanying these trends include various ATS operations for trading in securities and futures contracts.

According to Verdier, (2001), technological advances have led to the development of many interactive global telecommunications networks. These systems provide electronic "bulletin boards" that collect and display information from market participants interested in trading in a variety of financial instruments, such as debt and money market instruments that historically have traded in telephone-based OTC markets. These systems may also be used to display interest in illiquid small company stocks that may not be listed on a recognized exchange. A bulletin board system typically does not provide trade matching or settlement services, but some have been expanded to provide matching services and are termed "trade matching systems".
Transactions effected through these systems may be settled through recognized settlement services or settled directly between trading counterparties, Christie & Huang, (1994).

ATS uses data processing equipment to place buy and sell orders on securities markets and with automated brokers to execute trade directly between users of the system and external markets. Holders of such large, diversified portfolios have usually been long-term investors. The system allows active market participation by such investors whereby they provide added liquidity and depth to the securities markets while overcoming problems caused by trader identification and the inability to enter, change or execute orders in a real time environment, Allen, et al., (2000).

The system monitors and analyzes a variety of factors which effect trading decisions in a vast number of securities. A number of innovative brokerage firms have developed their own "proprietary" systems for trading in securities and futures contracts. Typically, these systems offer their services to other brokers, banks and institutional investors who meet the ATS operator's credit standards. Trading is usually done anonymously and settlement effected directly with the ATS operator. One large international ATS (Instinet) operates in 30 countries with 7500 trading terminals on a 24- hour basis. These ATS operations are regulated as brokers in the majority of jurisdictions, Theissen, (2002)

Broker-run ATSs may or may not be interfaced with traditional exchanges. Some ATS operators are members of an exchange and report all completed transactions to the exchange who then publishes the transaction data, Jiang et al, (2001). They are
also subject to the rules and regulations of the exchange. Others do not belong to an exchange, but report transactions to a "consolidated tape" which displays transaction data from multiple markets. Still other ATSs operate independently and may or may not publish transaction data.

Certain investor attitudes and opinions are commonly remarked by observers of speculative markets as having changed in important ways through time and the changes as having important consequences for the markets. One such attitude is “bubble expectations,” that is, investor thinking that leads towards speculating on a perceived temporary uptrend before the “bubble” bursts. Another such attitude, and a very different attitude, is investor “confidence,” an attitude that nothing can go wrong with the investment; that investors can sleep easy since there is nothing to worry about. While there are many other investor attitudes that might also be studied, it appears that these two may deserve particular consideration because of their alleged tendency to change importantly through time and their potential importance for the behavior of markets.

There appears to be little already-available quantitative evidence on these investor attitudes, and so those who think that there are important changes in these attitudes through time are forced to rely mostly on their own casual and informal observations. Most data on investor sentiment refer to simple expectations for price change or indicators of these expectations. These data are useful, but may not capture essential elements of investor thinking, Kaberia, (2009).
The driving forces behind these systems vary. Some were developed to avoid the price spread in traditional quote-driven markets or to lessen the market impact cost of institutional-size orders. For example, some systems provide "passive" pricing at average daily prices or a single auction price, which may be attractive to managers of indexed portfolios. Anonymity is also cited by fund managers as a feature that reduces market impact costs, Christie & Huang, (1994). Some systems allow direct access to institutional investors and thereby disintermediate brokers. Other systems provide an efficient trading environment and a creditworthy counterparty for trading in emerging market securities where the home market lacks integrity.

In response to the internationalization of investor interest and participation, traditional exchanges are increasingly expanding from their home geographical bases by using technology to provide global access to their facilities. For many years, of course, cross-border trading has flourished, typically being effected via various forms of telecommunications and through arrangements with home market intermediaries and global custodians, Makori, (1998).

More recently, some exchanges have made their trading "terminals" available to member affiliates overseas. In some cases, exchanges have admitted overseas members. Moreover, dedicated trading terminals are rapidly being replaced by computer linkages using common communications protocols and security measures, Sioud, & Hmaied, (2003). This makes remote access as nearly invisible as telephone access, not only to regulators but potentially to the exchanges themselves. It also improves dramatically cross-border trading by providing, among other things, on-line execution, trade confirmation, and last sale reporting.
ATSs have taken the form of a new exchange in several markets. In the United Kingdom, Tradepoint Financial Networks plc is a Recognized Investment Exchange on the same footing and subject to regulatory requirements applicable also to those for the London Stock Exchange and the London International Financial Futures Exchange. In the United States, the Arizona Stock Exchange provides a single-price auction market for U.S. stocks. It is classified as an exchange rather than a broker, but is exempt from many of the regulatory requirements applicable to other United States exchanges under a "limited volume" exemption, Kihanya, (2002).

Many brokers now operate linkages between their own systems and their clients' computers, often via the Internet. These linkages may provide market data; account balances; and on-line order entry, trade execution, and trade confirmation services. Client orders may be routed directly to an exchange for execution and confirmed directly to the client without any personal contact between the broker and client, Comertoe and Rydge, (2006); O'Hara, (2001); Kairys et al., (2000))

The Internet is increasingly being used in financial markets for data transmission purposes, such as receipt and delivery of price data, listed company information, and order routing. As mentioned, it is also used to provide automated connections between brokers and clients. The Working Group is aware of only limited use of the Internet as a trade execution platform. ATSs provide anonymous trading and passive pricing and may also reduce market impact costs, which are particularly relevant to large-volume institutional investors. In these circumstances, some Working Group members believe an ATS may provide beneficial competition to traditional markets or specialized
services targeted at specific segments of the market, Nimalendran and Petrella, (2003).

Ease of access refers to the ability to use an ATS via a simple computer connection, although credit assessment remains as an important consideration. An ATS may also provide 24 hour trading versus the fixed trading hours of most exchange markets. Whilst most exchange markets focus on a particular range of stock or derivative products, ATS operations can offer an expanded range of products. Some individual ATS operations focus on a single product that might otherwise be ignored by exchange markets. Other ATSs, for example, offer trading in stocks from nearly all the major international markets plus those of emerging markets, Christie & Huang, (1994).

2.7 Conclusion

The Internet is increasingly being used in financial markets for data transmission purposes, such as receipt and delivery of price data, listed company information, and order routing and hence automated trading systems are being used in almost all major stock listing companies rather than floor trading. There are various advantages associated with automated trading systems and include lower costs in electronic exchanges and dealer-centered systems expand liquidity and volume. However, there has been criticism over the various policies designed to promote local exchange growth and development and the effectiveness of regulations and institutions that govern information flows, in addition to security and management of ATS. The major disadvantages are that if the system is not properly coded and tested, large losses can
occur very quickly and that sometimes it is impossible to put certain rules into code, which makes it difficult to develop an automated trading system. Automated Trading Systems are frequently used to assist financial traders. They operate by looking at a variety of market factors and determining how to trade. They can interpret when the right time to trade is and are generally successful. They have many advantages over individual human traders.

Another positive of automated trading systems is that they don't just help trading professionals buy also those who are not trading experts. It allows those to trade who wouldn't otherwise be able to. Professional traders, though, are also able to benefit

Algorithmic trading systems can watch a variety of trading markets, something that just isn't possible by humans to the same degree. Automated system are able to do this therefore meaning users are able to trade within a larger variety of markets. In many aspects of life humans are sometimes guilty of making emotional decisions that are not actually the best decisions. They may have preferences as to which markets they trade in. This might be based on their own knowledge meaning they are able to interpret some markets more than others. Nobody can be an expert in every potential market. A benefit of using algorithmic trading technology is that they are able to look at such a variety of markets and then trade on the ones which offer the most favourable market conditions.

Automated trading system will only make a decision on a genuine factor. As well as watching many different markets, trading systems are also able to take everything into consideration. The human brain can only take on board a certain amount of
information and therefore they can't consider every single factor. The image of the local stock market has been battered by revelations that brokers have been manipulating client accounts and entering into transactions with their clients’ money illegally. This has violated the widely held preposition that, Participation in any stock exchange is based on perceived trust, confidence, reliability, accountability, transparency and governance of brokers, NSE, and other players.
CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the overall methodology to be used in the study. It includes the research design, population of the study, sample size, sample frame, data collection methods, research procedures, data analysis and the presentation.

3.2 Research Design

Descriptive research study was used as the research design. Descriptive research study is a study concerned with finding out who, what, where, when, or how much in the problem situation at hand, Babbie, (1989). A descriptive research design helped find out the level of investors confidence with Automated Trading System, the level of trust on institutions entrusted with ATS, advantages associated with introduction of ATS in NSE and some of the factors that contributes to decline in investors confidence.

3.3 Target Population

A population is defined as the total collection of elements about which the researcher wishes to make some inferences. According to Cooper and Schindler, (2003), a population element is the subject such as a person an organization, customer database, or the amount of quantitative data on which the measurement is being taken. For the current research work population consisted of MBA students as surrogate investors
in the Nairobi Stock Exchange different NSE members. According to the department of post graduate studies at the University of Nairobi there are 516 MBA students who were registered for the September to December 2010 semester and formed the study population. Kaberia, (2009), carried out an assessment of the perceived benefits and limitations of the Automated Trading System at NSE by way of surveying the MBA students at the University of Nairobi.

3.4 Sampling Design & Sample Size

3.4.1 Sampling Technique

According to Mugenda & Mugenda, (2003) sampling is the process of selecting a number of individuals for a study in such a way that the individual selected represents the large group from which they are selected. Chandran, (2003) defines sample as a small proportion of an entire population; a selection from the population. Sampling procedure may be defined as a systematic process of individuals for a study to represent the larger group from which they are selected. The process of constructing or designing a sample is called sampling, which begins by defining the sampling frame. Sampling frame is a complete or partial listing of items comprising the population

Systematic sampling was employed. Systematic sampling is a statistical method involving the selection of elements from an ordered sampling frame. The Register Role was obtained from the MBA office and questionnaires were distributed to the registered students, one out of every 10 in the register role.
3.4.2 Sample Size

The sample size of 50 MBA students was selected. The selection of the sample size depends on various factors. These factors include size of target population, statistical methods in use, primary variables of measurement and limitations of data collection (Babbie, 1989). It should bear some proportional relationship to the size of the population from which it is drawn or can be the population as a whole.

3.5 Data Collection

Data is a piece of information that helps to analyze and appraise the given problem in a research study. It could be either a primary data, which is collected individually or a secondary data that is obtained from an already existing source. The data used for the current research project work was primary data collected from the students, and this was collected using questionnaires.

The first section of the questionnaire dealt with demographic statistics such as name, age. This information provided data used in analyzing the personnel statistics based on gender, age, the second section sought information on level of satisfaction with automated trading system by the investors, third section sought level of trust with institution entrusted with ATS management, fourth section sought information on advantages attributed to use of ATS in Nairobi stock exchange and the last section sought information on the factors leading to decline in investors confidence.

The researcher issued the questionnaire to the class before lecturer started using the register role by selecting every 10th registered student. To ensure that a student did not
fill the questionnaire in another class the researcher asked if the student was presented with the same questionnaire.

3.6 Data Analysis

The data analysis was based on quantitative approach using descriptive statistics as well as inferential in nature. The data was analyzed with the help of Statistical Package for Social Sciences (SPSS) version 17. Factor analysis was employed. Percentages and frequencies was also used to facilitate easy understanding. The data was then presented using tables, pie charts, and graphs.

3.7 Data Reliability and Validity

The study used a standard questionnaire that was discussed with the supervisor. A pilot study was used for pre-testing of the research instrument. The clarity of the instrument items to the respondents was established so as to enhance the instrument’s validity and reliability. The pilot study enabled the researcher to be familiar with research and its administration procedure as well as identifying items that require modification. The result helped the researcher to correct inconsistencies arising from the instrument, which ensured that they measure what was intended. Cronbach alpha testing was also used to test the data validity and reliability.
CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

This chapter presents analysis and findings of the study as set out in the research methodology. The data was gathered exclusively from questionnaire as the research instrument. The questionnaire was designed in line with the objectives of the study.

4.2 Respondents’ demographic characteristics.

4.2.1 Gender

The study established the gender of the respondents. Results presented in table 4.1 shows that majority of the respondents were males comprising 64 percent while 36 percent were females.

Table 4.1: Gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>32</td>
<td>64</td>
</tr>
<tr>
<td>Female</td>
<td>18</td>
<td>36</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Survey Data, (2010)
4.2.2 Age

Results presented in figure 4.1 shows that a majority of the respondents were aged between 31 to 40 years comprising 42 percent while 34 percent were aged 41 to 50 years. 18 percent were aged between 21 to 30 years while 6 percent were above 50 years.

Figure 4.1 Age

Source: Survey Data, (2010)

4.2.3 Employment

The study went further to establish the employers of the respondents. Results revealed in figure 4.2 shows that a majority were employed in the public sector comprising 42 percent while 34 percent were employed in the private sector. Only 24 percent were self employed.
Figure 4.2 Employment

![Bar chart showing employment in Nairobi Stock Exchange]

Source: Survey Data, (2010)

4.2.4 Investing in Nairobi stock exchange

The study went further to establish whether the respondents had invested in Nairobi Stock Exchange. Results from table 4.2 shows that majority of them had invested in Nairobi Stock Exchange comprising 76 percent while 34 percent had not invested in Nairobi Stock Exchange.

Table 4.2 Investing in Nairobi stock exchange

<table>
<thead>
<tr>
<th>Investing Status</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>38</td>
<td>76</td>
</tr>
<tr>
<td>No</td>
<td>12</td>
<td>34</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Survey Data, (2010)

4.2.5 Years in stock market

The study inquired the number of years the respondents had been in the stock market. Results revealed in figure 4.3 shows that most of the respondents had been in the
stock markets for a period of three to five years comprising 46 percent while 38 percent had been in the stock market for less than three years, whilst 12 percent had been in the stock market for six to ten years.

**Figure 4.3 Years in stock market**

![Pie chart showing years in stock market: 46% for three to five years, 12% for six to ten years, 4% for over ten years, 38% for less than three years.]

Source: Survey Data, (2010)

Further, the study inquired on the respondents the form of shares on the last initial public offer they participated. Majority of them had their shares in electronic form comprising 64 percent while 36 percent had their shares in certificate form.

4.3 The level of investors’ satisfaction with Automated Trading System Management.

4.3.1 Whether the respondents have a CDS account

In this section, the study aimed at establishing whether the respondednts had a CDS account. A majority had a CDS account comprising 78 percent while only 22 percent had their shares in certificate form.
4.3.2 Level of satisfaction with various factors associated with Automated Trading System

The study further inquired on the level of satisfaction with various factors associated with Automated Trading System in stock trading in NSE. Data in this table was analyzed using a likert scale of 1= very satisfied, 2=somewhat satisfied, 3=neutral and 4 = very dissatisfied. The data was presented in mean and standard deviation.

Results shown in table 4.3 shows that majority of the respondents were satisfied that Automated Trading System had effective policies designed to promote local exchange growth and development as was shown by a low mean of 1.6 and that it had added Liquidity to the Securities Markets shown by a low mean of 1.76. In addition, the respondents were also satisfied that Automated Trading System had specialized services and expanded product ranges shown by a low mean of 1.98. However, the respondents were dissatisfied with the effectiveness of regulations and institutions that govern information flows and the security and Management of Automated Trading System as was shown by high means of 2.5 and 2.4 respectively.
Table 4.3 Level of satisfaction on various following factors associated with Automated Trading System

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Std Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective policies designed to promote local exchange growth and development</td>
<td>1.633</td>
<td>1.436</td>
</tr>
<tr>
<td>Added Liquidity to the Securities Markets</td>
<td>1.766</td>
<td>1.403</td>
</tr>
<tr>
<td>Specialized services and expanded product ranges</td>
<td>1.982</td>
<td>0.9534</td>
</tr>
<tr>
<td>Active market participation of investors</td>
<td>1.987</td>
<td>0.9844</td>
</tr>
<tr>
<td>International Competitive Stock Exchange</td>
<td>2.133</td>
<td>1.165</td>
</tr>
<tr>
<td>Reduction in the time it takes to execute a trade.</td>
<td>2.433</td>
<td>1.282</td>
</tr>
<tr>
<td>Security and Management of ATS</td>
<td>2.433</td>
<td>1.353</td>
</tr>
<tr>
<td>Effectiveness of regulations and institutions that govern information flows</td>
<td>2.556</td>
<td>1.084</td>
</tr>
</tbody>
</table>

*Source: Survey Data, (2010)*

The study went further to inquire on the level of computer literacy of the respondents. Results from the study showed that majority had basic level of computer literacy comprising 58 percent while 42 percent had excellent level of computer literacy.
4.3.3 Type of investment preferred

In this section, the aim was to determine the type of investment preferred by the respondents. Results depicted in table 4.4 showed that majority preferred both long term and short term investments comprising 40 percent while 36 percent preferred long term investments. 24 percent however preferred short term investments.

Table 4.4 Type of investment preferred

<table>
<thead>
<tr>
<th>Investment type</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speculative (Short term)</td>
<td>12</td>
<td>24</td>
</tr>
<tr>
<td>Capital (long term)</td>
<td>18</td>
<td>36</td>
</tr>
<tr>
<td>Both</td>
<td>20</td>
<td>40</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Survey Data, (2010)

4.3.4 Principles considered in relation to ATS operations.

The study further inquired on the various principles considered in relation to ATS operations. Data in this section was analyzed using a likert scale of 1-Not important at all, 2-A little important, 3- Important, 4- Very important, 5- Critically important. The results were presented in mean and standard deviation. Results from the study revealed that majority of the respondents cited that they considered maintenance of security, transparency of trading and system operations and maintenance of audit trails as the most important principles considered in relation to ATS operations as was shown by high means of 4.8 and 4.7 respectively. The least important principles were
fitness and properness of the ATS operator and the performance of surveillance and regulatory functions shown by low means of 3.8 and 3.9 respectively.

**Table 4.5 Principles considered in relation to ATS operations.**

<table>
<thead>
<tr>
<th>Principle</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fitness and properness of the ATS operator</td>
<td>3.843</td>
<td>0.9247</td>
</tr>
<tr>
<td>The performance of surveillance and regulatory functions</td>
<td>3.931</td>
<td>0.5645</td>
</tr>
<tr>
<td>Risk management policies</td>
<td>4.233</td>
<td>0.4394</td>
</tr>
<tr>
<td>Consistency between financial standing of the ATS operator &amp; accepted international practice</td>
<td>4.630</td>
<td>1.2205</td>
</tr>
<tr>
<td>Cooperation with regulatory authorities</td>
<td>4.656</td>
<td>0.7587</td>
</tr>
<tr>
<td>Maintenance of audit trails</td>
<td>4.720</td>
<td>0.5959</td>
</tr>
<tr>
<td>Transparency of trading and system operations</td>
<td>4.833</td>
<td>0.5508</td>
</tr>
<tr>
<td>Maintenance of security</td>
<td>4.828</td>
<td>1.2757</td>
</tr>
</tbody>
</table>

*Source: Survey Data, (2010)*

**4.3.5 Views on factors that affect stock exchange, brokers, NSE, and other players.**

In this section of study, the aim was to establish the various factors that affect stock exchange, brokers, NSE, and other players. Data was analyzed using a likert scale
where 1= Agree, 2= Strongly agree, 3 = Disagree and 4 = Strongly disagree. Results revealed in table 4.6 shows that the most cited factors were transparency, governance and accountability shown by low means of 1.03, 1.23 and 1.37 respectively. The least cited factors that affect stock exchange, brokers, NSE, and other players was confidence shown by a high mean of 1.9.

**Table 4.6 Views on factors that affect stock exchange, brokers, NSE, and other players**

<table>
<thead>
<tr>
<th>Factor</th>
<th>Mean</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived trust</td>
<td>1.8990</td>
<td>.5748</td>
</tr>
<tr>
<td>Confidence</td>
<td>1.9887</td>
<td>.6565</td>
</tr>
<tr>
<td>Reliability</td>
<td>1.775</td>
<td>.6532</td>
</tr>
<tr>
<td>Accountability</td>
<td>1.376</td>
<td>.6534</td>
</tr>
<tr>
<td>Transparency</td>
<td>1.034</td>
<td>.8672</td>
</tr>
<tr>
<td>Governance</td>
<td>1.243</td>
<td>.9023</td>
</tr>
</tbody>
</table>

**Source: Survey Data, (2010)**

**4.4. The level of trust on institutions entrusted with ATS**

The study found that all respondents considered any information from the institutions entrusted with ATS before making investment decisions. Further, the study inquired on the various parties that the respondents consulted before making investment decisions. A likert scale of 1-Not important at all, 2-A little important, 3- Important, 4- Very important, 5- Critically important was used. Results revealed from the study
showed that most respondents consulted friends and colleagues and a company’s accounting department before making investment decisions as was shown by high means of 3.9 and 3.0 respectively. The least consulted parties were accounting lecturers and board members of a company as was shown by a low mean of 1.00 and 1.07 respectively.

Table 4.7 Parties that the respondents consulted before making investment decisions

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auditor</td>
<td>2.9988</td>
<td>.43434</td>
</tr>
<tr>
<td>Board members of a company</td>
<td>1.0778</td>
<td>.65445</td>
</tr>
<tr>
<td>Company’s Accounting Department</td>
<td>3.0009</td>
<td>.87794</td>
</tr>
<tr>
<td>Accounting lecturers</td>
<td>1.0078</td>
<td>.08098</td>
</tr>
<tr>
<td>Friends and colleagues</td>
<td>3.9870</td>
<td>.65634</td>
</tr>
<tr>
<td>Family members</td>
<td>2.0098</td>
<td>.08788</td>
</tr>
</tbody>
</table>

Source: Survey Data, (2010)

4.5. Advantages associated with introduction of ATS in NSE.

The study revealed that majority of the respondents agreed that the introduction and implementation of ATS in NSE had brought numerous advantages. In this section, the study aimed at establishing the various advantages that were associated with introduction of ATS in NSE as a factor to investor confidence. Data in this section
was analyzed using a likert scale of 1-Not important at all, 2-A little important, 3-Important, 4- Very important, 5- Critically important. The results were analyzed in means and standard deviation. Results depicted in table 4.8 showed that majority of the respondents agreed that introduction and implementation of ATS in NSE had lowered the search time involved in trading as was shown by a high mean of 4.9 followed by increased volume as a measure of stock market success shown by a high mean of 4.7 and lower trading costs shown by a mean of 4.32. The least cited advantage was dealer-centered systems expanded liquidity shown by a low mean of 2.90.

Table 4.8 Advantages associated with introduction of ATS in NSE

<table>
<thead>
<tr>
<th>Advantage</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower trading costs</td>
<td>4.324</td>
<td>0.8172</td>
</tr>
<tr>
<td>Direct access to retail customers</td>
<td>3.988</td>
<td>0.5074</td>
</tr>
<tr>
<td>Electronic exchanges may be accessed from many locations</td>
<td>3.9</td>
<td>0.3457</td>
</tr>
<tr>
<td>Electronic exchanges lower the search time involved in</td>
<td>4.908</td>
<td>0.2537</td>
</tr>
<tr>
<td>trading</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dealer-centered systems expand liquidity</td>
<td>2.908</td>
<td>0.8787</td>
</tr>
<tr>
<td>Increased volume; a measure of stock market success</td>
<td>4.789</td>
<td>0.9247</td>
</tr>
</tbody>
</table>

Source: Survey Data, (2010)
4.6 Factor Analysis

Table 4.9: Communalities

<table>
<thead>
<tr>
<th>Item</th>
<th>Initial</th>
<th>Extraction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good transparency</td>
<td>1.000</td>
<td>.954</td>
</tr>
<tr>
<td>Better auditing</td>
<td>1.000</td>
<td>.943</td>
</tr>
<tr>
<td>Low corruption</td>
<td>1.000</td>
<td>.942</td>
</tr>
<tr>
<td>Effective regulations that govern information flows</td>
<td>1.000</td>
<td>.933</td>
</tr>
<tr>
<td>Good performance of economy</td>
<td>1.000</td>
<td>.911</td>
</tr>
<tr>
<td>Efficient management</td>
<td>1.000</td>
<td>.890</td>
</tr>
<tr>
<td>Improved risk management policies</td>
<td>1.000</td>
<td>.852</td>
</tr>
<tr>
<td>Authorized trading of clients shares</td>
<td>1.000</td>
<td>.806</td>
</tr>
<tr>
<td>Outstanding company financial performance</td>
<td>1.000</td>
<td>.748</td>
</tr>
</tbody>
</table>

Source: Survey Data, (2010)

The above table helps the researcher to estimate the communalities for each variance. This is the proportion of variance that each item has in common with other factors.
For example ‘Better auditing’ has 94.3% communality or shared relationship with other factors. “Good transparency of 95%, while ‘outstanding company financial performance’ has the least communality with others of 74.8%.

Table 4.10: Total Variance Explained

<table>
<thead>
<tr>
<th>Component</th>
<th>Initial Eigen values</th>
<th>Extraction Sums of Squared Loadings</th>
<th>Rotation Sums of Squared Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>% of Variance</td>
<td>Cumulative %</td>
</tr>
<tr>
<td>1</td>
<td>8.696</td>
<td>33.446</td>
<td>33.446</td>
</tr>
<tr>
<td>3</td>
<td>2.893</td>
<td>11.127</td>
<td>72.890</td>
</tr>
<tr>
<td>4</td>
<td>2.044</td>
<td>7.863</td>
<td>80.753</td>
</tr>
<tr>
<td>5</td>
<td>1.492</td>
<td>5.738</td>
<td>86.491</td>
</tr>
<tr>
<td>6</td>
<td>1.200</td>
<td>4.616</td>
<td>91.106</td>
</tr>
<tr>
<td>7</td>
<td>.707</td>
<td>4.718</td>
<td>95.824</td>
</tr>
<tr>
<td>8</td>
<td>.534</td>
<td>3.054</td>
<td>97.878</td>
</tr>
<tr>
<td>9</td>
<td>.415</td>
<td>1.597</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Source: Survey Data, (2010)

In the above table, the researcher used Kaiser Normalization Criterion, which allows for the extraction of components that have an Eigen value greater than 1. The principal component analysis was used and six factors were extracted. As the table shows, these six factors explain 91.1% of the total variation. Factor 1 contributed the
highest variation of 30.5%. The contributions decrease as one move from one factor to the other up to factor 6.

**Table 4.11: Rotated Component Matrix**

<table>
<thead>
<tr>
<th>Component</th>
<th>Component</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good transparency</td>
<td>.973</td>
</tr>
<tr>
<td>Better auditing</td>
<td>.939</td>
</tr>
<tr>
<td>Low corruption</td>
<td>.912</td>
</tr>
<tr>
<td>Effective regulations that govern information flows</td>
<td>.911</td>
</tr>
<tr>
<td>Good performance of economy</td>
<td>.863</td>
</tr>
<tr>
<td>Efficient management</td>
<td>.839</td>
</tr>
<tr>
<td>Improved risk management policies</td>
<td>.947</td>
</tr>
<tr>
<td>Authorized trading of clients shares</td>
<td>-.869</td>
</tr>
<tr>
<td>Outstanding company financial performance</td>
<td>-.946</td>
</tr>
</tbody>
</table>

*Source: Survey Data, (2010)*
The initial component matrix was rotated using Varimax (Variance Maximization) with Kaiser Normalization by suppressing small coefficients of values below 0.4. The above results allowed the researcher to identify what variables fall under each of the 4 major extracted factors. Each of the 9 variables was looked at and placed to one of the four factors depending on the percentage of variability; it explained the total variability of each factor. A variable is said to belong to a factor to which it explains more variation than any other factor.

4.7 Summary of Findings and Interpretation

The study revealed that a majority of the respondents were aged between 31 to 40 years comprising 42 percent while 34 percent were aged 41 to 50 years. In addition, most of the respondents were employed in the public sector comprising 42 percent while 34 percent were employed in the private sector. Only 24 percent were self employed. Further, the study revealed that majority of the respondents had invested in Nairobi Stock Exchange. The implications to the study was that they were the right persons to inquire information from as they had knowledge on stocks and investing.

On the number of years they had invested, most of the respondents had been in the stock markets for a period of three to five years comprising 46 percent while 38 percent had been in the stock market for less than three years, whilst 12 percent had been in the stock market for six to ten years. Majority of the respondents had their shares in electronic form comprising 64 percent while 36 percent had their shares in certificate form.
The study further revealed that a majority had a CDS account comprising 78 percent while only 22 percent had their shares in certificate form. Further, the study revealed that a majority of the respondents were satisfied that Automated Trading System as it had effective policies designed to promote local exchange growth and development and that it had added Liquidity to the Securities Markets shown. In addition, the respondents were also satisfied that Automated Trading System had specialized services and expanded product. However, the respondents were dissatisfied with the effectiveness of regulations and institutions that govern information flows and the security and Management of Automated Trading System.

On the topic of investments, the study revealed that a majority preferred both long term and short term investments. On principles of ATS, majority of the respondents cited that they considered maintenance of security, transparency of trading and system operations and maintenance of audit trails as the most important principles considered in relation to ATS operations. The least important principles were fitness and properness of the ATS operator and the performance of surveillance and regulatory functions.

On the topic of the various factors that affect stock exchange, the study revealed that the most cited factors were transparency, governance and accountability. The least cited factor that affects stock exchange, brokers, NSE, and other players was confidence. The study further revealed that most respondents consulted friends and colleagues and a company’s accounting department before making investment decisions. The least consulted parties were accounting lecturers and board members of a company.
On advantages of ATS, the study found that a majority of the respondents agreed that introduction and implementation of ATS in NSE had lowered the search time involved, increased volume as a measure of stock market success and lower trading costs. The least cited advantage was dealer-centered systems expanded liquidity.

The study revealed that that good transparency, better auditing, low corruption and effective regulations that govern information flows factors were the main factors that were considered as being the main factors influencing investor confidence in ATS in the NSE.
CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary

This study aimed at establishing the factors that influence investor confidence in ATS at the NSE. Descriptive research study was used as the research design. The population consisted of MBA students as surrogate investors in the Nairobi Stock Exchange different NSE members. Systematic sampling was employed. The sample size of 50 MBA students was selected. The data used for the research project work was primary data collected from the students, and this was collected using questionnaires. The data analysis was based on quantitative approach using descriptive statistics as well as inferential in nature. Factor analysis was employed. Percentages and frequencies were also used to facilitate easy understanding. The data was then presented using tables, pie charts, and graphs. The study found that the respondents were satisfied with automated Trading System as it had effective policies designed to promote local exchange growth and development and that it had added Liquidity to the Securities Markets. In addition, the respondents were also satisfied that Automated Trading System had specialized services and expanded product ranges shown. However, the respondents were dissatisfied with the effectiveness of regulations and institutions that govern information flows and the security and Management of Automated Trading System. The study further established that the respondents considered maintenance of security, transparency of trading and system operations and maintenance of audit trails as the most important principles considered.
in relation to ATS operations. The study also found that the factors that influence investor confidence in ATS at the NSE were good transparency, better auditing, low corruption and effective regulations that govern information flows.

5.2 Conclusions

The study concluded that Automated Trading System has effective policies designed to promote local exchange growth and development, added Liquidity to the Securities Markets and services and expanded product.

The study further concluded that maintenance of security, transparency of trading and system operations and maintenance of audit trails are most important principles considered in relation to ATS operations. The least considered principles in relation to ATS operations are fitness and properness of the ATS operator and the performance of surveillance and regulatory functions.

The study also concluded that transparency, governance and accountability are the major factors affects stock exchange, brokers, NSE, and other players. Further, the study concludes that the various advantages associated with ATS operation are lowering of search time involved, increased volume as a measure of stock market success and lower trading costs.

Further, the study concluded that the factors that influence investor confidence in ATS at the NSE were good transparency, better auditing, low corruption and effective regulations that govern information flows. In addition, the study concludes that the investors had welcomed the introduction and implementation of ATS in NSE.
5.3 Policy Recommendations

The study recommends that Nairobi Stock exchange and Central markets authority needs to put effective policies aimed at improving reliability and governance of brokers in the management of the Automated Trading System (ATS) as it has been seen to be a great contributor to the investors’ level of confidence. Automated Trading System should be aimed at promoting local exchange growth and development and increased Liquidity to the Securities Markets.

In addition, the study recommends that all stock brokerage firms need to uphold transparency and accountability. This can be aimed at reducing the recent poor performance of stock brokerage firms while others have been forced to close due to misappropriation of funds. The publishing of their financial statements should be followed through and auditing of the same financials to be done to ensure that the financial reports reflects a true and fair view of the operations of the brokerage firms.

The study further recommends that there is need for the implementation of a market making system. This measure can be aimed at boosting liquidity, and, in combination with other restructuring measures, can provide important improvements in market quality.

5.4 Limitations

The respondents approached were reluctant in giving information while others were too busy to respond to the questionnaire in full. Some did not fill out the questionnaire in totality, especially the open ended questions. The researcher had to persuade them
in order for them to fill the questionnaire. This therefore took more time than was initially anticipated.

The researcher encountered problems in eliciting information from the respondents as the information required was subject to areas of transparency, and confidentiality which could not be accurately quantified and/or verified objectively. However, the researcher encouraged the respondents to participate without holding back the information they had as the research instruments did not bear their names.

The researcher encountered problems of time as the research was being undertaken in a short period which limited time for doing a wider research. The fact that University of Nairobi registered MBA students were the only respondents used as surrogate investors was also a limitation since the scope of respondents was therefore limited.

**5.5 Suggestions for further study**

This research focused on the factors that influence investor confidence in ATS at the NSE. More research also needs to be carried out on the various factors that lead to good performance of stock brokerage firms. These could include image and financial performance and media attention on specific firms. A research to determine the effectiveness of the regulations set out by the Capital Markets Authority as regards the performance of the stock brokerage firms, especially with the collapse of three stockbrokers with significant retail clients which is believed to have been the single biggest factor that scared away the majority of retail investors.
This research was done with the aid of data collected from registered MBA students at the University of Nairobi. In future, more research needs to be carried out on other factors that determine the choice of particular stock brokerage firms more so using a wider public as the surrogate investors, say students from different universities in Kenya as surrogate investors.

More research could also be carried out on challenges and opportunities in mobile trading system. This is a system where investors receive price alerts on their Mobile phones. This being a new system in Kenya, a research needs to be done to determine its impact as well as the advantages and limitations.
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59
Appendix I: Questionnaire

Factors influencing investor confidence in automated trading system at the 
Nairobi stock exchange

SECTION A Personal Details

1. Gender: Male [ ] Female [ ]

2. Age (years): 21-30 [ ] 31-40 [ ] 41-50 [ ] above 50 [ ]

3. Employment: Self employed [ ] Private Sector [ ]
   Public Sector [ ] Others-----------------------------

4. Have you invested in Nairobi stock exchange?
   Yes [ ] No [ ]

5. How long have you been in stock market?
   • Less than three years [ ] 3-5 yrs [ ]
   • 6-10 yrs [ ] Over 10 yrs [ ]

6. In the last initial public offer you participated, which form were your shares?
   Certificate form [ ] Electronic form (CDS) [ ]

   If certificate why?

........................................................................................................................
SECTION B The level of investors’ satisfaction with Automated Trading System Management.

7. Do you have a CDS account?

Yes [ ] No [ ]

If yes, how satisfied are you Automated Trading System in stock trading in NSE?

Very satisfied [ ] fairly satisfied [ ] Satisfied [ ]

Not at all satisfied [ ]

8. Please indicate your level of satisfaction on each of the following factors in the table below.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Very</th>
<th>Somewhat</th>
<th>Neutral</th>
<th>Very</th>
</tr>
</thead>
<tbody>
<tr>
<td>Added Liquidity to the Securities Markets</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effective policies designed to promote local exchange growth and development</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduction in the time it takes to execute a trade.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Security and Management of ATS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effectiveness of regulations and institutions that govern information flows</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>International Competitive Stock Exchange</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active market participation of investors</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specialized services and expanded product ranges</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

9. What’s your level of computer literacy?

None [ ]       Basic [ ]       Excellent [ ]

10. Which type of investment do you prefer?

Speculative (Short term) [ ]   Capital (long term) [ ]   Both [ ]

Why? ............................................................................................................

11. Given an opportunity, which type of exchanges in the stock market would you prefer?

Physical location type [ ]   Virtual type [ ]

12. There is a set of general principles to be considered in relation to ATS operations. How would you rank these principles?

(1-Not important at all, 2-A little important, 3- Important, 4- Very important, 5- Critically important)
<table>
<thead>
<tr>
<th></th>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fitness and properness of the ATS operator</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cooperation with regulatory authorities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintenance of audit trails</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transparency of trading and system operations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The performance of surveillance and regulatory functions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintenance of security</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk management policies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consistency between financial standing of the ATS operator &amp; accepted international practice</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

13.  The widely held preposition is that, Participation in any stock exchange is based on some factors about brokers, NSE, and other players. How far do you agree?
<table>
<thead>
<tr>
<th></th>
<th>Agree</th>
<th>Strongly agree</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived trust</td>
<td>[     ]</td>
<td>[   ]</td>
<td>[   ]</td>
<td>[     ]</td>
</tr>
<tr>
<td>Confidence</td>
<td>[     ]</td>
<td>[   ]</td>
<td>[   ]</td>
<td>[     ]</td>
</tr>
<tr>
<td>Reliability</td>
<td>[     ]</td>
<td>[   ]</td>
<td>[   ]</td>
<td>[     ]</td>
</tr>
<tr>
<td>Accountability</td>
<td>[     ]</td>
<td>[   ]</td>
<td>[   ]</td>
<td>[     ]</td>
</tr>
<tr>
<td>Transparency</td>
<td>[     ]</td>
<td>[   ]</td>
<td>[   ]</td>
<td>[     ]</td>
</tr>
<tr>
<td>Governance</td>
<td>[     ]</td>
<td>[   ]</td>
<td>[   ]</td>
<td>[     ]</td>
</tr>
</tbody>
</table>

**SECTION C: The level of trust on institutions entrusted with ATS**

14. Do you consider any information from the *institutions entrusted with ATS* before making investment decisions?
   - Yes [     ] No [     ]

15. CDS accounts are managed by central depository settlement corporation and stock brokers, how do you have confidence with these institutions with management of ATS?
   - Very much [   ] Much [   ]
   - Just a little [   ] Not at all [   ]

16. Do you consult other parties before making investment decisions? Rank them.
   
   (1-Not important at all, 2-A little important, 3- Important, 4- Very important, 5- Critically important)
<table>
<thead>
<tr>
<th></th>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auditor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Board members of a company</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Company’s Accounting Dept</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accounting lecturers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Friends and colleagues</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family members</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SECTION D ; Advantages associated with introduction of ATS in NSE.**

17. The introduction and implementation of ATS in NSE has brought numerous advantages.

- Yes [ ]
- No [ ]

18. How would you rate the advantages associated with introduction of ATS in NSE as a factor to investor confidence?

(1-Not important at all, 2-A little important, 3- Important, 4- Very important, 5- Critically important)
SECTION E: Factors influencing investor confidence in ATS in the NSE

19. The automated trading system management in Nairobi stock exchange might have several factors, thereby leading to investors’ confidence. Do you agree?

- Yes [  ]
- No [ ]
20. Describe ways to increase investor’s level of confidence in ATS at the NSE, in the order of the following ranking.

(1-Not important at all, 2-A little important, 3- Important, 4- Very important, 5- Critically important)

<table>
<thead>
<tr>
<th></th>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good transparency</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Better auditing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low corruption</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Authorized trading of clients shares</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Good performance of economy</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Efficient management</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Improved risk management policies</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effective regulations that govern information flows</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
21. Efficiency criteria for stock exchanges in developing countries are normally poor.
   - Yes [   ]      No [   ]

22. What suggestion would you put forward to NSE stakeholders in redeeming investor’s confidence?

..............................................................................................................................................
..............................................................................................................................................
..............................................................................................................................................