EFFECT OF ONLINE FOREX TRADING ON STOCK EXCHANGE REVENUES IN KENYA

BY

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DECLARATION

This research project is my original work and has not been presented for a degree in any other university.

Signature... .... Date....05.11.2021…………

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This research project has been submitted for examinations with my approval as the university supervisor.

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DEDICATION

I would like to dedicate this paper to my Late Grandmother Mary Chumo and my parents Mr. and Mrs. Tonui for their advice, prayers, inspiration, and financial support during the study.

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I would like to pass my sincere appreciation to my parents Mr. and Mrs. Tonui whose encouragement and guidance on life's values have enabled me to get this far in my education. I would also like to thank my Brothers Victor and Winner for their unending support and encouragement. Moreover, I would like to thank my classmates and the University of Nairobi professors whose knowledge and inspiration throughout my academic journey have led to this academic achievement. I would also like to sincerely thank my supervisor Mr. Martin Odipo for his insight and inspiration during the entire project development process from beginning to end.

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LIST OF ABBREVIATIONS AND ACRONYMS

ANOVA   Analysis of variance

ARDL   Autoregressive Distributed Lag

GDP   Gross Domestic Product

NSE   Nairobi Securities Exchange

R   Correlation coefficient

R^2   Coefficient of determination

SPSS   Statistical Packages of Social Sciences

USD   United States Dollars

VIF   Variance inflation factor

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CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Globalizations and advancements in technology have improved forex trading from how it used to be then, to the now new concept of online forex trading. Online forex trading exhibits a negative plus positive impact on stock exchange revenues with a negative effect being more pronounced. Omar and Jones (2015) mentioned that forex trading has very high liquidity which means that there are very many buyers as well as sellers. Stocks, on the other hand, may have high liquidity but not at the level of forex trading. This has made many players opt for forex trading instead of stock exchange thereby reducing its revenues. On the positive side, however, Plihal and Urbanovsky (2017) revealed that any factor that reduces or increases the money at the disposal of the population has a direct impact on the revenues from the stock exchange. Subsequently, successful engagement in online forex trading would mean that the monies at the disposal of the players would have increased. This income would then be used to engage in the stock exchange should they desire to diversify from online forex trading. This reiterates the notion by Sharif, Purohit, and Pillai (2015) that the stock exchange has become a more subtle way to diversify from online forex trading.

The exploration was anchored by two theoretical underpinnings, the actor-network philosophy, plus the rational expectation philosophy. The actor-network theory as modeled by Latour (1980) asserts that if the technology is created or integrated into other fields, it becomes very successful. This theory best explained the interaction between technology and forex trading to give online forex trading. The interaction was timely and thus the massive success of online forex trading. The rational expectation theory posits that people

anchor their decisions on three factors, past experiences, the knowledge or information available to them, and their human rationality. This theory explained, not only the aspect of the stock exchange but also the relationship between online forex trading and stock exchange revenues. Based on the factors alluded to by the theory, it emerges that on one hand, one may choose to either buy or sell a particular stock for another. On the other hand, the theory was used to explain why one may opt for online forex trading or stock exchange. Both these decisions exert a direct influence on the revenues of the stock exchange.

Online forex trading continued to gain more prominence as a business venture not only in Kenya but in various parts of the world. Given that you can engage in forex trading from a remote location as long as you have the required devices has meant that players in this arena have meant that investors are not only limited to large corporations, financial banks, or central banks. Similarly, Omar and Jones (2015) noted that there has been increased ease with which one can acquire knowledge on forex trading through the online platform. From this, it was evident that the number of investors in forex trading has significantly grown due to the online aspect. Stock exchange on the other hand has remained relatively the same, as compared to online forex trading. It is however important to note that extensive engagement in risk management has meant that stock prices have been relatively stable (Wagdi, 2014).

1.1.1 Online Forex Trading

Online forex trading is a faction of forex trading. Forex trading according to Omar and Jones (2015) is a platform where investors have access to the foreign exchange market. Forex trading entails buying, selling, and exchanging foreign currencies. As such online forex trading can be defined as an online platform through which investors can buy, sell, and exchange foreign currencies. The online aspect means that investors can access the platform remotely through internet able devices. Korczak and Hernes (2018) further defined that forex trading as the means through which one currency is changed for another. Notably, Korczak and Hernes (2018) added that trading forex occurs in pairs. This means that selling one currency translates to buying another.

Forex trading and more specifically online forex trading has a lot of benefits to the players and the economy at large. Key among the benefits is that it has is its high liquidity. Unlike the stock market, online forex trading has constant buyers and sellers (Bjonnes, 2018). Similarly, the online aspect of forex trading has ensured that it has reached more people who meet the technological and skill requirements to engage in it.

Various scholars have measured online forex trading. For example, Vasile, Teodorescu, and Bucur (2015) measured online forex trading in terms of the number of online traders on a platform and the number of online brokers. On the other hand, Lopez-Gonzalez and Griffiths (2018) measured forex trading in terms of the amount of money invested in an online forex platform, the number of trades, and the total volume of transactions in forex. Evans (2018) measured online forex trading in terms of Forex volatility based on the key

currencies like GBP, USD, and EU. This study used forex volatility to measure online forex trading.

1.1.2 Stock Exchange Revenues

Stock exchange revenues are the monies earned from the stock exchange or the stock market. Stock exchange, on the other hand, is a centralized location within which the shares of a publicly-traded company are bought and sold (Ehteshami, Hamidian, Hajiha & Shokrollahi, 2018). According to Rawal (2017), stock exchange revenues are the earnings obtained from buying and selling of shares in public venues. Rawal (2017) also mentioned that the stock exchange could be used interchangeably with the stock market. A more elaborate meaning to the stock exchange was offered by Plihal and Urbanovsky (2017) who alluded that the stock exchange is a public arena where financial securities of listed companies are bought and sold. Financial securities in this context include bonds and shares.

Stock exchange revenue and stock markets, in general, have importance to both the individual and the economy. According to Rawal (2017), the stock exchange enables companies to raise revenue as it gives them a platform to trade publicly. The raised capital enables companies to grow their business. Similarly, the stock exchange has its benefits to the investors as it provides them with a platform through which they can earn profits through buying and selling of shares or earning dividends from the shares.

Additionally, the stock exchange has its benefits to the economy. By creating an enabling situation where companies can raise revenue and expand their operations results in other factors such as the creation of employment, and increased revenue for the economy (Rawal, 2017). All these are situations through which the economy can grow. Nevertheless, the

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government, in some instances, also purchases stock for certain corporations to not only gain a certain percentage of control but also gain revenue through the dividends.

Stock exchange revenues are measured by various authors. Ãœlker (2015) measured stock exchange revenues in terms of the economic value and market value-added. On the other hand, Gill, Biger, Mand, and Mathur (2013) measured stock exchange revenues in terms of share price appreciation plus dividend yield. Forde et al (2010), however, measured stock exchange revenues in terms of gain in stock price divided by the original purchase price. Ngari (2017) measured stock exchange revenues in terms of the share index. In this study, the researcher measured stock exchange revenues based on the Profitability of Companies Listed at NSE.

1.1.3 Online Forex Trading and Stock Exchange Revenues

Globalization and advancement in technology have spelled advancements in the fields of both the stock exchange and forex trading. As earlier revealed by Papadamou and Tsopoglou (2018) online forex trading has both a negative and positive impact on stock exchange revenues. This means that online forex trading can increase or decrease the revenues accrued from the stock exchange. The first instance, as Papadamou and Tsopoglou (2018) reported is witnessed in situations where a player in the online forex trading would wish to diversify his/her investments by engaging in the stock exchange.

Successful engagement in online forex trading means that the players have accrued profit and thus, they have more money to spend and, in this case, they decide to spend it in the stock exchange. The latter, which leads to a decrease in stock exchange revenue points that the volatility of forex trading has made it a better option compared to the stock exchange.

The implication of this, given that players in online forex trading and stock exchange are the same, has led to many of them opting for online forex trading. Statistics from OECD (2018) and World Bank (2019) have shown that forex trading has continually performed better than the stock exchange. The withdrawal of players from the stock exchange arena has detrimental out-turn on stock exchange revenues.

1.1.4 Nairobi Securities Exchange

Nairobi Stock Exchange's (NSE) history dates back to 1954, while it was a British overseas stock exchange (Murithi, 2013). There are currently 68 companies listed on the site (Chesire, 2014). Historically, the interchange has operated closely with various East African stock exchanges, including the Nairobi Stock Exchange. Some shares have been listed on East African exchanges as a result of this move. Major investment segments and alternative investment segments are used to classify stocks on the exchange. The economic sector is another way to classify the companies (Njuguna, 2015).

Up to 2006, trading occurred physically by merchants yelling over each other. However, an automated trading scheme was afterward developed in 2006 with the execution of a Wide Area Network (WAN) occurring in 2007. This heightened the exchange efficacy plus decreased disorder that marked the marketplace. Nevertheless, in other situations, the interchange is undertaken out of the floor of the building NSE (Chesire, 2014).

As recently as 2006, trading took place in person, with brokers yelling over one another. As of 2007, a WAN was executed, and in 2006, an electronic trading scheme was installed. Consequently, the trading efficiency improved, and the overall market turmoil was lessened. Consequently, stockbrokers no longer had to send their dealers down to the floor.

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There are some instances, however, when the exchange is undertaken out of the ground of NSE (Chesire, 2014).

1.2 Research Problem

Both in Kenya and the global platform, online forex trading is quickly gaining prominence. What was once regarded as a field for large corporations and central banks has become infiltrated by individual investors with the knowledge on how to engage in online forex trading. Similarly, the fact that information on forex trading is readily available on the internet has made the forex market have high liquidity. Sharif, Purohit, and Pillai (2015) reported that for a long time, online forex trading was not seen as a factor that could affect stock exchange revenues. Sharif, Purohit, and Pillai (2015) further asserted that it was a misguided position given that the high liquidity and volatility in forex trading has made it a better option for the stock exchange. Similarly, extensive research in risk management has spelled success for stock exchange revenues as now listed firms use relevant risk management strategies to ensure the stability of their stock prices. However, this has not been enough to address the onslaught of online forex trading.

Statistics from the OECD and World Bank indicate that there has been growth in daily trading for both forex trading and stock exchange. However, forex trading has had more significant growth with the current statistics stating that approximately USD 5.1 trillion value of the currency is traded every day. This, compared to USD 212 billion stocks traded every day shows that there is a steady migration from stock exchange to forex trading. Theoretically, this has led to diminishing returns regarding stock exchange revenue. Moreover, online forex trading and stock exchange revenues are quite relational. On one hand, Omar and Jones (2015) rightfully revealed that online forex trading is partly to blame

for the dwindling stock exchange revenues. On the other hand, Kithome (2017) mentioned that the stock exchange provides a more subtle option for investors wishing to diversify from online forex trading. Both these assertions form the basis of this study.

On the global scene, very minimal studies have been carried out to investigate the concepts of online forex trade and stock exchange revenue or stock market revenue. Omar and Jones (2015) who are among the few researchers to tackle the subject of online forex trading, conducted a study to gauge online Islamic forex trading's compliance with Islam philosophies. Similarly, Moeeni and Tayebi (2018) investigated the necessity of investigating forex financial trading by governments through their central banks. Stock exchange revenue or stock market revenue has also received minimal attention with E'zazi (2015) being among the very few researchers to address this literature shortage. E'zazi (2015) investigated the long and short-run influences on stock index revenues at the Tehran Stock exchange by foreign exchanges. Their study applied the ARDL model.

Locally, the script is no different. Very few researchers have delved into researching the two concepts. Makori (2017) aimed to focus on the prevailing exchange rate and the effects it had on the stock market's performances at the NSE. Magara (2016) also investigated interest rate alteration effects on stock market yields at the NSE. Ng'enda (2018) also investigated forex trading's impact on commercial banks' financial performance in Kenya. Additionally, Kabiro (2019) researched stock returns for NSE-listed firms and how earnings management affected them.

From the above review, it emerges that a gap exists both locally and on the global scene. Although online forex trading is a relatively new phenomenon, may explain the minimal research. However, its continued steady growth ought to have attracted a substantial

amount of research. Similarly, the relationship between online forex trading had not been investigated with most studies opting to delve into how exchange rates and stock market performances correlate. Therefore, that is why this study's objective seeks to answer the question as to how online forex trading affects stock market revenues in Kenya

1.3 Research Objective

1.3.1 General Objective

To institute the effect of online forex trading on stock market revenues among Listed Companies in NSE, Kenya.

1.3.2 Specific objective

i. To establish the influence of dollar volume traded on stock market revenues among Listed Companies in NSE, Kenya.

ii. To establish the influence of Euro volume traded on stock market revenues among Listed Companies in NSE, Kenya

iii. To determine the influence of inflation rate on the stock market revenues among Listed Companies in NSE, Kenya

iv. To establish the effect of financial output (GDP rate) on the stock market revenues among Listed Companies in NSE, Kenya

1.4 Value of the Study

Outcomes of this study would act as supporting literacy citations and advice research gaps that ought to be filled by future research. Additionally, this study reinforces the relevance of the three theories that have been used to anchor it.

To management and practice, the study would be beneficial, as they would understand the complex relationship between online forex trading and stock exchange revenue. Similarly, this study offers an understanding of both online forex trading and the stock exchange. This

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information could be used by management and practice who engaged in either of the activities to diversify to the other activity.

The importance of this study to policymakers is that they too would understand the relationship between online forex trading and stock exchange revenues. Kenya being an open market, their limited restrictions could be on online forex trading. However, the continued growth of this concept means that the government could formulate policies to encourage it and in turn, it could use it as a source of revenue collection. Policymakers also would understand that stock exchange revenue is undergoing a real onslaught from online forex trading, thus favorable laws can be formulated to attract investors into the field and protect also to protect it.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The segment consists of four sections, the theoretical literature review, determinants of stock exchange revenue, empirical review, conceptual framework, summary plus gaps.

2.2 Theoretical Literature Review

Theories in this study are the actor-network theory and the rational expectation theory. Each theory is described and its relevance to this study is posited.

2.2.1 Actor-Network Theory

This theory reiterates that technology is a vice that cannot act alone. The theory further posits that if the technology is created or integrated into other fields, it becomes very successful (Latour, 1980). This theory gained prominence in the 1980s following the works of Bruno Latour. In essence, this theory emphasizes the fact that other non-human aspects are just as important as the human aspect as long as their interaction is timely.

This theory anchors this study especially the concept of online forex trading. Online forex trading, as Omar and Jones (2015) posited is a product of the timely interaction between technology and forex trading. Timely in the sense that there was a gradual build-up in technological advancements up to the point in which technology merged with forex trading to give online forex trading. The timeliness also ensured that it was well embraced by the users. The timely interaction between technology and forex trading as echoed theorized by the actor-network theory almost has no limitations. The only limitation could be said to be the aspect of cyber-crime. However, cyber-crime is not a result of online forex trading as it is just as old as technology itself.

2.2.2 Rational Expectation Theory

The rational expectation theory posits that people anchor their decisions on three factors, past experiences, the knowledge or information available to them, and their human rationality (Ying, 2013). This theory asserts that an individual will spend or invest depending on their prediction of what will happen in the future. In the world of the stock exchange, it is this theory that guides investors to either buy or sell stock depending on their predictions (Wassal, 2013). If one believes that certain stocks are about to be highly valued based on the information at his/ her disposal, they may decide to buy the stocks. Similarly, if a fall in stock prices is predicted, sales of that stock may be witnessed (Wassal, 2013).

Additionally, this theory could be used to explain why online forex trading is gaining ground as compared to the stock exchange. Based on the information available to investors, coupled with the ease with which one can engage in online forex trading, most investors are opting for online forex trading. Moreover, based on their previous experiences, most investors acknowledge the fact that the stock market has much more stability than forex trading. This ensures that they still engage in the stock exchange which ensures a certain level of stability in the stock exchange revenue despite the online forex trading onslaught.

2.3 Determinants of Stock Exchange Revenue

2.3.1 Online Forex Trading

Omar and Jones (2015) defined online forex trading as the engagement in buying, selling, and exchanging stocks on the online platform. Online forex trading has gained prominence in recent years. This can be attributed to major developments in the technological front that

has enabled engaging in forex trading from a remote location a reality. Nevertheless, the skillset one needs to have to engage in online forex trading is readily available.

Online forex trading has been both bad and good for stock exchange revenue. On the positive aspect, Papadamou and Tsopoglou (2018) reported that the stock exchange offers a platform through which online forex traders can diversify their income. successful engagement in the online forex market means that the traders have received profits from their ventures. This additional income, in certain cases, is reinvested in the stock market which raises the stock exchange revenue. On the other hand, Papadamou and Tsopoglou (2018) opined that online forex trading is highly volatile and the fact that it has an online platform, has drawn investors from the stock markets to the forex market subsequently reducing the stock market revenues albeit by a minimal, but not a negligible percentage.

2.3.2 Interest Rates

Ali (2014) poses that interest is the amount that the financier charges for the use of assets. Interest rates and stock exchange revenue have an inversely proportional relationship in that a high-interest rate results in a low stock exchange revenue. According to Ali (2014), low-interest rates can make shares attractive.

Low-interest rates lead to enhanced economic growth thereby making firms more profitable which in turn makes their shares attractive. Furthermore, a low-interest rate increases the money at the disposal of the consumer thereby increasing the money that may be spent in acquiring shares. The low-interest rate has also been reported to have an impact on the attractiveness of bonds and savings. When the interest rates are low, the interest attached to bonds by the central bank and savings by commercial banks are lower (Ali,

2014). However, due to improved economic growth, share prices are very competitive. As such most investors during such economic times usually opt for the stock markets.

2.3.3 Economic Growth

Monetary advancement denotes the significant rise in the production of monetary goods plus services in a duration likened to other durations (Perera & Silva, 2018). Economic growth can be influenced by influencing the factors of production which include land, capital, entrepreneurship, and labor. If these aspects are increased, economic growth is recorded.

Economic growth has a direct and proportional impact or relationship with stock exchange revenue. Economic growth leads to the profitability of firms (Perera & Silva, 2018). This profitability then improves the dividends of the firms and thereby making the shares more attractive. Attractive shares then increase the number of potential investors thereby increasing the stock exchange revenue. Ali (2015) noted that economic growth and interest rate have the same impact on bonds and interests on savings. In both scenarios, Ali (2015) reported that the stock market is always presented as a viable and more profitable option.

2.3.4 Inflation

Maged, Abbas, Mohsen, Essam, and Hassan (2019) defined inflation as the waning of a currency's purchasing power over a certain season or phase. High rates of inflation mean that prices of goods and services are relatively higher. This translates to less revenue which reduces the profitability of companies and the economic growth rate. Maged, Abbas, Mohsen, Essam, and Hassan (2019) noted that in general, inflation can be said to harm stock exchange revenue. This is pegged on the fact that inflation harms the economy and

thereby it reduces not only the value of shares but also the money at the disposal of the consumers.

However, it is also important to note that not all stocks are affected in the same manner by inflation. Jamaludin, Ismail, and Manaf (2017) noted that value stocks do well in times of high inflation when differentiated from growth stocks which do well when there is low inflation. This brings out a different perspective on the relationship between the inflation rate and stock exchange revenue. What can be deduced from this relationship is that the key determinant to whether the association amid the price increases rate plus stock exchange enactment is constructive or negative is the type of stocks.

2.4 Empirical Review

Omar and Jones (2015) investigated whether online Islamic forex trading complied with Islamic principles in Malaysia. Quantitative exploration design was embraced. The exploration collected and analyzed secondary statistics from online sources from the year 2008 to 2013. These online sources are four Islamic websites selected because they appeared on two Islamic forex website lists. The findings of the study indicate that online Islamic forex trading was indeed in compliance with Islamic principles. Omar and Jones (2015) concluded that the pace at which online forex trading was growing and advocated for growth control measures within the Islamic context to maintain its validity and adherence to Islamic principles.

Moeeni and Tayebi (2019) sought to find out if it was necessary to restrict forex financial trading in Iran. This study was instigated by the banning of online forex trading in Iran. Despite this banning in 2016, the authors reported that online forex trading was still common in Iran and therefore questioned the need for the restriction to it. Quantitative

exploration design was assumed. The inquiry, which collected secondary information from online sources plus past studies, revealed that since the banning of online forex trading in Iran, the vice has exponentially grown among private investors. The study reported that this restriction impeded diversification as large firms, that are under strict government supervision could not engage in this form of forex trading. Additionally, the study speculated that the reason for the ban was mattered to do with compliance with Islamic principles. The researchers concluded that for the formation of an institution that would act as a regulatory body to ensure online forex trading is done within the confines of Islamic law.

Ezazi (2015) investigated the temporary as well as lasting effects of the fluctuations in the foreign exchange rate on the stock exchange revenues in Iran. A descriptive inquiry design was assumed. This inquiry was conducted at the Tehran Stock Exchange and used the ARDL model. The study collected data from the Tehran Stock Exchange covering five years from 2007 to 2012. The data was later analyzed and put through the ARDL model to reveal that there was indeed a positive and significant association amid foreign exchange price rates plus total stock market index at the Tehran Stock Exchange in both the long and short-term. Additionally, the study revealed that in the long term, the total index of consumer goods and services has an insignificant impact on the total stock index. Ezazi (2018) concluded that foreign exchange rates impact stock exchange revenues.

Muhammad and Ali (2018) investigated the connection amid fundamental analysis plus stock returns based on panel data scrutiny with specific reference to the Karachi Stock Exchange. A quantitative research design was adopted. The authors revealed early in their study that both vital plus technical scrutinies were utilized by investors to maximize their

yields when dealing with stocks. Both these modes of analysis allow the investors to buy shares when values are small and sell them when values are high. Data were collected from 115 con-financial companies detailed on the Karachi Stock Exchange over an 11-year era. The type of data sought by the researchers included profitability ratios, liquidity ratios, market-based ratios, and leverage ratios. The data was later analyzed using the random-effect model, common-effect philosophy, and the fixed-effect concept. The outcomes concluded that fundamental analysis can be used to forecast stock volatility.

Locally, Makori (2015) investigated the impact of exchange rate on stock market yields at the NSE, Kenya. A quantitative exploration design was assumed for the inquiry. The inquiry obtained data from the NSE database spanning 16 years between 2001 to 2016. The study aside from focusing on the NSE it also emphasized the exchange of the Kenyan shilling and the US dollar. The study further used simple regression to analyze data and ensured the data was not affected by multicollinearity and heteroscedasticity problems. Having ensured this, the study comprehensively revealed that exchange rates are positively and significantly correlated with the NSE index and by the extent the stock market returns. The exploration deduced that inflation has a negative influence on stock market yields.

Magara (2016) conducted a study similar to that of Makori (2015) by investigating the impact that interest rate modification had on the stock market yields at the NSE. A descriptive exploration design was adopted to realize the study's objective. The study collected secondary data from companies listed in the NSE. The exploration further used both descriptive plus inferential data to analyze the data. The inquiry revealed that among the populace of the NSE, there was an affirmative association among interest rate adjustment plus stock market returns. The exploration concluded that periods of lower

interest rates were marked with higher rates of stock market returns. These findings mirror that of Ali (2014) and in both cases, it is attributed to economic growth.

Ng'enda (2018) carried out an inquiry to examine the impact of forex trading on commercial banks' monetary enactment in Kenya. This study offers a shift from the subject of the current study as it investigates forex trading and its relation with the performance of commercial banks and not stock markets. A descriptive research design was adopted. However, Ng'enda's (2018) study is key to the present study as it shows the interaction of forex trading with other variables (performance of commercial banks) other than stock exchange revenue. The inquiry collected its statistics from audited annual financial reports of commercial banks in Kenya from 2017 to 2017. The statistics were later scrutinized utilizing descriptive data. The exploration revealed that forex trading has a significant impact on return on assets, a pointer of performance for commercial banks. The outcomes of the investigation contain likeness to those of Mbaka (2016) who also examined the association amid foreign exchange trading plus the monetary enactment of moneymaking banks. Mbaka (2016) as part of his findings revealed that the instability in forex trading was the main cause of the unstable association amid forex trading plus the monetary enactment of commercial banks.

2.5 Conceptual Framework

The framework below is an illustrative representation of the link between the independent variable, the dependent variable plus the moderating variables. The independent variables included: online Forex trading represented by forex volatility (USD, EU), moderating variable is represented by the inflation rate and annual GDP rate, the dependent variable is represented by stock exchange revenues (NSE 20 Share Index).

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┌─────────────────────────────┐                    ┌─────────────────────────────┐
│  Online Forex Trading       │                    │ Stock Exchange Revenues     │
│                             │                    │                             │
│   • Dollar Volume Traded    │──────────────────▶ │   • Profitability           │
│   • Euro Volume Traded      │          ▲         │                             │
│                             │          │         │                             │
└─────────────────────────────┘          │         └─────────────────────────────┘
Independent variable                     │              Dependent variable
                              ┌──────────┴──────────┐
                              │ -Inflation rate     │
                              │ -Economic growth (GDP rate) │
                              └─────────────────────┘
                                 Moderating variables
```
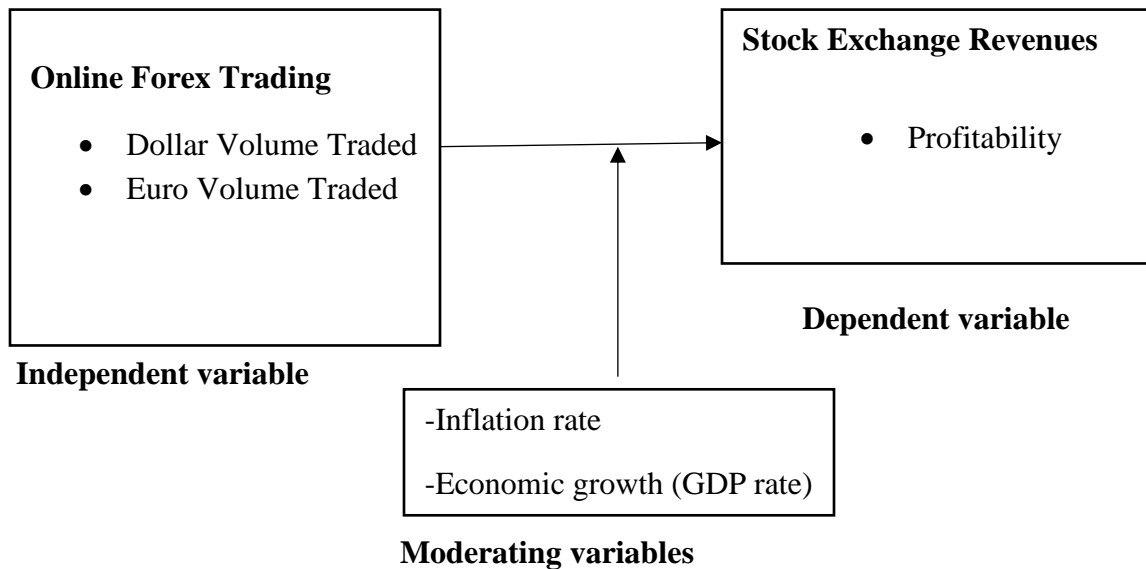
Source: (Author, 2020) Figure 2.1: Conceptual Framework

2.6 Summary and Gap

2.6.1 Summary of Literature Review

From the review above, it emerges that forex trading indeed has an impact on stock exchange revenue. Additionally, studies reviewed revealed that other than online forex trading, other factors also affect stock market revenue such as interest rates and inflation. In comparison, it emerges that the aspect of forex trading had been widely researched in comparison to online forex trading. Researchers have investigated the relationship of forex trading to other aspects such as the performance of commercial banks.

2.6.2 Research Gap

The aspect of online forex trading has been minimally researched both by local and international researchers. This was attributed to the fact that it is a relatively new phenomenon. Of importance to note is that by the time the present study was conducted

there were no published studies that sought to examine the association amid online forex trading and stock exchange revenue both in Kenya and internationally. Therefore, this is the gap that the exploration sought to close.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This section represents the exploration methods that were assumed in this exploration. This segment is constituted of various sub-sections. It contained the research design, population, and data collection. This chapter also contains the diagnostics for the models. In addition, the chapter contained the data analysis methods. Data analysis included the analytical model and the test for model significance.

3.2 Research Design

Creswell (2017) defines a study design as a combination of strategies one uses to solve a research problem. The method entails the information-gathering tactics, measurement instruments plus finally data scrutiny. The following inquiry adopted the descriptive exploration design, which entails observation plus analysis of the behaviors of the recipient minus interfering with their normal functioning.

The study used a descriptive research design because it entails just observation of the respondent's behavior which would not interfere with the normal environment or functioning of the recipients (Kothari, 2004). It allowed the collection of information which

is either qualitative or quantitative and finally, allowed the collection of large amounts of data within a wide geographical area.

3.3 Population of the study

Kombo and Tromp (2011) describe the target population as a cohort of people, objects, or items out of which samples of the exploration are taken for measurement. Mugenda and Mugenda (2012) define the target population as the desired units/individuals in which the study has an interest. The Profitability of Companies Listed at NSE will be utilized to determine the stock exchange revenues. This was analyzed from the year 2015 to 2019. This is because the years recorded a surge in the level of electronic forex trading.

3.4 Data Collection

The research used secondary information gathered for the period 2015-2019. The volume of Dollar and Euro Volume traded, annual inflation rate, GDP rate was sourced out of the Central Bank of Kenya Website while the Profitability of Companies Listed at NSE was sourced out of NSE websites and other annual publications from the year 2015 to 2019.

3.5 Diagnostic Tests

The information collected underwent diagnostic tests to assess the conformity with more than one regression version assumption. This ensured that the outcome is valid. The research study tested normality, autocorrelation, and multicollinearity. Normality test is directed to test if data portrays normal distribution. If not, it may not show the right association between the variable under study. The study will utilize the P-P plot to normality.

Data is normally distributed in the P-P plot if clustered around the horizontal curve. This aided in identifying outliers. The amount of correlation amid the values of variables across various observations in the statistics was determined using autocorrelation. Autocorrelation was tested via the Durbin-Watson test. Durbin Watson tests range from 0 to 4. Values closer to 0 or 4 indicate a positive and negative correlation. Values close to 2 indicate less autocorrelation.

Multicollinearity refers to a high extent of inter-correlation among the predictor variables in a manner that the effects of the predictor variables cannot be separated. Multicollinearity was tested via the Variance inflation factor (VIF). When VIF=1 then there exists no correlation, 1<VIF<5 means moderate correlation while VIF>5 reflects high correlation (Garson, 2012).

3.6 Data Analysis

Data was scrutinized by Statistical Packages of Social Sciences (SPSS), whereby the collected data were fed in the system of SPSS and later generate the outcomes descriptively in terms of mean scores, standard deviation, and graphical representations.

3.6.1 Analytical Model

The multiple regression models were assumed to determine the association between online forex trading and stock exchange revenues. The model of this exploration is as detailed below:

$Y=\alpha+\beta_1 X_1+\beta_2 X_2+\beta_3 X_3 + \beta_4 X_4 + \varepsilon$

Where: Y = Dependent variable (Stock Exchange Revenues in terms of Profitability)

X_1 = Dollar Volume Traded

22

X_2 = Euro Volume Traded

X_3 = Inflation rate

X_4 = GDP rate:

α = Constant, ϵ = error term

$\beta1, \beta2, \beta3, \beta4$ = Regression coefficients or change included in Y by each X value

α = Constant, ϵ = error term

3.6.2 Tests of Significance

The exploration accomplished important testing utilizing Analysis of variance (ANOVA). ANOVA measures variances amid variables. The study will also employ T statistic since the population is at a 95% confidence level. A t-test's statistical importance pointed out whether or not the variance between two variables' means probably replicates an "actual" variance in the population. F-test is undertaken to test the importance of the regression equation. The correlation coefficient (R) measures the bearing and strength of linear correlation among variables. Coefficient of determination (R^2) gave the amount by which Online Forex Trading (x) predicts stock exchange revenues (y). (R^2) is such that $0 \leq r^2 \leq 1$, and denotes the strength of the linear link between x and y.

CHAPTER FOUR: DATA ANALYSIS AND INTERPRETATION

4.1 Introduction

In this chapter, the results and the research analysis of the study were presented. The objective of this research study was to determine the effect of online forex trading on stock market revenues in Kenya. The study was carried out over 5 years, that is, from 2015 to 2019. The chapter is majorly comprised of a discussion on diagnostic tests, descriptive statistics, regression analysis, and a discussion of the findings.

4.2 Descriptive Statistics

The study sought to look into the various descriptive statistics for the variables under investigation. Table 4.3 shows the mean and standard deviation of the study variables: NSE stock revenue (profitability), the volume of Dollar traded, Volume of Euro traded, Inflation rate, interest rate, and GDP rate.

Table 4.2 Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
NSE stock revenue (profitability)	60	-12.30%	8.98%	-1.01%	4.72%

Dollar traded	60	-8.19%	11.08%	0.23%	2.01%	
Euro traded	60	-7.97%	10.16%	0.07%	2.99%	
Inflation rate	60	-10.10%	8.89%	-0.41%	3.42%	
GDP rate	60	-30.00%	28.30%	0.27%	10.09%	
Valid N (listwise)	60					

Source: (Secondary Data, 2021)

The mean column represents the average values for each variable. Mean values show the center of the numerical data set and it indicates the variability around a single value. A numerical dataset with higher mean values is thought to have a greater impact. The standard deviation, on the other hand, describes how much numerical values deviate from the mean. The further a numerical value is from the mean, the higher the volatility.

From the findings above, NSE stock revenue (profitability) with a mean of -1.01% and standard deviation of 4.72%, Volume of Dollar traded with a mean of 0.23% and standard deviation of 2.01%, the volume of Euro traded with a mean of 0.07% and standard deviation of 2.99%, Inflation rate with a mean of -0.41% and standard deviation of 3.42% and GDP rate with a mean of 0.27% and standard deviation of 10.09%.

4.3 Correlation Analysis

Pearson's coefficient of correlation was used to determine the strength of the relationship between the variables in this study. Pearson's coefficient of correlation, represented by r, measures the linear relationship between any two variables and ranges from -1 to 1. Values greater than 0 indicate that a positive relationship exists between the two variables implying that as the value of one variable increases the other variable increases as well. A value of 0 indicates no association between variables. A negative correlation is shown by a number

smaller than zero. That is, as one variable's value rises, the value of the other falls. The results of the correlation are as presented in table 4.4.

Table 4.3 Pearson's Correlation Coefficient Matrix

	NSE stock Revenue	Dollar traded	Euro traded	Inflation rate	GDP rate
NSE Stock Revenue	1.000	-0.18	0.020	0.32	-0.14
Dollar exchange rate		1.00	0.59	0.03	-0.10
Euro exchange rate			1.00	0.14	-0.18
Inflation rate				1.00	-0.23
GDP rate					1.00

Source: (Secondary Data, 2021)

Table 4.4 shows the correlation between the variables. The findings reveal that NSE stock revenue (profitability) was negatively correlated with the volume of dollar traded (r=-0.18), GDP rate(r=-0.14), and positively related volume of Euro traded (r=0.02) and inflation rate (r=0.32). The volume of Dollar traded was positively correlated with the volume of Euro traded (0.59), inflation rate (0.03), and negatively correlated with GDP rate (r=-0.10). The volume of Euro traded was positively correlated with inflation rate (0.14) and negatively related to GDP rate (-0.18). The interest rate was negatively correlated with the GDP rate (r=-0.23).

4.4 Diagnostic Tests

The gathered data was assessed for linearity, autocorrelation, and multi-collinearity. Test of linearity was assessed by use of P – P plot; autocorrelation was measured through Durbin-Watson test; multicollinearity tested via Variance inflation factor (VIF).

4.4.1 Linearity Test

A linearity test was used to test the association between the dependent factor and the predictor variable. Data is linearly distributed if the P-P plot is clustered around the horizontal curve. This will aid in identifying outliers. The data output is shown in figure
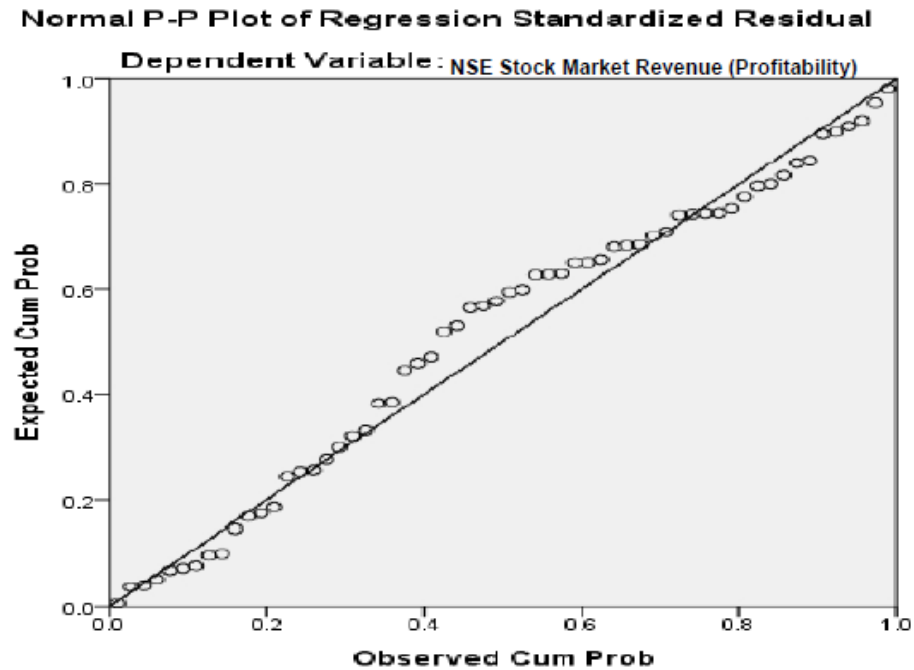
Figure 4.1 Normal P –P Plot

Source: (Secondary Data, 2021)

The normal P-P Plot shows a normal distribution since the scatters fall close to the normal distribution line.

4.4.2 Autocorrelation

Autocorrelation was tested via the Durbin-Watson test. Durbin Watson tests range from 0 to 4. Values closer to 0 or 4 indicate a positive and negative correlation. Values close to 2 indicate less autocorrelation. The result was shown in Table 4.1.

Table 4.1 Durbin-Watson Test

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.40[a]	.16	.089	4.32751%	2.039

a. Predictors: (Constant), GDP rate, Volume of Dollar traded, Inflation rate, the volume of Euro traded

b. Dependent Variable: NSE stock revenue (profitability)

Source: (Secondary Data, 2021)

The findings reveal a close to no autocorrelation between the variables as the Durbin Watson score was close to 2.039.

4.4.3 Multicollinearity

Multicollinearity identifies the intercorrelated predictors in a data set. Multicollinearity was detected via Variance Inflation Factor and Tolerance. Table 4.2 shows the values of the VIF of each of the variables.

Table 4.2 Variance inflation Factor

Model	Collinearity Statistics
	VIF
(Constant)	
The volume of Dollars traded	1.517
The volume of Euro traded	1.559
Inflation rate	1.192
GDP rate	1.079

Source: (Secondary Data, 2021)

Variance inflation factor (VIF). When VIF=1 then there exists no correlation, 1<VIF<5 means moderate correlation while VIF>5 reflects high correlation (Garson, 2012). From

the findings, the variables volume of Dollar traded, Volume of Euro traded, Inflation rate, and GDP rate had a VIF score of between 1 and 1.6. These values show that there was a fairly moderate correlation.

4.5 Regression Analysis Output

A regression analysis was conducted to establish the effect of online forex trading (volume of Dollar traded, GDP rate, Inflation rate, the volume of Euro traded) on stock market revenues (profitability) in Kenya. The tables of model summary, ANOVAs, and Regression Output present the findings from the data.

Table 4.5 Model Summary

Model	R	R Square	Adjusted R Square
1	0.40[a]	0.16	0.089

a. Predictors: (Constant), GDP rate, Volume of Dollar traded, Inflation rate, Volume of Euro traded

b. Dependent Variable: NSE 20 Share Index

Source: (Secondary Data, 2021)

The model summary indicates that the coefficient of determination R square is to be 0.16. This means that 16.0% of the variation in stock market revenues is due to the predictor variables captured in the study. This also implies that 84.0% of the variation in stock market revenue is attributed to the measurements of error and other factors that could have affected stock market revenues but were not captured in the study.

Table 4.6 Analysis of Variance (ANOVA)

Model	Sum of Squares	df	Mean Square	F	Sig.

	Regression	201.1	4	50.275	2.485	.049[b]
1	Residual	1113.01	55	20.234		
	Total	1314.02	59			

a. Dependent Variable: NSE stock revenue (profitability)

b. Predictors: (Constant), GDP rate, Volume of Dollar traded, Inflation rate, Volume of Euro traded.

Source: (Secondary Data, 2021)

The significance value of 0.049, therefore, indicates that there is a regression relationship between the dependent variable and the predictor variables. Thus, the model with Volume of Dollar traded, GDP rate, Inflation rate, Volume of Euro traded as predictors are fit for predicting stock market revenues.

Table 4.7 Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-.711	.591		-1.200	.235
Dollar Traded	-.623	.373	-.265	-1.723	.090
Euro traded	.192	.251	.122	.778	.044
Inflation rate	.401	.178	.291	2.263	.028
GDP rate	-.037	.060	-.078	-.606	.547

Source: (Secondary Data, 2021)

The regression output in table 4.7 estimates the model for predicting the dependent variable given the value of the independent variable can be written as;

$Y = -0.711 - 0.623X_1 + 0.192X_2 + 0.401X_3 - 0.037X_4$

The estimated model shows that the value of stock market revenues when other factors are held constant is -0.711.

The findings further reveal that the inflation rate had a positive impact on stock market revenues as indicated by a beta coefficient of 0.401. This means that for every unit increase in inflation rate stock market revenues go up by 0.401. The volume of Euro traded had a beta coefficient of 0.192 indicating that for every unit increase in Euro traded, stock market revenues go up by 0.192. GDP rate had a beta coefficient of -0.037 implying that for every unit increase in the GDP rate, stock market revenues went down by -0.037. The volume of Dollar traded had a beta coefficient of -0.623 meaning that for every unit increase in Volume of Dollar traded stock market revenues went down by -0.623.

The table also shows the individual significance of each variable. Volume of Dollar traded has a significance of 0.090> P-value 0.05, Volume of Euro traded has a significance of 0.044< p-value 0.05, inflation rate has a significance of 0.028 > P-value 0.05, while GDP rate has a significance of 0.547> P-value 0.05. All variables with a significance of <0.05 are considered significant, thus the final model will be

$Y = -0.707 + 0.192X_2 + 0.401X_3$

4.6 Discussion of the Findings

This section discusses the study results using descriptive and inferential statistics. The goal of the study was to see how internet FX trading affected Kenyan stock market revenues. The interrelationships between the variable were found to have an association that was either positive or negative. That NSE stock revenue (profitability) was negatively correlated with the volume of dollar traded (r=-0.18), GDP rate(r=-0.14), and positively

related volume of Euro traded (r=0.02) and inflation rate (r=0.32). The volume of Dollar traded was positively correlated with the volume of Euro traded (0.59), inflation rate (0.03), and negatively correlated with GDP rate (r=-0.01). The volume of Euro traded was positively correlated with inflation rate (0.14) and negatively related to GDP rate (-0.18). The interest rate was negatively correlated with the GDP rate (r=-0.23).

As per the model summary, the overall regression model was found to have a weak positive correlation (r= 0.39) between the dependent variable (NSE stock revenue (profitability)) and the independent variables (Online forex trading). The coefficient of determination R square was found to be 0.16. This means that 16.0% of the variation in stock market revenues is due to the predictor variables captured in the study. This means that 84.0 percent of the variation in stock market revenue can be attributable to measurement errors and other factors that may have influenced stock market revenue but were not considered in the study.

The study was found to have a positive significant relationship. The significance value of 0.049 which is less than 0.05 indicates that there is a significant relationship between the dependent variable and the predictor variables. Thus, the model with a volume of Dollar traded, GDP rate, Inflation rate, the volume of Euro traded as predictors are fit for predicting stock market revenues. The findings of this study were in agreement with the results of various researchers for instance: Ezazi (2015) investigated the short and long-term effects of the fluctuations in the foreign exchange rate on the stock exchange revenues in Iran. Model to reveal that there was indeed a positive and significant relationship between foreign exchange price rates and total stock market index at the Tehran Stock Exchange in both the long and short-term. Makori (2015) conducted a study to investigate

the effects of exchange rate on stock market returns at the NSE, Kenya. The study comprehensively revealed that exchange rates are positively and significantly correlated with the NSE index and by the extent the stock market returns. Ng'enda (2018) carried out a study to investigate the impact of forex trading on the financial performance of commercial banks in Kenya. The study revealed that forex trading has a significant impact on return on assets which is an indicator of performance for commercial banks. The results of this study are similar to those of Mbaka (2016) who also investigated the relationship between foreign exchange trading and the financial performance of commercial banks.

CHAPTER FIVE

SUMMARY, CONCLUSION, AND RECOMMENDATIONS

5.1 Introduction

The chapter presents the summary, conclusion, and recommendations of the study. In addition, it also gives limitations of the research and the recommendations for further research. The findings are summarized in line with the objective of the research, which was to establish the effect of online forex trading on stock market revenues in Kenya. The summary is given based on the various aspects such as annual volume of Dollar traded, the volume of Euro traded, inflation rates, GDP rate, and NSE stock revenue (profitability).

5.2 Summary of Findings

The study sought to establish how as annual Volume of Dollar traded, Volume of Euro traded, inflation rates, GDP rate, and NSE stock revenue (profitability). The findings revealed that there were different descriptive statistics for the variables under study. From the findings, NSE stock revenue (profitability) with a mean of -1.01% and standard deviation of 4.72%, the volume of Dollar traded with a mean of 0.23% and standard deviation of 2.01%, Volume of Euro traded with a mean of 0.07% and standard deviation of 2.99%, Inflation rate with a mean of -0.41% and standard deviation of 3.42% and GDP rate with a mean of 0.27% and standard deviation of 10.09%.

As per the model summary, the overall regression model was found to have a weak positive correlation (r= 0.40) between the dependent variable (NSE stock revenue (profitability) and the independent variables (Online forex trading). The coefficient of determination R square was found to be 0.16. This means that 16.0% of the variation in stock market revenues is due to the predictor variables captured in the study. This also implies that 84.0% of the variation in stock market revenue is attributed to the measurements of error and other factors that could have affected stock market revenues but were not captured in the study.

The study was found to have a positive significant relationship. The significance value of 0.049 which is less than 0.05 indicates that there is a significant relationship between the dependent variable and the predictor variables. Thus, the model with a volume of Dollar traded, GDP rate, Inflation rate, Volume of Euro traded as predictors are fit for predicting stock market revenues.

5.3 Conclusion

Online forex exchange is no doubt one of the factors that affect the performance of NSE in Kenya today. The study concludes that an increase in the Euro exchange rate and the inflation rate would increase stock market revenues. On the other hand, a fall in the volume of Euro traded and the inflation rate would result in a decrease in stock market revenues.

The study also found that there is a positive and significant effect between online forex trading and stock market revenues. Therefore, the study concludes that increased units in online Forex trading will favor how the stock market performs and grows. Hence, the study concludes that the stock market is affected by activities of the foreign exchange market and inflation rate.

Overall, there exists a direct/ positive relationship between dependent and independent variables. The study found out that the independent variables with the volume of Euro traded and inflation rate had a significant effect on the stock market revenue. Therefore, the study concludes that the performance of the stock market about revenues is influenced by online forex trading.

5.4 Recommendations

The report advises that difficulties related to online FX trading be taken into account at all times to boost securities market activities and thereby earnings. According to the report, online Forex trading should be continued and funds should be put in high-return capital projects. The governance frameworks must be put in place to improve capital and asset returns and, as a result, increase stock market income.

According to the Study, Online Forex introduces new market dangers that necessitate regulatory involvement. Market risk, on the other hand, varies greatly amongst online markets. As a result, a more accurate assessment of the risk associated with Online Forex trading and how these risks affect the securities market is required. It was evident that the macro environments in which the Nairobi Securities Exchange operates it crucial in influencing stock market revenues. The study recommends that organizations should focus on the movements of the volume of Euro traded and Inflation rate since they have a significant effect on Stock market revenues.

5.5 Limitations of the Study

The period allotted was insufficient for the researcher to study the research problem and track its evolution or stability over time. The secondary data was difficult to come by, and the study only had a tiny sample size.

Unlike primary data, which is based on first-hand information, the study relied on secondary data, which had already been gathered and was in the public domain. It's possible that his research was tainted by errors made during the measurement or recording process.

5.6 Suggestions for Further Research

This study investigated online forex trading and stock market revenue. The researcher recommends that since the securities market is still experiencing growth it becomes important for security markets to put into consideration the risk exposures and thus research into new and innovative risk management techniques is required. In this regard, therefore, the researcher recommends that additional studies should be conducted on this area.

This research should be replicated in the banking sector, that is, Micro Finance Institutions, SACCOs, and commercial banks to establish whether there is consistency among them on the sources of for organizations. The study will supplement the findings of this study by providing information on the strength and weaknesses experienced in this study. Additionally, further research done on the factors affecting the other Stock market revenues should be undertaken to depict reliable information that illustrates the real situation in the sector.

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APPENDICES

Appendix: Data Collection Form

	Profitability	Volume of dollar traded	Volume of Euro traded	Inflation rate	GDP rate
	Shs.	Shs.	Shs.	%	%
2015					
2016					
2017					`
2018					
2019					