EFFECTS OF INTERNET INTEGRATION ON FOREX TRADING IN KENYA

BY

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DECLARATION

This research work which is my original will not and has not been submitted to any other institution of higher learning for degree award. No section of this project may be produced without the prior knowledge and permission of the author and/or Nairobi University.

Signature…… Date ……

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D61/71409/2014

Supervisor's Approval

This research project has been submitted for examination with my approval as the student's supervisor.

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DEDICATION

I dedicate this work to my parents Mr. and Mrs. Waithaka for their love for education which was beyond reach and for inspiring me to be who I am today.

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ABBREVIATIONS AND ACRONYMS

CBK	Central Bank of Kenya
EDI	Electronic Data Interchange
ICT	Information Communications Technology
LOP	Law of One Price
OLS	Ordinary Least Squares
SPSS	Scientific Package of Social Sciences
TAM	Technology Acceptance Model
U.S	United States

ABSTRACT

In foreign exchange market, internet integration has led to the increase of forex trading through online foreign exchange trader that increase exponentially since the introduction of internet technology. The number of foreign exchange traders has greatly increase thanks to online traders. This inquiry sought to determine the influences of Internet integration on Kenyan foreign exchange trading. The study was based on actor-network theory, ethical theory and the law of one price (LOP). This study research design was a descriptive survey. The study's population of interest comprised of foreign exchange traders who include Commercial Banks, Forex bureaus, and forex brokers. Stratified sampling was used to obtain representative sample of the main participants. Data was presented by use of both inferential and descriptive statistics. SPSS version 21 was used in analysing the collected data. The multiple linear regression equation was used. The findings from this study revealed a direct association amid internet integration and Kenya's forex trading. The study suggests that the Kenyan Government should enhance internet integration as this will have an upward effect on the forex trading in Kenya as well as make sure the economy is stable in both long and short-run. Forex firms in Kenya ought not to just concentrate on forex trading; they should also make sure there is efficient and effective management of internet integration so as to improve the growth of forex firms in Kenya.

CHAPTER ONE

INTRODUCTION

1.1. Background of the Study

In Davis (1989), Technology Acceptance Model (TAM) theory, the successful adoption of new technological advancements is accepted within two measures; Ease of use and usefulness of the advancements. He says that because new technologies are usually incomplete and full of uncertainties, people or users form attitudes and intensions towards their uses. The successful adoptions of the advancement therefore should depend of ease of use and usefulness of the advancement. Forex trading in the world has existed since around the year 1637. According to the Central Bank of Kenya it any transaction executed, service provided, or business undertaken with anyone that involves an international currency all-encompassing lending, transfer, account facility, counter-guarantee, cash sale or purchase, draft, issuance of warranties, cheque, or any other tool stated in an international currency (CBK, 2011).

This was greatly affected by the distance in region of the trading partners, the efficiency and volume of transactions and also the security of funds as it required carrying of large sums of money to the actual trading place. In western countries internet integration has greatly influenced foreign exchange trading. It has led to increase in volume of trading, speed of transaction and security to traders' investments. So much so are these phenomena unresponsive in most African countries such as Kenya that a trader in Kenya is unable to find trusted foreign exchange brokers locally to trade in online forex trading. However, with the new interest of government to develop the ICT

industry in Kenya these effects are predicted to be positively accepted and increase online forex trade.Goldstein and Khan (1985).

Foreign /exchange trading can be defined as the trading of the currencies of different countries or rather speculating on currency prices on a leverage basis so as to buy when they are low and to sell when they are high. It also refers to any sort of transaction executed, service provided, or business undertaken by anyone that involves an international currency all-encompassing any credit extension, issuance of warranties, cash sale or purchase, transfer, cheque, account facility, lending, draft, or any other tool expressed in oversees currency. The rapid globalization of the world has led to complexity in trading of currencies as many countries continue to break away from parent currencies and adopting their own currencies as they gained independence, economic growth of many countries whose economies where down and the business approach by global businesses in their attempt to seek investment opportunities resulted in the adoption of the system for floating exchange rate system which is more market determined exchange rate but more riskier than the fixed rate regime that then creates the need to trade in foreign exchange.

Internet integration refers to the introduction of internet technology to enhance financial, economic and social activities. It may also refer to the penetration of internet to our daily routine. Internet integration has become a very integral component in global and financial Industry. In the banking industry for example, internet integration has help in unlocking the rigidity of the industry by enhancing the speed, efficiency and reducing the costs of money transfer, account opening and operations, Westerman, Bonnet and MacAfee (2014). In communication industry it has helped in the creation of social application like Facebook, WhatsApp and email.

In foreign exchange market, internet integration has led to the increase of forex trading through online foreign exchange trader that increase exponentially since the introduction of internet technology. The number of foreign exchange traders has greatly increase thanks to online traders. According to Bank of International Settlements (BIS). (2010), there are about 9.6 million online traders only minus the overall forex traders 'majority that includes banks and financial institutions. The increase of foreign exchange traders is due to the ease of trading following the massive internet integration in computers and mobile devices. However even though there is a steep increase in internet integration in Kenya there are still not affecting the increase in the number of foreign exchange traders and thereby trading in Kenya. The number of people using internet integration to access forex trading is less compared to the rate of the world yet access of internet towards social sites for example Facebook is still seen as competitive.

The reality is that internet integration has reduced the distance of world populations to each other and therefore trading on each other currencies should be fast efficient and less costly compared to pre-internet era.Westerman, Bonnet and MacAfee, (2014). Evidence from research so far are based on the return or profit on foreign exchange trade on one side and internet integration on the other neglecting the relationship of the two to each other. The need to seek answers to unlock increased forex trading in Kenya therefore stabilising and strengthening our currency is a major topic of discussion. The aim of this investigation is to examine the slow impact of internet integration on the forex industry in Kenya. This study design will be descriptive and correlated with a view of identifying the challenges of internet integration in increasing volume of foreign exchange trading, and the solutions that could be undertaken to address this anomaly.

1.1.1 Internet Integration

Internet integration in this study refers to the art of bringing together foreign exchange devices with internet with a view of increasing the efficiency, quantity and security of transactions. We live in a world that thrives on connectivity. In terms of business, remaining connected is a necessity. The internet integration technology has made this need more critical than ever. Consequently, technology is being developed to become more invasive and integrated to keep people, places, and products connected at any time and from anywhere. Internet integration technology is going to have a huge effect on the future of integration technology. Internet integration technology especially computer technology started by the invention of the internet. The US Advanced Research Projects Agency were the first people to discover and use the internet. According to Chandler (2009),"It was in 1970, that two computer scientist's, Robert Kahn and Vinton Cerf, developed the transmission system for sending data between different networks**.** The system that they developed was called Transmission Control Protocol and Internet Protocol. This was the technical achievement that made the internet possible". With the creation of the internet then came the internet integration which in this study refers to the continuous configuration of devices such as computers and mobile phones to use the internet. According to Michell Weiss, (2009), He stated that advancement within the field of technology is able to lower workforce, make business firms more competitive, reduce waste, heighten communication, reduce waste, increase income and profits, as well as enhance productivity. The reason behind reduced workforce is that "jobs that previously required personnel can now be automated, further reducing costs"

In the quest for businesses to escape the risks associated with foreign exchange trading and concentrate on profit creation, globalization has brought with it technological advancement in not only other sectors but also in business Archibugi, and Michie, (1997). The study postulate that the globalization quest in the use of technology in the sector included to connect users of in this case foreign exchange traders, automate the process cut out the middlemen and therefore reduce costs to the businesses. Foreign exchange excels in first-hand information; the use of middlemen complicated the process in the earlier centuries creating a quest by the businesses to make use of technology. Internet integration technology therefore offers the platform of where foreign exchange trading is manifested by for example the use of online trading where currencies are now being traded online and the speed of growth of these online platforms has really grown to prompt even governments to start rethinking how to enter into the market by regulation and taxes.

From the expansion of access to internet integration and access through Wi-Fi, fiber optic cable technologies and cheap data by mobile subscribers to expansion of mobile technology for example mobile handsets, tablets laptops, and foreign exchange robots. That has greatly affected the old idea of the foreign exchange industry. However, technology can also have its disadvantages in business, Atkinson, (2003) said that progressive change is the major technological problem; this causes the inability of users to adapt to the new technology creating a struggle in managing daily used transactions that causes errors, fraud and misuse of the human mind.

1.1.2 Foreign Exchange Trading

Foreign exchange market has been into existence since the early 1970 and is regarded as the single biggest financial market in the world with trading volumes increasing from 1.6 billion US dollars

to 6.4 billion US dollars with the advent of internet integration. Where the post internet era relied on physical access of banks or foreign exchange bureaus for trading Internet Integration has brought it nearer to just a computer keyboard distance. Since the price of traded currencies changes in momentarily Internet integration has increased the speed and efficiency of capturing these price changes making it easier to make profit. Foreign exchange according to Butler and Kart (2016), refers to the conversion of one currency of one country to another currency of a different currency for a purchase or a sale without making a profit or the intention of profiting of the exchange.

Foreign exchange trading, forex trading as it will be referred in this study refers to the trading of the currencies of different countries or rather speculating on currency prices on a leverage basis so as to buy when they are low and to sell when they are high, Barbosa, R. P., & Belo, O. (2008). According to the Bank of international settlement (BIS). (2010) the total turnover of over the counter exchange instruments has increased from 20 billion united states dollars in the year 1997 to about 85 billion united states dollars in 2016. This shows that overall foreign exchange trade has greatly increased.

Foreign exchange trading also refers the exchange of currencies by buying or selling a country's currency and tacking advantages of small changes in the value of the currencies due to time difference in order to make profit. According to Gyllenram, Hanes, and Hellström, (2013) foreign exchange trading started around 1637 where the price of tulips changed by skyrocketing to nearly 10 times its price over time. Market for foreign exchange is the biggest trading platform globally since it is not characterized by trading of physical goods but virtual currency.

Globalization in the world has created a system where even small transactions or payment across border create or triggers an exchange of currency, therefore firms and businesses alike are conscious on what losses they may accrue due to the exchange of the transactions. According to the Central Bank of Kenya (2011), foreign exchange trading refers to any transaction executed, service provided, or business undertaken with anyone that involves an international currency all-encompassing lending, transfer, account facility, counter-guarantee, cash sale or purchase, draft, issuance of warranties, cheque, or any other tool stated in an international currency

1.1.3 Internet Integration and Foreign Exchange

Labour (1997), posits that technology should not be viewed as non-human functions rather we should view it as anthropomorphized human interaction supporting the actor-network theory that states that "no one acts alone". This theory emphasizes that technology (Internet integration) cannot act alone but if created or integrated by other fields in relation to innovating them then it becomes very successful in relation to the integrated field. In view of this research therefore it proposes a successful future for foreign exchange integrated with technology and therefore seeks to explain the positive impact of internet integration on foreign exchange trading. According to Ilyina and Samaniego, (2008), the search for systematic factors that might determine the need or ability to raise external funds in an imperfect environment such as the foreign exchange market has led also to many researchers' belief that such factors must and are likely to be industry specific and technological in nature, underlining why technology is the main factor in forex trading. However, no systematic effort either through thesis or practical research has been made to identify what these factors entail.

According to the LOP which states that similar commodities ought to bear same price after considering all rates of exchange in an efficient market, it creates a situation of no arbitrage that is the profit of foreign exchange trade, Agenor, Hoffmaister, and Medeiros(1997). The availability of arbitrage in foreign trade creates a surge for transactions to gain profit by many traders reducing the arbitrage to zero over timethis alters the market supply or demand, hence resulting in a change in price Cumby and Obstfeld (1984). Internet integration here offers the speed and efficiency needed to take advantage of these offers or arbitrages through faster transactions, faster information and efficient trading.

Although Speculation may be the backbone of foreign exchange trading, as Singh, (2013) postulated, there exist some stronger and more stable currencies for example the euro and dollar account that creates certainty in this line of reasoning. However, according Géczy et al (2007), the belief that speculation is lucrative as an international exchange exposure is the main driving factor and alludes to the responsiveness of the company's real local currency value for operating income, assets, cash flows, or obligations to unforeseen alterations in rates of exchange (Adler &Dumas, (1984).

Lacovou (1995) model analyzed features which compel organizations to embrace technological novelties. The model found that the characteristics are founded on three aspects: external forces, perceived benefits, and firm readiness. It also found that the readiness of an organization combines both the firm's technological and organizational environments. This theory extends to support a positive inclination of technology on foreign exchange trading. However the rapid globalization of the world has led to complexity in trading of currencies as many countries continue to break

away from parent currencies and adopting their own currencies as they gained independence, economic growth of many countries whose economies where down and the business approach by global businesses in their attempt to seek investment opportunities resulted in the adoption of the system of floating exchange rate that is more market determined exchange rate but more riskier than the fixed rate regime(Baxter &Stockman, 1989). The bigger profit however induces investors to the benefits of this rate regime and as a result creates innovation and strategies on how to survive this rate by avoiding risks and gaining profit.

1.1.4 Internet Integration and Foreign Exchange in Kenya

On Kenya vision 2030 blueprint the government seeks to create a youthful online business community by promoting online business opportunities for the youth. It established for example the Amira Digital program through the ministry of information and technology and University of Nairobi (UON) that targets over 1000 youths in order to train them for online job opportunities, that was one year ago. Forex opportunity however have not take-off in Kenya even with the programs initiated by the government. According to Njunge (2010) in the analysis of foreign exchange rates by financial institutions, he found out that the financial institutions in Kenya adopt risk management practices that end up frustrating foreign exchange trading in Kenya.

The Kenya 2018 population and internet users ‘statistics, on a population of 50,950,879 people, there were 200,000 internet users in the year 2000, to a growth of up to 43,329,434 internet users in 2017 creating an internet integration rate at 85%. Using the social networks as an example to calculate internet integration in Kenya, shows the growth of 21564% growth since 2000 to 2017. However, this exponential growth cannot be seen in the case of an increase in online foreign

exchange trading. Majok (2015) in his study to establish the impact of fluctuations in exchange rates on Kenya's commercial banks' financial performance, postulates that price fluctuations affect the overall profit that a financial institution should make. Online foreign exchange reduces this effect considerably as an individual trader in Kenya can make a transaction in Singapore and get paid instantly due to online banking institutions like PayPal.

Kiptalam and Rodrigues (2010), in their internet utilization study found that internet usage in learning and teaching in high schools is rising with its usage more prevalent amongst teachers and students as a channel for information search as well as effective communication. The rates of internet use for learners and teachers have been noted to rise in learning institutions that heavily invest in information communication technology educational programmes. This has translated into efficient use of technologies related to information and communication.

1.2 Research Problem

Forex trading refers the exchange of currencies by buying or selling a country's currency and tacking advantages of small changes in the value of the currencies due to time difference in order to make profit. According to Gyllenram, Hanes, and Hellström, (2013) forex trading started around 1637 where the price of tulips changed by skyrocketing to nearly 10 times its price over time. People therefore started buying them only to resell them at the higher price later. Since then the trading has existed to the currency trade now. Foreign exchange trading has been a big avenue for shareholders, analysts, investors, and managers after the Bretton Woods' fixed exchange rate system was abolished in 1971.

Following its abolishment, a floating exchange rate system-where currency price is determined by forces of demand and supply-was discovered to replace Bretton woods system. Arbor (2005) argues that this new system is responsible for currency fluctuations given the constant changes in demand and supply determined by countless external forces. This fluctuation causes arbitrage profit to arise hence creating a frenzy of buying and selling until the law of one price is attained. However, to enter into the currency trade one has to have information that the price of the product will eventually change. Such information gathering requires speed and accuracy in order to make the desired or effective profit.

Studies done include a study by Irene, (2011) that sought to find the link amid profitability of Kenya airlines and risk of foreign exchange. Also, Onyancha (2011) studied the relationships of oversees losses and exchange suffered by NGOs. Ongeri, (2012) sought to find out the effect of Nairobi stock Exchange andforeign exchange trading. The entry of internet integration into this industry therefore sought to increase the speed, efficiency and accuracy which are regarded as the greatest impediments to foreign exchange trading in Kenya. Chandler, (2009). The impact of internet integration on the industry is well documented. Since internet technology in 1970 the number of foreign exchange traders have skyrocketed in the world. Globally there have been an increase of foreign exchange traders from 1996 to 2017 that is attributed to the internet integration into mobile devices like tablets, and mobile phones that increased the ease of trading online.

In Kenya however this increase of online trading activity cannot be accounted for, the study therefore seeks to assess the effects internet integration has on foreign exchange trading with a view to ascertain why although many people have access to internet there is a slow growth of

Online foreign exchange trading. Studies assessing the effect of internet integration in foreign exchange trading has been however given a wide berth and therefore creating a gap to study the subject. With the globalization expansion mainly propelled by the internet, many forms of industries are continuing to integrate with it and foreign exchange trading is definitely not left alone. Kenya as a country must also increase its participation in the industry in order to attain many industrial blueprints it has for the youth of this country. The main objective of this research therefore is to find out the impact of internet integration on foreign exchange technology and why the positive impacts that increases the volume of trading internationally does not occur in Kenya and the policy that can be used to improve the situation.

1.3 Objectives of the Study

The investigation sought to determine the effects of Internet integration on Kenya's foreign exchange trading.

1.4 Value of the Study

Given that the trading offers employment to most unemployed youth and the government seriousness of entry into the market the researcher foresees a situation of lack of information of how we can take advantage of the internet integration availability to improve our countries economic and financial capabilities in finding gainful employment opportunities.

The results of this examination are likely to profit both government and the general public to gain insight on the how internet integration affects forex trading. The study is going to establish the key variables that need to be taken into account by policy makers while undertaking forex trading

Researchers may gain insight into what the relationship between internet integration forex trading which will aid them with necessary information while undertaking future related study. Research is a useful tool for developing, supporting or negating theory. This study may also help the key policy makers in devising proper mechanisms that will ensure full integration internet in order to enhance forex trading in the country.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The chapter consist of past works related to the past studies that the researcher seeks to examine. The sections covered include a review of theories, literature, and a summary of literature.

2.2 Theoretical Review

Forex trading refers to the buying and selling of different countries' currencies to make a profit. The medium in attaining the required revenue would be through technological innovations; the internet. Theoretical review below looked at the various theories that underline forex trading and the independent variable internet integration.

2.2.1 Actor-Network Theory

This theory emphasizes that technology cannot act alone but if created or integrated by other fields in relation to innovating them then it becomes very successful in relation to the integrated field. In view of this research therefore it proposes a successful future for foreign exchange integrated with internet technology and therefore seeks to explain the positive impact of technology on foreign exchange trading. Many times we often and practically eliminate consideration non-human resources, believing that they have a condition that is different from that of mankind viewing materials as constraints or resources; they're deemed passive unless acted upon by humans. However, as said noted by Callon and Law (1997), this asymmetry does not work properly if the social is really materially heterogeneous.

In relation to this research therefore, the study creates a situation problem where technology and its relations cannot stand alone. That is technology must be integrated with a situation in order to realise its gains and performance. This study analyses therefore the relationship between technology and its integration to foreign exchange trading and supports the researcher in assuming a positive correlation.

2.2.2 Ethical Theory

According to Manuel Velasquez and Clair Andre Being, (1987) "Ethics has to do with what my feeling tell me is wrong." "Ethics has to do with what my religious beliefs." "Being ethical is doing what the law requires." "Ethics consist of the standards of behaviour our society accepts" It's not basically abiding by the law. By and large, the law includes moral values and standards that guide the conduct of many people. However, laws such as law of feelings are able to move away from what's moral or ethical.

The theory of ethics places on the concept of justice, truth and fairness. This is likely to ensure that we do everything possible and morally ethical to ensure we do good things. Such good things will be reflected by this research for the use of technology in the foreign exchange trading. Issues such as honesty may distract fraud in the industry making the trading even safer for all traders irrespective of the country.

It is through this theory that the researcher foresees the positive effects of Internet integration to foreign exchange trading by minimising fraud, robberies and misinterpretation of facts that are the real dependable factors that may lead to effective policy framework in the industry. The researcher

predicts a negative impact without this theory and may actually lead to industry collapse or introduction of stringent measures.

2.2.3 The Law of One Price

Another theory that is deeply entrench into this study is the law of one price; abbreviated as (LOP or LOOP). This is an economic theory that says similar commodities ought to bear the same price after the rate of exchange is considered in an efficient market. When there is a difference in commodity prices and individuals make use of arbitrage chances, their practices compel the commodity prices to meet in the middle, and consequently even out. According to Agenor et al (1997), drastically divergent prices are a sign of strange events or inefficient market.

As per LOP, sellers often search for high price whereas buyers seeks out the lowest price, and since the two should converge, financial market prices ought to be the same. For example, the price of a stock in one market should be exchanged in another market for the same price. People tend to gravitate towards the prices most favorable to their interests if aware of different prices being charged in other markets.

This alters the market demand or supply hence resulting in a change in price Cumby & Obstfeld, (1984). With goods, the LOP should include the transportation costs as well. In such a scenario, the commodity price in varied locations would vary basing on the costs of transportation. When the price significantly beyond this point, it's an indication of new market trend including a glut driving prices down or a shortage forcing a price extremely high. According to Akram et al (2009), people can make use of different divergent values to indulge in arbitrage.

2.3 Determinants of Forex trading

These refers to factors that create or enable the existence of forex trading. There are four factors that will be considered for this study. These are, Technology Inflation rate, Interest rate and Political instability.

2.3.1 Technology

Forex trading involves the trading of different countries' currencies, technology offers the ability to shorten the distance of these countries without need of travel, increases the speed of transactions and the efficiency and security of bulk transactions. Without technology, the trader would have to travel to the countries for trading which would greatly hinder forex trading.

2.3.2 Inflation Rates

When market inflation changes it causes changes in currency exchange rate. Specifically, a country that has high inflation rates will exhibit very high interest rates that devalue the currencies of the country. It is therefore easier for a foreign currency trader to buy these currencies in their lowest value and sell them later for profit if there is speculation of a reduction of inflation rates.

2.3.3 Interest Rates

As discussed above High interest rate exhibit currency devaluation and hence a trading opportunity for forex traders to buy at low currencies with an expectation that interest rates would reduce and sell at a profit. Therefore, low interest rates present an opportunity to sell currencies at a higher price as they will be on demand.

2.3.4 Political Instability

Political instability with or without violence provide an opportunity for the changes in value of a country's currencies. Most countries in Africa experience devaluation of currencies due to political instability and therefore lowers the prices for their currencies which can be bought at lower prices, however western countries for example the United States of America exhibit peculiar scenario that characterizes political instability but gaining currency.

2.4 Empirical Studies

In a study to Identify revue generating business strategies, Deeter et al (2003) posit that a number of strategies a business can use technology to conduct their exchanges to improve profit and revenue exist (Archer &Yuan, 2000). In World Wide Web navigation aid also found that some technological solutions make it possible for businessmen and in this case forex traders who are mainly geographically dispersed to share copy and deliver data through the internet via servers and many other forms. Therefore, internet integration as an objective of this research seeks to support this view that where internet integration is high amongst the population the greater the forex trading is affected although variably since as the revenues increase so as the frauds and losses also increase.

Kedia andMozundar, (2003) in an empirical examination of foreign debt indicate that, there is a profound rise in number of organizations with several business operations overseas due to integrated global economy. This has been coupled with their foreign involvement in trade activities that range from straightforward export or import practice to sophisticated choices such as unified

worldwide competition, sourcing, and production; therefore, these international businesses encounter a myriad of exchange rate uncertainty, legal eras, differing capital and products market, as well as political risks. Engagement in foreign exchange trading through internet integration without physically being there reduces the risk associated with globalization but an increase in the speculation and arbitrage on forex market.

In their empirical study of Banks and regulation, Houston and Chen, (2013), indicate that in the end result of the latest financial hurdles, there is a hot debate concerning the need to alter the regulatory structure of the financial system across the world. Majority have emphasized that vigilant regulation should be a necessity, however, the general feeling is that firms within the financial sector can avoid regulations by operating in less controlled markets, as a result, the comparative benefits and costs of organizing regulations throughout states are congruent to the degree to which such kind of regulatory arbitrage occurs. The researcher believes that this might be the reason forex trading in Kenya is marred by problems that can only be solved by efficient regulation.

Foreign firms which might be running away from efficient regulation in their own country maybe coming to Kenya to explore the serious loopholes in our foreign exchange policy and less advanced technology to conduct fraud and other malpractices. Schmelz, (2002) in empirical study of emotional intelligence and banks performance found that utilizing EDI, for instance, is a means of permitting flow of information through IT including requesting information for repayment, product, or delivery (Nath&Angeles, 2000). Laage-Hellman (1989); Hill and Scudder (2002) state

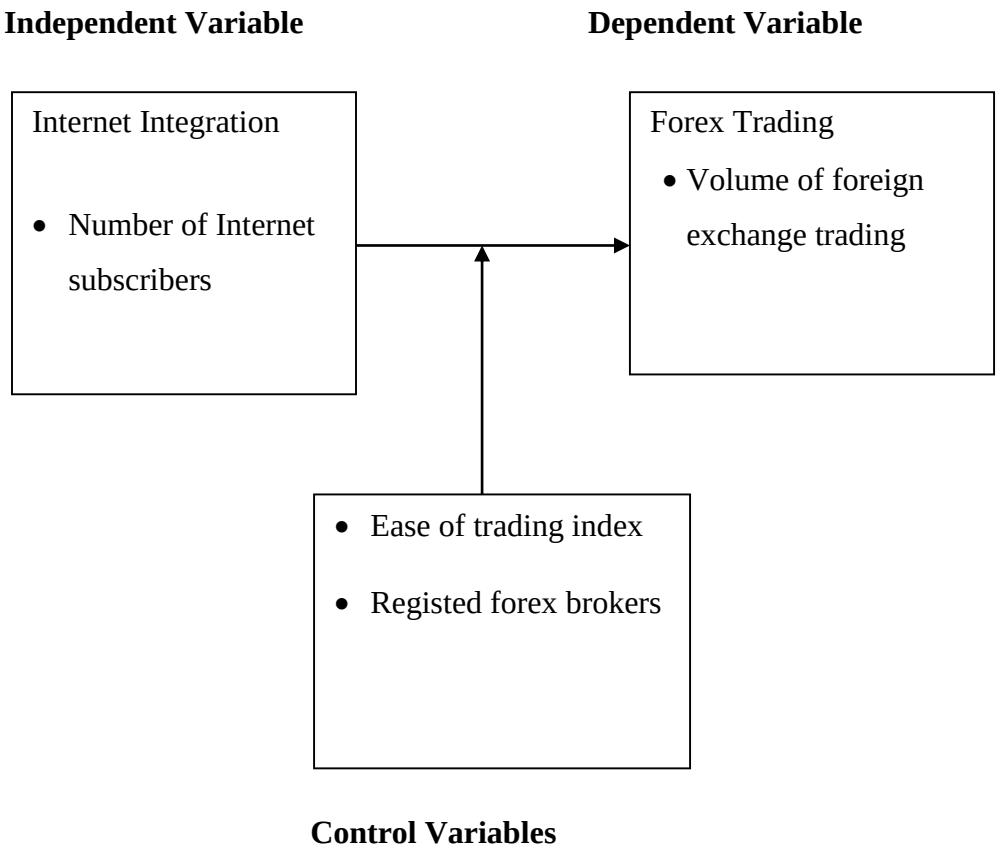
that with unified electronic data interchange, a firm's efficiency increase and allows business associations to reduce costs and save time.

Foreign exchange risk does also multiply in the presence of forex trading and technology. To start with, Jorion (1990) conducted a seminal study to determine if corporations are exposed to risk of foreign exchange. Allayannis and Ofek (2001); Gentry and Bodnar (1993); Chow et al (1997); and Bodnar andbartov (1995) examined the impact of financial hedging on the exposure to foreign exchange trade. In a recent study, Pantzalis (2000) investigated the capacity of operational hedges in minimizing foreign-exchange exposure. Many of these studies look into the foreign exchange risk in trading but do not explain how the risk is impacted by technology. Whether technology reduces or increases the foreign exchange risk

Also, a host of empirical inquiries have been conducted locally. First, Irene (2011) examined the link amid profitability of Kenya's airlines and risk of foreign exchange. In her study, she employed a case study research design. The study findings revealed that an indirect association amid profitability and risk of foreign exchange exists. Fluctuations in currency influence commodity prices thus negatively affecting expenses and revenues expressed in oversees CCY. Elsewhere, in his study, Muriithi (2011) sought to determine the association amid market performance and foreign exchange rate among manufacturing firms. A descriptive study design was employed. The study outcomes revealed that market performance and exchange rates are positively correlated.

2.5 Conceptual Framework

Figure 2.1: Conceptual Framework



The rate of increase of foreign exchange traders indicated a positive effect of internet integration on foreign exchange trading. Volume of currencies traded online indicated a positive impact if increase while a negative impact if they reduce. These statistics was accessed from the Kenya bureau of statistics. The success of regulations on internet integration regarding forex trading the ease of trading via applications showed a positive impact of internet integration through the statistical observation of ease of trading index.

2.6 Summary of Literature Review

It is evident that performance is pegged on various variables from the different works of the authors mentioned above. The purpose of this thesis was to look at the effects of Internet integration on foreign exchange trading in Kenya. The summary of the literature above is to show what has been done so far to improve the situation and why it has not. Additionally, this chapter appreciates the citations and efforts of different authors on aspects that affect performance figures amongst them are; the long term serving employees, skilled workers, team work and the surrounding environment in terms of rural or urban set-up.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

Discussed in this section is the study methodology and design. The chapter offers an outline of the population of interest, techniques and approaches of sampling, methods of data collection and analysis, perceived limitations, sampling design, moral considerations, as well as the possible outcome.

3.2 Research Design

This study research design was a descriptive survey as well as correlation study which will help in establishing the associations between variables. These designs are preferred because they combine the use of case-study and case study control techniques and observational survey and study about different countries, currencies and traders. In the words of Babbie (2004), this approach was selected because it's more accurate and precise as it entails a description of circumstances in a well-planned manner.

3.3 Target Population

According to Mugenda et al (1999) target population is the total sample that the researcher wants to generalize in the inquiry. The target populace for this investigation consisted of foreign exchange traders who include Commercial Banks, Forex bureaus, and forex brokers. There exist 56 commercial banks in Nairobi, an estimate of 60 forex bureaus and 5 forex brokers.

3.4 Sampling Techniques and Sample Size

Stratified sampling was used to achieve representation of the main respondents. Mugenda (2005) claims that a sample size is suitable if it it's 30 percent of the entire population.

3.5 Data Collection Procedure

Flick (2009) defines data collection as the process of obtaining scientific evidence with a view of developing new understandings concerning the situation and respond to the study questions. The study sought to use secondary data. Published secondary data was collected by published statements from government and end of year reportsso as to circumvent opinion bias in each case and serve as a means of triangulation, the data was gathered from several key informants (Bonoma, 1995). Triangulation seeks to "overcome the intrinsic bias that comes from single-method, single observers and single theory studies" (Denzin, 1998). The main approach for choosing a study method comprised longitudinal, process-centred interviews, observation of the target population and use of interviews.

3.6 Research Instruments

These are means of obtaining data. The researcher will not be able to put the data in hand without these instruments. Study instruments include: observation, feedback forms (questionnaires), rating scales, and interviews. Self-administered feedback forms were used to collect data from the respondents. Concerning the types of study questions, the feedback form comprised of close-ended and open-ended questions (Dillman, 2000).

3.7 Data Analysis

The research used both descriptive and inferential statistics to present the study. SPSS version 21 was used in analysing the data obtained. First, data collected was cleaned, organized and coded. Characteristics of gathered data were outlined through descriptive statistics. Ordinary Least Squares, a method of estimation, and multiple linear regressions were also used to determine the effect of internet integration on the population and foreign exchange trading in Kenya. The findings were shown in form of graphs and frequency tables to help in data analysis.

3.7.1 Diagnostic Test

The researcher resolved to register in person a forex trader to experience first-hand the problems faced by traders in daily operations so as to evaluate the impact of technology on foreign exchange trading in Kenya. Unfortunately, there are no reliable forex brokers in Kenya and the only way to trade and gain a profit is by using oversees brokers. Forexkenya.net (n.d). The foreign websites also demand a deposit of a minimum of 500 United States dollars to start trading with no security that your money is safe. If there were reliable brokers in Kenya, trading would be easy and since the broker would be known raising and depositing the required deposit would be easy and secured. This is why the researcher sought to find out why there are no reliable brokers and what would be done to ensure they are.

3.7.2 Analytical Model

An equation of multiple linear regressions was employed to consider the dependent variable as shown;

$$\mathbf{Y = \beta_0 + \beta_1 X_1 + \beta_1 X_2 + \beta_1 X_3 + \varepsilon}$$

Where;

Y=Forex trading measured by volume of foreign exchange trading

$\beta_1, \beta_2,$ =Coefficients of determinations/The slope of the curve

β_0 =Constant/Y intercept

X_1=Internet integration in Kenya trend for past 8 years measured by the number of internet subscribers in Kenya

X2 = A Statistic for change of ease of trading index by central bank – measured by total value of trading index

X3 = Number of registered forex brokers in Kenya increase 8 years

α = The values of an unobserved error term.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND INTERPRETATION

4.1 Introduction

This particular section makes a presentation of data analysis and interpretation. This examination sought to assess how the forex firms in Kenya have been affected by internet integration. Collection of data was done from 17 banks, 18 forex bureaus and 5 forex brokers in Kenya. The data sources included CBK reports, annual statements for a period of 8 years (2010-2017) as well as other publications. Data was obtained basing on the research parameters including: forex trading; internet integration, trading index and number of registered forex brokers.

4.2 Descriptive Statistics

Bolomo (2000) take descriptive statistics to mean the measures that state the type of data being studied. They describe the kind of answers from secondary or primary sources of data. Minimum, maximum, mean, and standard deviation made up the list of descriptive statistics utilized in this inquiry. Analysis of descriptive data was done on foreign exchange trading; internet integration, Number of registered forex brokers.

Table 4.1: Descriptive Statistics

	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Forex Trading (Ksh.)	62130.06	82342.03	74247.09	7046.72	-0.736	0.637	-0.931	1.232
Internet integration*1	3928602	5438103	4646236	494636.7	0.138	0.637	-1.176	1.232
Trading Index*2	89.746	93.820	91.231	1.440	0.658	0.637	-1.046	1.232
No of brokers*3	0	5	1.27	0.52	2.83	0.637	7.92	1.232

Key:

*1 number of internet subscribers

*2 volume

*3 number

As presented in table 4.6 the average value of the forex trading measured by Foreign exchange trading, was 74247.09with a standard deviation of 7046.72, maximum value of 82342.03and 62130.06 minimum value. The standard deviation for the mean value depicts the existence of high disparity. The results indicated that the average internet integration is 4646236with a maximum of 5438103 and a minimum of 3928602. This indicates increased high level of internet integration. Trading index had a 91.231average, a maximum of 93.820and a minimum value of 89.746.

4.3 Diagnostic Tests

Raw data was tested for suitability running diagnostic tests as follows.

4.3.1 Tests of Normality

The proper application of the parameters of inferential statistics the assumption of normality is tested. This is to ensure that the kurtosis and skewness of the data is tested. This is just to make a confirmation on whether the data under study is normally distributed. The data normality was then tested by use of Shapiro-Wilk Test and Kolmogorov-Smirnov Test. The second method is best used when the sample of the data is small i.e. less than fifty. The method is much more reliable especially when making a determination on kurtosis and skewness of the data. When the result is below 0.05, then it is slowly deviating from the normal data distribution.

Table 4.2: Shapiro-Wilk Test of Normality

Variables	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Internet integration	.072	24	.200	.979	24	.428
Trading index	.093	24	.200	.972	24	.219
No. of registered forex brokers	.085	24	.200	.976	24	.322

In accordance to the results, the Shapiro-Walk values were 0.428 for internet integration, 0.219 for trading index and 0.322 for Number of registered forex brokers. Kolmogorov-Smirnov tested significant values were at 0.200 for internet integration, trading index, and Number of registered forex brokers each. This brings an implication that the p-value is far much greater than level 0.05 then the prediction that the data was normally distributed cannot be denied. The tested results are therefore of the population emanating from the normal distribution.

4.3.2 Test for Multi-collinearity

The outcome of multicollinearity test was as presented in Table 4.3.

Table 4.3: Coefficients[a]

	Colinearity Statistics Tolerance	VIF	COMMENT
Internet integration	0.943	1.06	No Multicollinearity present
Trading index	0.982	1.018	No Multicollinearity present
Number of registered forex brokers	0.952	1.051	No Multicollinearity present

In the results above, all the VIFs are very low because they are well below 5. These values suggest that the coefficients are weljl estimated and the study should trust their p-values.

4.3.3 Serial Correlation

Wooldridge F-statistic serial correlation analysis was done to test whether the study variables were correlated in any way. Serial correlation test was done and as per the results it is clear that there is no correlation. This ensures the OLS estimates are not biased. The diagnostic results are found on Table 4.4 below:

Table 4.4: Serial Correlation

Test	Statistic
Durbin Watson	2.469

Source: Research Findings

The Durbin Watson serial correlation test results as per Table 4.4 indicated the value to be 2.469 which is more than 2 implying that there is no serial correlation.

4.3.4 Heteroscedasticity

This takes place when the error term of the variance is different across the observed data. The heteroscedasticity is very essential in examination of the difference that exist in the variance of the observation to the other (Godfrey, 1996). In accordance to this case, the assumption made is that if the value>0.05, then there should be very minimal problem of the herescedasticity. Table 4.5 below shows the outcomes for Heteroscedasticity measures.

Table 4.5: Test for Heteroscedasticity

Coefficients[a]						
Model		**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**
		B	**Std. Error**	**Beta**		
1	(Constant)	1.125	0.612		1.838	0.068
	Internet integration	0.198	0.445	0.146	0.444	0.657
	Trading index	0.096	0.056	0.126	1.714	0.089
	Number of registered forex brokers	0.256	0.189	0.045	1.354	0.178
a. Dependent Variable: foreign exchange trading						

Basing on the level of output, the values obtained>0.05, hence there is no big difference existing in the variation of dependent to independent variables that were tested.

4.4 Regression Analysis

In simple words, regression analysis refers to the computational method that establishes the association amid multiple quantitative parameters: Explanatory/independent parameter- to which knowledge is readily available; and predictor/dependent variable-whose value is to be foretold. The method is utilized to formulate an equation that conveys the association amid study parameters. With multiple regressions, an equation that foretells one parameter from multiple predicted parameters can be derived.

An investigator performed an analysis of multiple regressions to measure the association amongst parameters in Kenya's forex trading. SPPS version 21 was used to key in, code, and calculates the tests of the multiple linear regressions for the inquiry. Normally, coefficient of determination is the degree of variation in the predicted parameter (Kenya's forex trading) is described by all the six predictor components (No. of registered forex brokers, internet integration, and trading index) or describes the degree to which an alteration in the predictor parameter explains a change in the explanatory variable

The multiple linear regression models that guided the study was as followed:

$Fp_t = \beta 0 + \beta_1 X1 + \beta_2 X2 + \beta_3 X3 + e_t$

A summary of the regression model findings in which Standard error, R square, and adjusted R square are shown in Table 4.6:

Table 4.6: Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
.891[a]	.794	.784	1.021

The findings presented in Table 4.6 show that the Internet integration had s combined substantial impact on forex trading as indicated by r value of 0.891. Predictor variables represented 79.4 percent of the difference on Kenya's forex trading as indicated by the R squared of 0.794.

Table 4.7 denotes the results for analysis of variance that describe the probability of F-statistic and fit of model via F-statistic.

Table 4.7: ANOVA

	Sum of Squares	**df**	**Mean Square**	**F**	**Sig.**
Regression	74.679	3	24.89333	6.170931	0.00001[b]
Residual	149.257	37	4.033967		
Total	**223.936**	**39**			

The findings Table 4.8 reveal that the F statistic was 6.170931. The F statistic was significant at the confidence level of 5%. In this event, independent parameters altogether (internet integration, trading index, and Number of registered forex) describe a variation in forex trading and show that the general model is considerable.

Table 4.8 presents the results of coefficient for the model parameters, the t-values as significance (p-value) and each of the predictor variables.

Table 4.8: Coefficients

Model		**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**
		B	**Std. Error**	**Beta**		
1	(Constant)	0.706	0.151		4.6755	0.000
	Internet integration	0.556	0.221	0.146	2.5158	0.016
	Trading index	0.601	0.179	0.126	3.3575	0.002
	Number of registered forex brokers	0.599	0.123	0.045	4.8699	0.000
	a. Dependent Variable: forex trading					

From the table above, the results established that that embracing Internet integration, Trading index Number of registered forex brokers, constant forex trading stands at0.706. Also, it was revealed that a unit rise in Internet integration activities will result in a rise in forex trading by .556. In addition, the study determined that a unit rise in Trading index activities will result in a 0.601 rise in forex trading. Further, it was determined that a unit rise in Number of registered forex brokers practices will result in a rise in forex trading by 0.599.

4.5 Interpretation of the Study Findings

The study revealed that Internet integration had a joint significant effect on Kenya's forex trading in Kenya as indicated by r value of 0.891. From the study, predictor variables constituted 79.4 percent of the variance on forex trading in Kenya as indicated by R squared factor of 0.794. The F statistic was significant at a confidence level of 5 percent. In this event, independent parameters altogether (internet integration, trading index, and number of registered forex brokers) determine a difference in forex trading and that the general study model is considerable.

The study is in agreement with Archer and Yuan, (2000) who found out that in world wide web natigation aid also found that some technological solutions make it possible for businessmen and in this case forex traders who are mainly geographically dispersed to share copy and deliver data through the internet via servers and many other forms. Therefore, internet integration as an objective of this research seeks to support this view that where internet integration is high amongst the population the greater the forex trading is affected although variably since as the revenues increase so as the frauds and losses also increase.

The results presented in the table above show that embracing Internet integration, Trading index Number of registered forex brokers constant forex trading will stand at0.706. Also, it was established that a unit rise in Internet integration activities will result in a rise in forex trading by a factor of .556. More so, the study determined that a unit rise in Trading index activities causes a 0.601 rise in forex trading. Further, it was established that a unit rise in Number of registered forex brokers activities will result in a rise in forex trading by 0.599. Similarly, Kedia and Mozundar, (2003) in an empirical examination of foreign debt indicate that, there has been a profound rise in the number of organizations with some business operations overseas due to increasingly integrated global economy. This has been coupled with their foreign involvement in trade activities that range from free export or import practice to sophisticated choices such as unified worldwide competition, sourcing, and production; therefore, such international organizations experience a myriad of legal eras, uncertainty in exchange rates, several capital and product markets, and political risks. Engagement in foreign exchange trading through internet integration without physically being there reduces the risk associated with globalization but an increase in the speculation and arbitrage on forex market.

CHAPTER FIVE

SUMMARY CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

Presented in this chapter is the summary of findings from previous sections and outline study limitations, conclusion, and conclusion with regard to the study objective. This inquiry sought to determine the relationship amid internet integration and Kenya's forex trading. Secondary data used was obtained from audited financial statements of 17 banks, 18 forex bureaus and 5 forex brokers in Kenya for a period of 8 years starting 2010 to 2017. Forex trading was measured via foreign exchange trade, internet integration through number of internet subscribers in Kenya, trading index through Statistical change of ease of trading index by central bank and Number of registered forex brokers through Number of registered forex brokers in Kenya increase 8 years.

5.2 Summary

The study revealed that Internet integration had a joint significant effect on forex trading in as indicated by r value factor of 0.891. From the study, predictor variables constituted 79.4 percent of the variance on forex trading in Kenya as indicated by R squared factor of 0.794. The F statistic was significant at a confidence level of 5 percent. In this event, independent parameters altogether (internet integration, trading index, and number of registered forex brokers) determine a difference in forex trading and that the general study model is considerable

The results presented in the table above show that embracing Internet integration, trading index Number of registered forex brokers constant forex trading will stand at0.706. Also, it was

established that a unit rise in Internet integration activities will result in a rise in forex trading by a factor of .556. More so, the study determined that a unit rise in Trading index activities causes a 0.601 rise in forex trading. Further, it was established that a unit rise in Number of registered forex brokers activities will result in a rise in forex trading by 0.599.

5.3 Conclusion

The study did confirm that internet integration influences forex trading as seen from data analysis presented in chapter four. There is a positive association amid foreign exchange trading and internet integration; this implies that an increase in internet integration cause a rise in forex trading in Kenya. The study revealed that Internet integration had a joint significant effect on forex trading in as indicated by r value factor of 0.891. From the study, predictor variables constituted 79.4 percent of the variance on forex trading in Kenya as indicated by R squared factor of 0.794. The F statistic was significant at a confidence level of 5 percent. In this event, independent parameters altogether (internet integration, trading index, and number of registered forex brokers) determine a difference in forex trading and that the general study model is considerable.

5.4 Recommendations for Policy and Practice

The findings from this study reveal a direct association amid internet integration and Kenya's forex trading. The study proposes that Kenyan government should enhance internet integration as this will have an upward effect on the forex trading in Kenya and make sure that the general economy should be stabilized in both long and short-run. Besides focusing on forex trading by Kenya's forex firms, they should guarantee efficient and effective management of internet integration as well to improve their growth.

5.5 Limitations of the Study

While carrying out this study, we faced a host of challenges that prevented us from conducting an efficient examination. First, some forex firms didn't have readily available audited financial statements to be used thus reducing the sample size from which data was obtained. The study focus was mainly on Kenya as a country. The outcomes may be irrelevant to other global states due to varying business environment. Finally, the study period included 8 years, starting 2010 to 2017. This is a short time for making unequivocal deduction.

5.6 Suggestions for Further Studies

The study proposes that a further study on the relationship amid the two parameters: internet integration and forex trading in other sectors of Kenyan economy ought to be done. The degree of internet integration that a firm should maintain is normally regulated. Cross border studies should be carried out oversees to determine the influence of varied operating and economic factors on the link amid the two parameters.

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APPENDICES

Appendix I: Volume of Foreign Exchange Trading

	2010	2011	2012	2013	2014	2015	2016	2014
December	50429.46	70468.41	76905.57	78673.99	97025.61	73552.32	76470.31	92453.63
November	53596.69	77443.32	83837.21	71723.9	78706.79	114283.3	79842.7	87276.06
October	42706.32	89852.11	62381	92959.78	113262.1	74513.21	73088.41	98771.2
September	45730.83	58232.4	65641.29	71017.14	119462.7	88802.52	78222.84	91411.35
August	46168.73	60490.54	72218.12	78833.16	100000.7	70620.75	85972.5	102624.5
July	47075.05	76055.2	80512.51	82680.73	105738.5	84747.99	69274.54	112651.7
June	40838.09	47570.75	70794.81	58416.58	69529.95	80638.12	79104.31	91439.66
May	40489.5	65857.38	86408.98	70062.98	102611.6	98073.39	66288.77	98751.87
April	26972.74	46774.02	57981.04	76076.35	90289.2	89961.29	78318.83	84259.95
March	40596.31	55070.07	59293.38	68299.05	59157.56	67155.56	60391.09	87077.48
February	40596.31	53185.18	75017.38	69715.92	64424.44	70497.51	49073.67	82883.25
January	40596.31	63442.77	81787.4	83648.2	87053.98	86484.43	58459.58	101893.7

Appendix II: Internet Integration

	2010	2011	2012	2013	2014	2015	2016	2017
Jan	1982864	2141498	2312820	4586554	4783775	4989478	5204025	5427798
Feb	2042350	2205743	2382205	4724151	4927288	5139162	5360146	5590632
March	2103620	2271915	2453671	4865875	5075107	5293337	5520950	5758351
April	2166729	2340073	2527281	5011851	5227360	5452137	5686579	5931101
May	2231731	2410275	2603099	5162207	5384181	5615701	5857176	6109034
June	2298683	2482583	2681192	5317073	5545706	5784172	6032891	6292306
July	2367643	2557061	2761628	5476585	5712078	5957698	6213878	6481075
August	2438673	2633772	2844477	5640883	5883440	6136429	6400294	6675507
September	2511833	2712786	2929811	5810109	6059943	6320521	6592303	6875772
Oct.	2587188	2794169	3017706	5984413	6241741	6510137	6790072	7082045
Nov.	2664803	2877994	3108237	6163945	6428994	6705441	6993774	7294507
Dec	2744748	2964334	3201484	6348863	6621863	6906604	7203588	7513342

Appendix III: Trading Index

	2010	2011	2012	2013	2014	2015	2016	2017
Jan	93.62	88.39	84.32	87.6	88.39	103.87	101.36	103.01
Feb	91.1	87.8	84.21	87.28	87.8	102.52	101.39	103.07
March	89.86	87.63	84.23	86.01	87.63	98.64	101.1	101.35
April	85.7	87.8	86.83	85.12	87.8	97.78	100.83	101.79
May	83.42	83.82	83.22	83.82	86.87	94.6	101.14	101.43
June	82.99	85.64	83.06	85.64	86.44	92.34	101.33	100.67
July	82.36	86.24	82.97	86.24	86.33	91.42	101.7	100.71
August	81.27	87.61	84.59	87.61	86.24	91.67	102.28	101.44
September	80.75	90.6	85.07	86.03	86.31	90.6	102.31	100.98
Oct.	77.45	90.18	89.72	85.93	86.99	90.18	102.11	101.31
Nov.	75.81	89.35	99.78	85.18	85.15	89.35	101.8	99.38
Dec	74.16	99.83	99.83	85.28	86.65	89.28	105.29	102.62