Czech University of Life Sciences Prague

Faculty of Economics and Management

Department of Business and Finance

Master's Thesis

The importance of technical analysis in making investment decisions (Case study of a country).

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CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE

Faculty of Economics and Management

DIPLOMA THESIS ASSIGNMENT

Moustafa Soliman

Business Administration

Thesis title

The importance of technical analysis in making investment decisions (Case study of a country).

Objectives of thesis

Identify the methods used in technical analysis and its theories used in general, and Japanese candlestick patterns in particular, and ways to use them in making investment decisions aimed at achieving rewarding returns in the foreign exchange market.

Learn about the foreign exchange market in the United Arab Emirates, understand the methods of dealing with foreign currencies via the Internet in general, and in the UAE in particular, and learn about its future and ways to market it to the Emirati investor.

Describe the mechanisms through which trading in the foreign exchange market takes place over the Internet and how the investor is aware of them.

Studying the difference between the return on investment resulting from technical analysis using Japanese candlestick patterns and the returns on random investment and understanding their results after analyzing.

Identify the difficulties facing investors in the foreign exchange market, and propose solutions to overcome them.

Methodology

The methodology of the study depends first on the theoretical study and includes the identification of foreign currencies via the Internet and the study of the basic concepts of technical analysis, patterns and conditions of Japanese candles and their significance, and secondly, on the method of descriptive analytics, where information is collected from reports and studied in-depth and an attempt to explain the reasons why investors make financial decisions.

The proposed extent of the thesis

60-70 pages

Keywords

Technical analysis, Investment, Trading Patterns, Japanese candlestick, Forex, Currencies.

Recommended information sources

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Declaration

I declare that I have worked on my master's thesis titled "The importance of technical analysis in making investment decisions (Case study of a country) by myself and I have used only the sources mentioned at the end of the thesis. As the author of the master's thesis, I declare that the thesis does not break any copyrights.

In Prague on 29/03/2023 Mousatafa Soliman

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I express my gratitude towards my supervisor Professor Lubomír Civín for his guidance and support during my academic journey. I also extend my appreciation to my family, especially my parents, for their love, support, and sacrifices. Additionally, I thank my friends, colleagues, and research participants for their contributions and encouragement. I am grateful for everyone's role in making my journey memorable.

The importance of technical analysis in making investment decisions (Case study of a country).

Abstract

This thesis explores the theoretical and practical aspects of Forex trading, focusing on technical analysis. The origins of the forex market, currency exchange rates, efficient market hypothesis, and margin trading are discussed in the theoretical part, along with different technical trading theories and types of charts and the support and resistance levels, and finally, the chart candlestick patterns. The practical part measures the effectiveness of MACD and RSI indicators on various currency pairs and evaluates their signals on upcoming price trends. Additionally, the thesis examines the knowledge and experience of technical analysis among UAE Investors in the forex market and its impact on their investment decisions through a questionnaire. Overall, this thesis provides a valuable resource for individuals interested in forex trading or financial markets by offering insights into the forex market and technical analysis.

Keywords: Forex trading, Efficient market hypothesis, Technical analysis, Currency pairs, Japanese candlesticks, Indicators (MACD and RSI), Supply and Demand Levels, UAE Investors in the forex market.

Význam technické analýzy při rozhodování o investicích (případová studie země)

Abstrakt

Tato práce se zabývá teoretickými a praktickými aspekty obchodování na forexu se zaměřením na technickou analýzu. V teoretické části je pojednáváno o vzniku trhu forex, měnových kurzech, hypotéze efektivního trhu a obchodování s marží. Dále o různých teoriích technického obchodování, typech grafů, úrovních podpory, odporu a nakonec o svíčkových vzorcích v grafu. Praktická část měří účinnost indikátorů MACD a RSI na různých měnových párech a vyhodnocuje jejich signály o nadcházejících cenových trendech. Práce dále zkoumá znalosti a zkušenosti s technickou analýzou mezi investory ze Spojených arabských emirátů na forexovém trhu a její vliv na jejich investiční rozhodnutí prostřednictvím dotazníku. Celkově tato práce poskytuje cenný zdroj informací pro jednotlivce, kteří se zajímají o obchodování na forexu nebo o finanční trhy, neboť nabízí vhled do forexového trhu a technické analýzy.

Klíčová slova: Forex obchodování, Hypotéza efektivního trhu, Technická analýza, Měnové páry, Japonské svícny, Indikátory (MACD a RSI), Úrovně nabídky a poptávky, Investoři ze SAE na forexovém trhu.

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1 Introduction

The foreign exchange market, which has a global reach and an extensive history, can be considered one of the most significant markets in the contemporary era. Its growth and success can be attributed to the divergence in exchange rates of various currencies due to the discontinuation of the classical gold standard system and the adoption of currency floating, which enabled the market to be driven by the principles of supply and demand in the determination of currency valuations, among other factors.

The foreign currency market has undergone significant changes over the past few years, with increased trading volume and regulatory framework changes. According to the Bank for International Settlements (BIS, 2022), the world's leading central bank organization, currency trading hit a record high of $7.5 trillion per day in 2022, indicating a notable 14% increase from the $6.6 trillion recorded in 2019. These developments highlight the growing importance of the foreign currency market and its role in facilitating global trade and investment.

In the United Arab Emirates (UAE), the foreign currency market has also experienced significant growth over the past few years. In the early stages of its development, investors in the United Arab Emirates were more interested in property investments and hedge funds. However, the global financial crisis led to a shift in investment patterns, and investors started recognising the benefits of investing in forex. This shift has been driven by both local and international demand. The United Arab Emirates' economic stability and favourable tax system are key attractions for investors seeking a safe haven for investment. In addition, introducing tailored financial instruments for young investors has contributed to the market's growth; despite challenges, such as was covid pandemic, the forex market in the United Arab Emirates is poised for continued growth, supported by the presence of safe, licensed companies overseen by local and international regulatory bodies (Al Khaleej Newspaper, 2022).

And speaking about investment, Investment decision-making is a rigorous process that must be approached with discipline and thorough consideration of all relevant factors. To make informed and logical decisions, investors must utilize market analysis and research. The

technical analysis encompasses technical aspects and is crucial for guiding investment decisions. By adhering to the principles and theories of scientific analysis, investors can make sound investment choices.

One of the investors' primary concerns is determining what and when to buy or sell the currency pair. These questions can be answered through a combination of fundamental and technical analysis. Fundamental analysis is used to evaluate the underlying value of the currency pair, while technical analysis is employed to assess the timing of buying or selling decisions. Both questions are critical to the success of an investment strategy. The choice of the currency pair to purchase or sell can significantly impact the outcome of the investment process, as can the timing of these transactions.

According to HSBC Bank, Fundamental analysts aim to identify the reasons behind market movements, whereas technical analysts rely on price charts and volume data to predict future price movements. Technical analysis is preferred by short-term investors and day traders who rely on historical price patterns to identify investment opportunities. In contrast, fundamental analysis involves more research and data to determine the intrinsic value of the currency pair and is used to make long-term investment decisions. While technical analysis can provide useful signals and breakout points, it is subject to individual interpretation and may lead to delayed decision-making. Over-reliance on technical indicators without considering other factors can result in incorrect investment decisions; therefore, successful trading and investing require a combination of both approaches and an understanding of market sentiment and other non-quantifiable factors.

2 Objectives and Methodology

2.1 Objectives

The main objective of this thesis is to research the technical analysis in detail, analyze the effectiveness of technical analysis in the forex market and evaluate the comprehension of Investors in the UAE in the financial markets, forex trading, and technical analysis tools. Through empirical analysis and questionnaire analysis, the study aims to provide insight into the market and develop effective solutions in order to improve the performance of investors from the UAE in the forex market.

2.2 Methodology

In the theoretical part, this thesis presents a comprehensive analysis of technical analysis in the forex market. The study commences with an exploration of the historical origins and development stages of technical analysis, culminating in an examination of its current form and involving the currency pairs overview. The thesis further includes a comparative analysis between technical and fundamental analysis, elucidating the principles of technical analysis and various theories that aim to explain it. The important Japanese candlestick patterns are also explored in detail, covering individual and multiple patterns as an integral aspect of technical analysis. The author employs document analysis to obtain relevant information, including printed and electronic documents, professional trusted sites, research reports, and other pertinent sources of information. The theoretical background of the study is synthesized from secondary sources, building upon the analyzed information.

The practical Part of the thesis first analyze the effectiveness of the MACD and RSI indicators together through empirical analysis. This involves testing the indicators on a range of currency pairs and evaluating the signals generated by the indicators. The empirical analysis method enables the study to draw conclusions based on quantitative analysis of the data gathered during the testing process; by utilizing this method, the author can objectively try to evaluate the effectiveness of using MACD and RSI indicators in the forex market.

In addition to the empirical analysis, the thesis includes a detailed questionnaire analysis to evaluate the comprehension of financial markets, forex trading, and familiarity with

technical analysis tools among investors in the United Arab Emirates. Questionnaires are considered the most widely used data collection tool to directly obtain information from respondents. The survey was distributed in Arabic through forex-interested Arab Facebook groups and created using the JotForm platform to filter the answers of forex investors in the UAE only. The questionnaire consists of 25 questions designed to understand investor preferences in the UAE and examine their awareness of technical analysis in the forex market. To examine awareness, the Likert scale is utilized to quantify the respondents' degree of agreement or disagreement with the statements asked. The data collected is being analyzed using two statistical components, namely the mean and the weighted percentage. These components are being used to identify prevalent responses and trends in the data, which will provide insight into the comprehension of the market and technical analysis tools. The aim of this analysis is to develop effective solutions to enhance the performance of individuals involved in forex trading within the United Arab Emirates.

3 Theoretical Part

3.1 Chapter 1 - An In-Depth Exploration of the Foreign Exchange Market: Origins, Efficiency, and Margin Trading

3.1.1 The genesis of the forex market

The origins of currency trading can be traced back to ancient times when money changers provided services to facilitate currency exchange and charged a fee for their services. With the advent of the metallic age, gold and silver emerged as widely traded commodities, leading governments to mint these metals as currencies. This eventually led to the issuance of paper currencies, which were backed by physical gold, until the transition to floating currencies, which are now subject to market forces of supply and demand (Wikipedia, 2022). To provide more details, the following points should be considered:

3.1.1.1 Gold Standard

Currencies have evolved over time to become paper currencies representing a certain value of gold. This meant a currency could be exchanged for a specific amount of physical gold. However, prior to World War I, central banks abandoned the practice of converting money into gold, resulting in the absence of a gold standard for paper currencies. This led to excessive money printing, which caused inflation and a rise in the cost of goods and services. As a result, countries imported large amounts of gold. The difficulties of conducting trade during war further impacted the economy, leading countries to search for a solution to revive the global economy following both World War I and II (Wikipedia, 2022).

3.1.1.2 Bretton Woods system

In 1944, the Bretton Woods Conference was held in New Hampshire, United States (USA), with the aim of addressing the decline of the global economy. Given the relative stability of the United States during the World War, participating nations agreed to establish fixed exchange rates relative to the US dollar and to peg the value of the US dollar to gold, with the rate set at 35 dollars per ounce (Wikipedia, 2022).

3.1.1.3 Floating the currencies exchange rates

In 1970, the US faced an economic crisis as a result of the trade balance deficit caused by President Johnson's financing of the Vietnam War. To mitigate the impact of this crisis,

President Nixon made a historic decision to cancel the dollar conversion into gold and abolish its fixed exchange rate against gold. This event marked the beginning of a new era in the global economy as countries started to search for alternative systems to restore economic stability. As a result, the concept of floating currency exchange rates emerged, and the value of currencies became subject to the forces of demand and supply (International Monetary Fund).

The currency market came into existence as a result of this change, as currency trading became a separate entity. Investment companies started to trade in the currency market to generate profits, while retail brokers began to purchase large amounts of currencies to offer their clients better investment options. Small investors also became eligible to participate in the market, opening new avenues for growth and profitability (Wikipedia, 2022).

3.1.1.4 Forex Trading Online

Successive economic events led to the creation of new economic systems and then the trading of foreign currencies on the Internet, or what is known now as forex, which extends all over the world, where several participants, such as global banks, international institutions, financial markets, and individual traders exchange currencies (DailyFX, 2018).

The foreign exchange market, or forex, operates differently from other financial markets as it lacks a central stock exchange. Instead, it is a decentralized network of financial institutions and individuals. The absence of a central exchange provides greater flexibility and accessibility in the forex market (Investopedia, 2022).

In the financial industry, there are two primary types of marketplaces for trading and exchanging asset (International Monetary Fund):

- Trading on an exchange

This type of trading takes place within the physical trading floor, where investors engage in direct interaction with each other.

- Trading over the counter (OTC)

The transactions in the currency market are facilitated through an electronic system, enabling investors to execute purchase and sale orders via their brokers, authorized by the relevant

regulatory bodies. forex, as one of the largest financial markets, falls under this category where buying and selling operations occur between governments, corporations, banks, and individuals via computer networks. The forex market is not only renowned for its substantial trading volume, but also for the following (Wikipedia, 2022):

A) Its remarkable liquidity allows for the seamless execution of trades.
B) Its wide geographical reach, encompassing multiple time zones and countries.
C) The 24/7 trading hours, excluding weekends, provide ample opportunity for investors to participate in the market.
D) The diversity of factors that impact exchange rates, including but not limited to interest rates, economic indicators, future projections, and political events.
E) The potential for high profits despite relatively low-profit margins compared to other fixed-income markets, due to the large volume of trades and the ability to profit regardless of market direction.
F) Using financial leverage, allows investors to magnify their returns and risks through borrowing.
G) The low commission fees and minimal transaction costs associated with trading in the forex market.

In light of these factors, investors are afforded the freedom to enter and exit the market with ease, as the presence of high liquidity facilitates such actions. Furthermore, information about the market is widely available on the internet, providing all investors with access to the same data, so the forex market operates within the framework of efficient markets, which precludes centralized control.

3.1.2 Naming the currencies and their pairs.

Currency has evolved beyond its traditional role as a medium of exchange and now serves as a symbol of a nation's sovereignty. The strength of a currency has become a widely accepted indicator of a nation's economic strength. With the increasing number of currencies, it has become challenging to keep track of them and the countries in which they are traded. To address this, the International Standards Organization (ISO) has developed ISO 4217, a standard for naming currencies. This standard calls for abbreviating the name of a currency to three Latin letters, with the first and second letters representing an abbreviation of the country in which the currency is traded, based on ISO 3166, which provides codes for

country names, while the third letter identifies the currency. For instance, the New Zealand dollar is abbreviated as NZD, where "NZ" is the country code for New Zealand, and "D" signifies the New Zealand dollar (ISO, No Date).

In the foreign exchange market, currency pairs are traded, and it is crucial to be familiar with the naming conventions of each pair. There are two primary types of currencies: the Base Currency and the Quote Currency. The Base Currency is listed first in the pair and signifies the currency being purchased. For example, in the currency pair EUR/USD, EUR represents the Base Currency. Meanwhile, the Quote Currency is listed second in the pair and represents the currency being sold. In the EUR/USD pair, USD is the Quote Currency (CFI, 2022).

When purchasing a currency pair, the investor buys the Base Currency and sells the Quote Currency. The Bid Price represents the amount of the Quote Currency required to purchase one unit of the Base Currency. Conversely, when selling a currency pair, the investor receives the Quote Currency and sells the Base Currency. The selling price, or the Ask Price, represents the amount of the Quote Currency obtained by selling one unit of the Base Currency (CFI, 2022).

Additionally, there is a special type of currency referred to as cross currencies, which are currency pairs that do not involve the US dollar. They are priced against each other, such as in the case of EUR/GBP (Investopedia, 2022).

3.1.3 Market Efficiency and foreign exchange

3.1.3.1 Efficient-market hypothesis

The Efficient Market Hypothesis (EMH) is a cornerstone theory that suggests that financial markets are highly efficient and that asset prices reflect all available information. In other words, EMH proposes that market prices are always fair and reflect all known information, making it impossible for investors to consistently outperform the market through analysis or trading strategies; the only option for an investor to achieve greater returns is to invest in assets that come with higher levels of risk (Investopedia, 2022).

According to Andrew W. Lo's paper "The Adaptive Markets Hypothesis: Market Efficiency from an Evolutionary Perspective," while the efficient market hypothesis (EMH) assumes

that investors are rational and profit-maximizing, and have equal access to all relevant information, empirical evidence and behavioral finance research have challenged these assumptions. The paper suggests that investors may be subject to cognitive biases and emotional reactions that can lead to suboptimal decision-making and that access to information may not be equal in practice. Despite these challenges, the EMH remains a foundational concept in finance and has influenced various research and investment strategies.

Given the diversity of financial markets, the market efficiency hypothesis has been differentiated into three distinct forms based on the availability of information (Investopedia, 2022):

- Weak Form

This form of the Efficient Market Hypothesis (EMH) posits that all past stock prices are already reflected in today's stock prices, and therefore, technical analysis cannot be used to gain an advantage in trading decisions. According to this theory, the only way to achieve higher returns is through fundamental analysis, which involves evaluating companies' financial statements to identify undervalued or overvalued stock.

- Semi-strong Form

This form of the Efficient Market Hypothesis (EMH) states that all publicly available information is already reflected in the current market price of a stock. Thus, investors cannot utilize technical or fundamental analysis to gain higher returns, and only non-public information can help them achieve above-average market returns. This theory suggests that the market is efficient and that investors cannot consistently earn excess returns by analyzing publicly available information.

- Strong Form

This form of the Efficient Market Hypothesis (EMH) asserts that all information, including both public and non-public information, is fully incorporated into current stock prices, leaving no room for any type of information to give investors an edge in the market. This theory suggests that investors cannot earn returns that exceed the normal market returns, regardless of the information they acquire or the research they conduct. Supporters of the

strong form of the EMH believe that the stock market is highly efficient and that no investor can consistently outperform the market.

Notwithstanding its broad acceptance, the Efficient-market hypothesis (EMH) has faced substantial criticism. The following list outlines some of the most prominent objections to the theory:

- Behavioral Biases: Barberis and Thaler's "A Survey of Behavioral Finance" criticizes the efficient-market hypothesis (EMH) for assuming that market participants always act rationally, which is not supported by the evidence of behavioral biases in financial decision-making. These biases can lead to market inefficiencies and persistent anomalies that the EMH cannot explain. For example, investors may exhibit overconfidence, herding behavior, and loss aversion, which can lead to the mispricing of assets and suboptimal investment decisions. The survey suggests that considering behavioral biases is important for developing alternative models of asset pricing that can better explain the observed anomalies.

- Market Inefficiencies: In Fama's "Efficient Capital Markets: II," market inefficiencies refer to situations where market prices do not reflect all available information about a particular security, leading to potential opportunities for investors to earn abnormal returns. The efficient-market hypothesis (EMH) argues that markets are efficient because prices reflect all publicly available information, and any new information is quickly incorporated into prices, leaving no room for investors to earn excess returns. However, Fama also acknowledges that there may be some inefficiencies in markets, particularly in relation to the cost of acquiring and processing information. For example, small or fewer liquid markets may have less information and be more prone to mispricing. Additionally, some investors may have access to private information or may be able to process information more quickly, leading to potential abnormal returns. Overall, market inefficiencies represent a deviation from the EMH and suggest that markets may not always be perfectly efficient.

3.1.3.2 Currency exchange rates

The evolution of economic life and international relations has brought modifications to commercial exchanges and capital transfers. This has been accompanied by a transformation in the exchange rate mechanism for currencies, most recently demonstrated by the complete floating of exchange rates devoid of government or central bank intervention. However, those knowledgeable in present-day economic realities acknowledge the unrealistic nature of this condition. Experiments have demonstrated that central banks in all economic systems actively intervene to adjust the currency exchange rate under state interests (M. Dominguez, 1998).

One factor contributing to the balance between exchange rates is the Fisher Effect, which stipulates that the real interest rate can be calculated as the difference between the nominal interest rate and the expected inflation rate. If the real interest rate of a country exceeds that of another country, it can result in capital inflows and an appreciation of its exchange rate. Additionally, purchasing power parity (PPP) plays a role in establishing a balance between exchange rates, as it suggests that in the long run, exchange rates should adjust such that the cost of a standardized basket of goods remains uniform across different countries (Frenkel, 1986).

3.1.4 Margin trading in the forex market

Margin trading is a highly sought-after product in the world of finance, especially among finance scholars, due to its unique characteristics that set it apart from other financial derivatives. It offers a smooth and uncomplicated experience while also providing self-coverage against risks to banks or brokerage firms and providing investors with high profits. The process involves purchasing foreign currencies by paying a portion of their value in cash and borrowing the remaining amount from the broker or financing bank, with the goal of profiting from the difference between the purchase and selling price once the currencies appreciate in value (Curley, 2015).

In order to gain a comprehensive understanding of the mechanics of trading using margin, it is imperative to examine the step-by-step processes, as outlined below:

1. The brokerage firm establishes the margin by using leverage ratios such as 1:100 or 1:200, or something else.
2. The investor deposits an amount, for example, 1000 EUR, into the brokerage firm's account, which enables the investor to trade a sum of 200,000 EUR in the currency market based on the established leverage, for instance, 1:200.
3. The brokerage company or a funded bank lends the investor the rest of the amount, i.e., the remaining 199,000 €.
4. In the event that the investor realizes a profit, the profit is credited to the investor's account.
5. In the case of a loss, the investor may incur a complete loss of their deposit, as they trade on a margin basis with the possibility of profit or loss. The brokerage firm, in such scenarios, will liquidate the investor's currency holdings after deducting their fees within the bounds of the initial deposit (i.e., 1000 EUR).

While margin trading can be an effective way to increase returns, it also carries significant risks that have drawn criticism from financial experts. Here are some of the key criticisms of margin trading in forex:

High Risk: Margin trading is a high-risk endeavor that involves leveraging funds in the trader's account to control a larger amount of currency. As stated in Jim Brown's book 'forex Trading: The Basics Explained in Simple Terms,' forex trading is a leveraged instrument, meaning that brokers can offer traders leverage ratios of up to 1000:1, allowing traders to control a large amount of currency with a small number of funds. However, higher leverage also increases the risk of significant losses. If a trade goes against a trader who is over-leveraged, their broker may close the trade to protect their own interests, resulting in significant losses for the trader. Risk management is crucial when engaging in margin trading. Traders must carefully monitor their positions and also be prepared for potential losses (Brown, 2015).

- Overtrading: It's a common mistake made by forex traders, and it can lead to significant losses. According to Mark Douglas in "Trading in the Zone: Master the Market with Confidence, Discipline and a Winning Attitude," overtrading can be a result of emotional trading, lack of discipline, and impatience. Traders who are overconfident and trade too

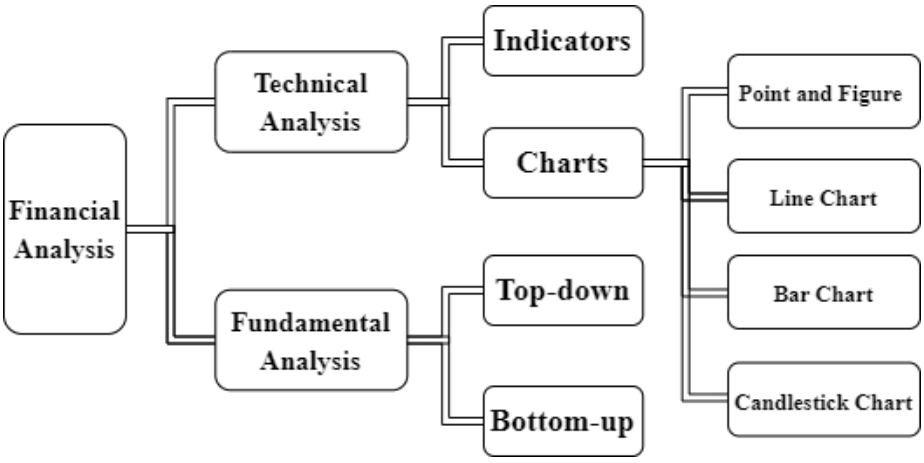
frequently can quickly erode their trading capital. Moreover, overtrading can lead to poor decision-making, as traders become more susceptible to emotional reactions and impulsive trading. Therefore, it is essential for traders to develop a trading plan and adhere to it with discipline (Douglas, 2001).

3.2 Chapter 2 - Examining Fundamental and Technical Analysis: An Overview of Key Elements and Theories

The current era has seen a remarkable transformation in the realm of financial analysis, characterized by an expansion of theories and advancements in application methods. This function plays a fundamental role in investment decision-making, providing investors with valuable insights and serving as a benchmark for success in the stock and forex markets. Its importance cannot be overstated, and it has become a necessary tool for anyone looking to make informed and rational investments.

Whereas the analysis of financial data and information in the stock exchanges takes two directions: fundamental analysis and technical analysis (Murphy, 1999). The illustration in Figure (1) provides a summarized layout of the financial analysis, encompassing its fundamental and technical components.

Figure (1): Forms of financial analysis



Source: The Author

So, it is important to look at the basic idea behind the fundamental analysis and understand its thinking. Then, we should learn about technical analysis in a complete way. This will

help us see the big differences between fundamental and technical analysis. Furthermore, finally, we will understand the different parts and ideas that make up technical analysis.

3.2.1 Fundamental Analysis

Fundamental analysis is a systematic approach to evaluating an asset or company's financial and economic performance. This methodology applies to both stock and foreign exchange (Forex) markets. In the context of stocks, fundamental analysis entails thoroughly examining key financial metrics, such as revenue, earnings, assets, liabilities, and industry trends, to determine the intrinsic value of a stock and assess whether it is overvalued or undervalued (Graham & Dodd, 2009). On the other hand, In the foreign exchange (Forex) market, fundamental analysis encompasses the examination of various economic, financial, and political factors that can influence the relative value of a currency. This analysis aims to determine the intrinsic value of a currency and assess whether it is overvalued or undervalued relative to other currencies (Dolan, 2011). So, the insights gathered from a fundamental analysis can be utilized by traders, investors, and analysts to make informed decisions about acquiring or disposing of an asset or currency. This information is relevant for both long-term investment strategies and short-term market speculation.

The fundamental analysis employs two distinct approaches to understanding a company's market and financial health. The first approach, known as top-down analysis, entails analyzing economic conditions to determine potential market changes and their impact, evaluating industry conditions, and examining sectoral analysis recommended by market analysts. The second approach, bottom-up analysis, involves evaluating a set of financial ratios for the company over a series of periods to identify trends and make comparisons (Graham, 2006).

Fundamental analysis is a systematic approach that seeks to evaluate a company's financial health and potential, and Its objectives are crucial in accurately assessing a company's financial standing and future prospects. These objectives are as follows (Lynch & Rothchild, 2000):

A) Determining the fair value of the company's shares: Fundamental analysis strives to determine the intrinsic value of a company's shares by analyzing various financial and non-financial factors.
B) Evaluating revenue strength and return on investment: The analyst assesses the company's revenue streams, profitability, and the efficiency of its investment strategies to determine its overall financial performance.
C) Assessing capital structure: The analyst examines the company's capitalization, including its equity and debt, to determine its financial leverage and risk exposure.
D) Evaluating indebtedness: Fundamental analysis evaluates a company's short-term and long-term debt obligations to determine its financial stability and ability to meet its financial obligations.
E) Evaluating future investment opportunities: The analyst assesses a company's potential for growth and future investment opportunities.
F) Forecasting Cash Flows and the financial Hardship: Fundamental analysis utilizes financial forecasting techniques to estimate future cash flows and predict financial hardship or failure. This helps investors make informed investment decisions and assess a company's overall risk profile.

Currency exchange rates are heavily influenced by the economic conditions of the country that issues the currency. This has been demonstrated by various studies showing that fundamental analysis can be effective in the long term for investments. The deviation between actual economic indicators and expected results can greatly impact the exchange rate, resulting in profits or losses based on price differences (Rosenberg, 1996).

To ensure success, technical analysts must consider all factors that could impact the currency price. This includes the inflation rate, the balance of payments, the interest rate index, and monetary policy measures such as tax cuts and changes to compulsory reserve ratios and open market operations. Other indicators such as cost of living, unemployment rate, domestic income growth, and political events such as international economic agreements and treaties should also be considered. Considering these factors, technical analysts can make informed investment decisions (Rosenberg, 1996).

A crucial aspect of fundamental analysis involves comprehending the factors that drive price movements. To do so effectively, it requires the rapid collection and analysis of financial and economic data. However, obtaining this information with the necessary speed to make informed investment decisions in real time is often challenging due to the dynamic nature of currency and stock markets. Prices and currencies can fluctuate rapidly, making timely decision-making a critical factor in successful investing.

3.2.2 An Overview of the Technical Analysis Methodology

Technical analysis predicts prices by examining market data such as charts, price patterns, and trading volume. It involves the study of market movements through charts to identify future price trends. The technique was established in the trading industry as a specialized method of analysis that relies on the historical performance of securities or assets, considering their movements over a certain period (Pring, 2002).

The objective of technical analysis is to provide an unbiased outlook on the expected performance of stocks, exchange rates, commodities, or any other type of security. It also examines demand and supply dynamics for securities and commodities and the correlation between prices and trading volumes of these securities or commodities. In addition, technical analysis endeavors to cover the psychological and emotional elements that influence investors in the market, as these factors play a crucial role in determining market movements and should not be disregarded (Murphy, 1999).

The proponents of technical analysis believe that the movement of prices is not arbitrary but follows predictable patterns that repeat themselves consistently over time. With the expectation that these patterns will continue appearing in the future, where it matters, the importance of technical analysis lies in the ability of analysts to employ a combination of tools and fundamental techniques to forecast future market trends with precision (Murphy, 1999).

3.2.3 Comparing Technical vs Fundamental Analysis in Investments

Investing in financial markets is a complex endeavor that requires a deep understanding of the underlying forces that drive prices; technical analysis involves using historical price and volume data to identify trends and patterns in market behavior, while fundamental analysis

involves analyzing the financial health of a company or an entire market. Technical analysis is often used by short-term traders looking to profit from short-term price movements, while fundamental analysis is often used by long-term investors looking to hold assets for extended periods (Murphy, 1999).

While technical analysis is more subjective, as different analysts may interpret the same data differently, fundamental analysis is more objective, as financial statements and economic data are typically publicly available and can be verified. Despite these differences, both technical and fundamental analysis have their place in investment strategies. Technical analysis can provide valuable insights into short-term market trends, while fundamental analysis can help investors identify undervalued assets that may be poised for long-term growth. By combining these two approaches, investors can better understand the markets and make more informed investment decisions. Therefore, it is essential for investors to understand and utilize both technical and fundamental analysis in their investment strategies to maximize their profits and minimize their risks (Murphy, 1999).

3.2.4 Technical Analysis Components in Investment Decisions

Technical analysis is based on three basic components:

A) Trading Volume: The trading volume is a key metric utilized to specify the market's direction, bullish or bearish, and predict potential trend reversals. For instance, a continuous increase in trading volume resulting from sustained buying activity indicates a bullish market trend. However, suppose there is a slight decline in price followed by a decrease in trading volume. In that case, this may signal profit-taking operations and indicate a potential return to previous bullish conditions (Investopedia, 2022).

On the other hand, in a bearish market, a high trading volume suggests that the trend of declining prices is likely to persist. On the other hand, a decrease in trading volume accompanied by a correction wave, which is characterized by a temporary uptick in prices, may indicate that the bearish trend is set to continue. The illustration in Table (1) demonstrates the correlation between trading volume and market trends in certain scenarios.

Table (1): The Correlation between Trade Volume and Market Trend

Market Trend	**Bullish**		**Bearish**	
Trade Volume	High	Low	High	Low
Holding constant other factors	Uptrend Continuation	Opportunity for Trend change	Downtrend Continuation	Opportunity for Trend change
Price decline	Reversal of Trend	Uptrend Continuation	-	-
Price increase	-	-	Reversal of Trend	Downtrend Continuation

Source: The Author

B) Trader's Situations: It is a concept in technical analysis that describes different market conditions that traders may encounter. Technical analysts use a range of tools and techniques to analyze price charts and identify these situations. By doing so, traders can potentially make more informed decisions about when to buy, sell, or hold a security (Achelis, 2000).

C) Price Direction: The price is the result of the fusion of factors affecting the price of any commodity. And, since the sum of the previous prices represents the price direction of a particular currency, the price and its direction are necessary elements of technical analysis (Nison, 2003).

3.2.5 Technical Analysis Theories

The origins of technical analysis in the forex market can be traced to the idea of the random walk theory. Over the years, this concept has advanced and evolved, culminating in the emergence of the field of behavioral finance. Behavioral finance acknowledges the influence of human psychology on market trends; consequently, theories have been developed to analyze and interpret market mechanisms, laying the groundwork for technical analysis. In this context, we will detail and elucidate the most significant theories (Murphy, 1999):

- Dow theory.
- Elliott waves.
- Moving averages.

- Indicators.
- Charts and graphs.

3.2.5.1 Dow Theory

The Dow Theory is a set of principles for analyzing stock market trends and making investment decisions. It was first introduced by Charles Dow in the late 19th century and is considered one of the first formal theories of technical analysis in finance (Rhea, 2012).

The Dow Theory consists of five principles (Rhea, 2012):

A) The market has three trends: The primary trend lasts for several years and consists of a series of higher highs and higher lows for bullish markets and lower highs and lower lows for bearish markets. The secondary trend, which lasts several weeks to several months, is a reaction against the primary trend. The minor trend lasts only a few days to a few weeks and is a short-term fluctuation within the secondary trend.

B) The averages must confirm each other: Dow believed that the stock market could be analyzed by studying the movements of the Dow Jones Industrial Average (DJIA) and the Dow Jones Transportation Average (DJTA). He believed that these two averages must confirm each other for a trend to be considered valid. In other words, if the DJIA is trending higher, the DJTA should also be trending higher. If the DJTA is not trending higher, this is a bearish signal and suggests that the primary trend may be reversing.

C) The market trends exist until proven otherwise: Dow believed that a trend continues until proven otherwise. This means that the market should be analyzed for signs of a trend reversal, but until such a reversal is confirmed, the trend should be assumed to continue.

D) Volume must confirm the trend: Dow considered that volume must confirm the trend in the market. The volume should also increase if the market is trending higher. If volume decreases while prices rise, this is a bearish sign and suggests that the trend may be reversing.

E) Price is the ultimate indicator: Dow believed that the most important factor in analyzing the stock market was the price of stocks. He believed that all other factors, such as economic data and company financials, were reflected in the price of a stock and that analyzing price trends was the best way to analyze the market.

Dow theory is a widely used tool in technical analysis, but it has faced criticisms for being a lagging indicator. This means that investors may miss out on significant market movement by the time the primary trend is confirmed. However, if the trend reversal is only temporary or minor, investors may not suffer significant losses. It is important to recognize the limitations of the Dow theory and use it in conjunction with other indicators to make informed investment decisions. Overall, while it has its shortcomings, Dow theory remains a popular tool among investors (Spaulding, No Date).

3.2.5.2 Elliott waves

Elliott theorized that the financial market is inherently inefficient and susceptible to the whims of its traders, leading to a consistent bias towards either undervalued or overvalued prices. So, to comprehend the Elliott Wave theory, it is necessary to examine both bullish and bearish market formations and the specific waves associated with each (Frost & Prechter Jr., 2005).

In Bullish Market, the Elliott Wave theory identifies five upward price movements, known as "waves," and three corrective price movements, known as "corrections", the following describes each of these waves:

A) First wave: The first wave is characterized by an initial burst of optimism, as a few investors believe that the current price of the currency pair is undervalued and begin buying, causing prices to rise.

B) Second wave: It is a corrective or pullback phase, as some investors take profits, and the currency pair is considered overvalued, leading to a temporary decline in prices but not reaching the low of the previous wave.

C) Third wave: It is the longest and strongest wave, as more investors become aware of the currency pair and begin buying, driving prices to new highs beyond those reached in the first wave.

D) Fourth wave: It is another corrective phase, as some investors take profits and sell the currency pair, causing a temporary decline in prices but again not reaching the low of the previous wave.

E) Fifth wave: It marks the final stage of the uptrend, as prices continue to rise toward the market's peak. What happens after that is either the emanation of a sudden correctional wave or starting again to enter another five waves.

In a bearish market characterized by declining prices, the five waves of the Elliot wave pattern take on a specific form and meaning. The pattern represents the progression of a bearish trend, from the initial decline in prices to the final stage of heavy selling pressure before a trend reversal occurs.

A) First wave: Represents the initial price decline and it is characterized by a strong bearish sentiment and heavy selling pressure, which lower prices.

B) Second wave: It is a corrective wave that follows the first wave. Prices may rise or fall during this wave, but they typically do not move above the high of the first wave. This wave represents a temporary respite from the bearish sentiment and gives traders a chance to reassess the market and their positions.

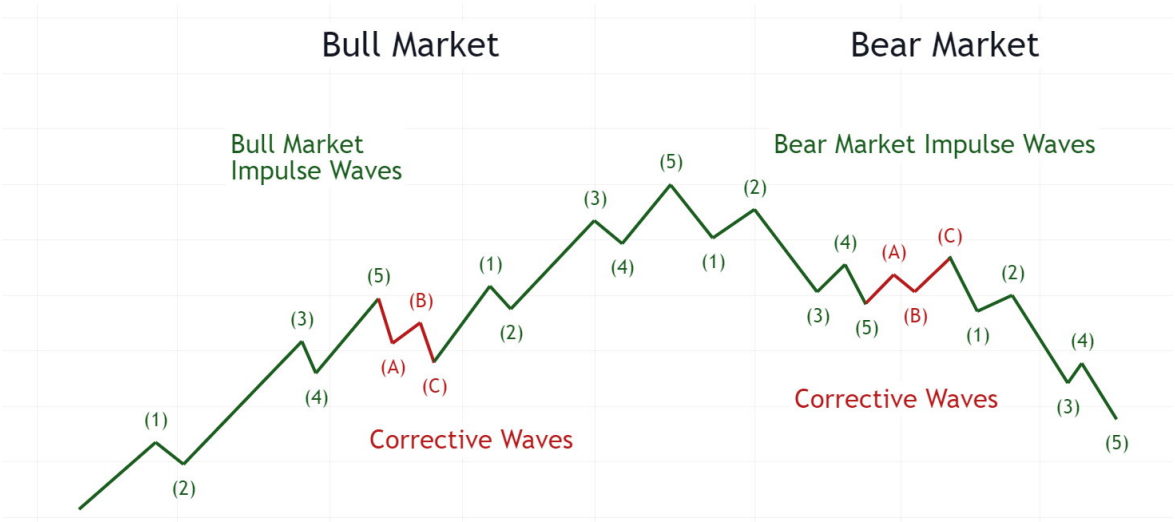
C) Third wave: It is the longest and strongest wave in a bearish market and represents a continuation of the bearish trend. Prices typically fall sharply and with increasing momentum during this wave as more traders become bearish and sell their positions.

D) Fourth wave: A corrective wave that retraces some of the losses from the third wave. Prices may rise or fall but typically don't surpass the high of the third wave. This wave represents a temporary pause in the bearish trend.

E) Fifth wave: The final wave represents the final decline in prices before a trend reversal occurs. Prices fall rapidly due to strong bearish sentiment and selling pressure.

Figure (2) represents a complete market cycle encompassing bullish and bearish trends. The illustration is based on Elliott's wave theory, which suggests that waves 1, 3, and 5 exhibit bullish movements, referred to as impulse waves, while waves 2 and 4 demonstrate bearish or corrective movements. After the fifth wave, another corrective movement occurs, composed of three consecutive waves labeled a, b, and c. This pattern is not limited to just bullish markets, as the same principles can apply in bearish markets as well, with the direction of the waves being inverted, as shown in the figure.

Figure (2): Bullish and Bearish Market Cycles based on Elliott's Wave Theory



Source: liberatedstocktrader.com, 2022

Elliott wave theory is a way of technical analysis that attempts to identify patterns and cycles in market movements. However, this theory has been criticized for being too subjective and ambiguous. Different analysts may use different rules and guidelines to label and count waves, leading to inconsistent and contradictory results. Moreover, some waves may be too complex or irregular to fit into the theory's framework, requiring ad hoc adjustments or revisions. Therefore, Elliott's wave theory lacks objectivity and replicability, which are essential for any scientific theory (DailyForex, 2022).

3.2.5.3 Moving Averages

The application of moving averages in statistics establishes the overarching trend of a given time series. As a result, technical analysts frequently utilize these averages to identify market trends in the short and long term. This method is broadly used due to its simplicity. Moving averages can be further categorized into three distinct types (Dicks, 2004):

A) Simple Moving Average (SMA).
B) Weighted Moving Average (WMA).
C) Exponential Moving Average (EMA).

Below is a detailed explanation of each of the three types of moving averages:

A) Simple Moving Average (SMA)

It is widely regarded as a user-friendly tool in technical analysis. It displays the average value of a currency pair's price over a chosen period, represented as a continuously evolving line. The name 'Moving Average' reflects that the indicator moves in correspondence with changes in the market (Investopedia, 2022).

Simple Moving Averages (SMAs) are crucial in trend identification and informed trading decision-making. The positioning of price action relative to the SMA can provide insight into market trends. If the price action is above the SMA, it is generally interpreted as an indication of an uptrend, while if it is below the SMA, it is considered a sign of a downtrend. To further enhance their trading strategies, traders often incorporate SMAs with other technical indicators, such as support and resistance levels, to generate concrete trading signals and make informed decisions about entry and exit points. SMAs may have lag and not always reflect current market trends. Traders use different periods and look for crossovers between multiple SMAs to better understand the market (Investopedia, 2022).

The formula for calculating a Simple Moving Average (SMA) is outlined as follows:

$$\text{SMA} = \frac{(sum\ of\ prices\ over\ n\ periods)}{n}$$

Where:

* "n" is the number of periods being considered.

* "sum of prices over n periods" refers to the total of the closing prices of the last n candles or bars on the chart.

The calculation of a 50-day Simple Moving Average (SMA) involves adding up the closing prices for the last 50 days and dividing the sum by 50. The resulting value provides the 50-day SMA. It is noteworthy that the number of periods used in the calculation of the SMA can greatly affect the resulting average, and it can be tailored to the specific requirements of the trader. Using a shorter period result in a more sensitive SMA, while utilizing a longer period generates a smoother, less sensitive SMA (Murphy, 1999).

B) Weighted Moving Average (WMA)

It is a moving average calculation commonly used in technical analysis. Unlike simple moving average, WMA assigns greater weight to recent prices, resulting in a more responsive average that heavily reflects the most recent price action.

According to (BabyPips), The Weighted Moving Average (WMA) calculation in the forex market involves assigning varying degrees of importance and weight to each price based on its level of newness or age. The recent price is deemed to have a greater impact on market trends and is therefore assigned a higher weight than its preceding price when computing the moving average. The purpose of this calculation is to analyze price trends and identify potential turning points in the market. A rising WMA suggests an upward trend, while a declining WMA indicates a downtrend. If the WMA crosses above the price chart, it may indicate a possible buying opportunity, while a cross below the chart may suggest a selling signal.

C) Exponential Moving Averages (EMA)

According to (Stockcharts), It is a moving average that places greater emphasis on recent data points and decreases emphasis on older data points in a time-series data set. The purpose of EMA is to identify the trend of the data by smoothing out short-term fluctuations, making it a useful tool in technical analysis for financial markets where trends play a crucial role in prediction; The (EMA) Exponential Moving Average is a weighted average of the current price and the previous EMA, where the weighting factor is determined by the number of periods, n. more in value of n, the more weight is given to older data points, resulting in a

smoother EMA. One of the key advantages of this average is its ability to retain older prices; additionally, its responsiveness to recent price changes makes it a valuable tool in technical analysis.

3.2.5.4 Indicators

Indicators are statistical tools that traders use to analyze past and current market conditions and predict future price movements. They are based on the calculation of the direction of the market using the price of a security and its trading volume. Indicators are derived by applying mathematical equations to price data related to stocks or currency pairs, which can include a combination of opening, high and low, and closing prices over a specified period (Achelis, 2000).

The selection of technical indicators is a complex process that considers multiple variables. It is important to understand that some indicators are solely derived from closing prices, while others factor in additional information such as trading volume, purchase order data, and other relevant metrics (Nison, 2003). For enhanced clarity, The following will concentrate on two of the most widely used technical indicators, the Relative Strength Index (RSI) and the Moving Average Convergence Divergence (MACD), for a clearer understanding.

1) Relative Strength Index (RSI)

The Relative Strength Index, an indicator created by J. Welles Wilder Jr., is a popular tool in technical analysis for determining the strength of a currency pair's price momentum. It helps traders identify potential turning points in trends and assess whether a currency is overbought or oversold (Investopedia, 2022).

The Relative Strength Index is computed by evaluating a currency pair's average gains and losses over a pre-determined time frame. This indicator is primarily utilized to identify buying and selling opportunities in the market by analyzing the fluctuation and momentum of the trend. With its significant analytical capabilities, the RSI compares the size and strength of gains in the currency pair's price to the size and strength of losses over a specified period, ultimately resulting in a data point represented as an indicator (Investopedia, 2022).

The Relative Strength Index, represented as an oscillating indicator between 0 and 100, is displayed on a separate chart window in conjunction with the currency pair's price chart. A reading of 70 on the RSI is interpreted as overbought, signaling the possibility of a price correction, while a value of 30 is considered oversold, suggesting the likelihood of a price rally (Investopedia, 2022).

Figure (3) illustrates the Relative Strength Indicator through a chart. To provide a clearer understanding of the information presented; According to (The Secret Mindset) it is important to note that the calculation of the Relative Strength Index involves a systematic two-step process:

A) Buy signals: A buy signal is generated when RSI falls below the oversold level (30) and then rises above it. This indicates that the selling pressure has exhausted, and the buyers are likely to take control of the market.
B) Sell signals: A sell signal is generated when RSI rises above the overbought level (70) and then falls below it. This indicates that the buying pressure has exhausted, and the sellers are likely to take control of the market.

Figure (3): Illuminating the point lines on the Relative Strength Index (RSI)

Source: Investopedia.com, 2022

According to (The Secret Mindset), Many traders think that when the Relative Strength Index (RSI) crosses the 50-level, it shows a change in trend. They believe that if it goes above 50, the trend is going up, and if it goes below 50, the trend is going down. But this is not always true. When the RSI is near the 50-level, it means the market is not making up its mind, and prices are likely to stay within a certain range; It is recommended to ignore the 50-level as a defining factor for interpreting the Relative Strength Index (RSI) and instead, incorporate a long-term moving average to minimize the risk of false signals. It is imperative to understand that the RSI is a valuable tool in trading but should not be relied on as the only indicator in making investment decisions; other factors, such as market developments and economic data releases, can greatly influence currency price movements and should be considered alongside the RSI.

Although the Relative Strength Index (RSI) is a widely used technical analysis indicator, it has several limitations that traders must consider. One of the main weaknesses of the RSI is its tendency to produce false signals after sudden and significant price changes. This is because the RSI measures the magnitude of recent price movements, and extreme price fluctuations can result in overbought or oversold readings that do not accurately reflect market conditions (Investopedia, 2022).

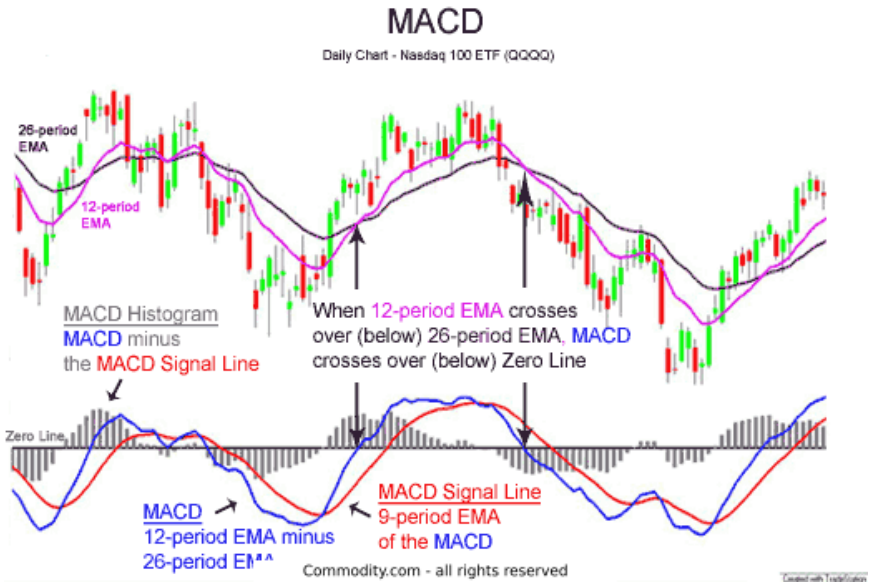
2) Moving Average Convergence Divergence (MACD)

The Moving Average Convergence Divergence, or MACD, is a widely utilized indicator among technical analysis proponents. It calculates the difference between two exponential moving averages of closing prices, typically 26 and 12 periods in length, identify potential buying and selling signals and the market trend. The MACD serves as a momentum oscillator, allowing for identifying the market trends and potential buying and selling signals (Investopedia, 2022).

The MACD line is derived by subtracting a 26-period exponential moving average (EMA) from a 12-period EMA. In contrast, the signal line is a 9-period exponential moving average of the MACD line. The MACD histogram visually illustrates the trend's intensity and direction by showing the difference between the MACD line and the signal line (Investopedia, 2022).

The following Figure (4) represents the methodology to understand the MACD line (represented in blue). The MACD line is calculated as the difference between the 26-period EMA (represented in black) and the 12-period EMA (represented in purple).

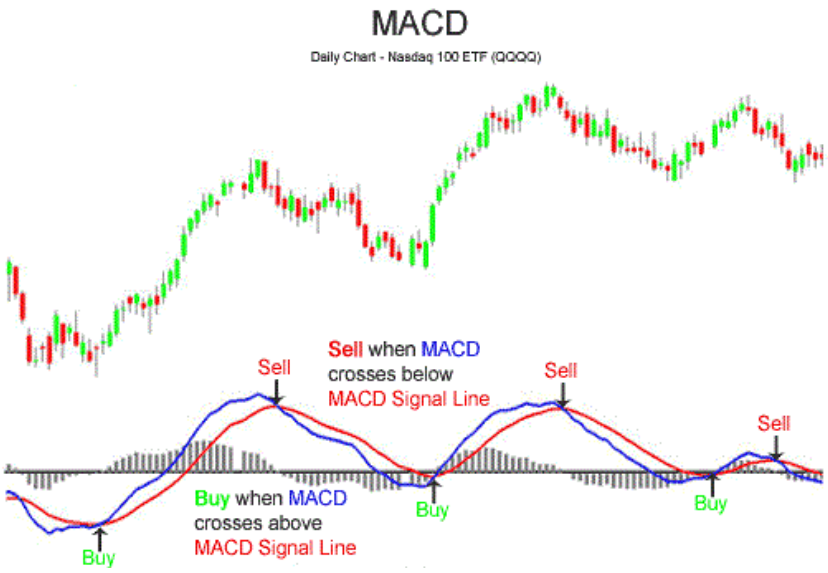
Figure (4): Historical Stock Price with MACD Indicator



Source: Wikipedia, 2022

The MACD can be used to trade both trending and ranging markets. When the MACD line (Blue) crosses above the signal line (Red), it is considered a bullish signal and indicates a potential buy opportunity. Conversely, when the MACD line crosses below the signal line, it is considered a bearish signal and indicates a potential sell opportunity. Additionally, divergences between the MACD line and price can also be used as a signal for potential trend reversal. Figure (5) illustrates examples of such opportunities, providing visual aids to traders in their decision-making processes (Commodity.com, 2022).

Figure (5): Examples of Buy/Sell Opportunities on MACD



Source: Commodity.com, 2022

Despite the widespread MACD usage, it has several weaknesses that traders should be aware of. One of the primary issues associated with the MACD is the occurrence of false positive divergences, which arise when the indicator indicates a possible reversal, but no actual reversal takes place. Additionally, the MACD is not capable of forecasting all reversals, which means it may forecast too many reversals that do not materialize while failing to predict enough actual price reversals (Investopedia, 2022).

3.2.5.5 Charts and graphs

Charts and graphs are used in various types of science to further clarify the theoretical framework of those sciences. It is also used in technical analysis in a more reliable way to understand the implications of the market movement, Where The x-axis - the horizontal axis - represents the time factor, and the y-axis - the vertical axis - represents the price factor.

Chart analysis is a key component of technical analysis. The most well-known types include:

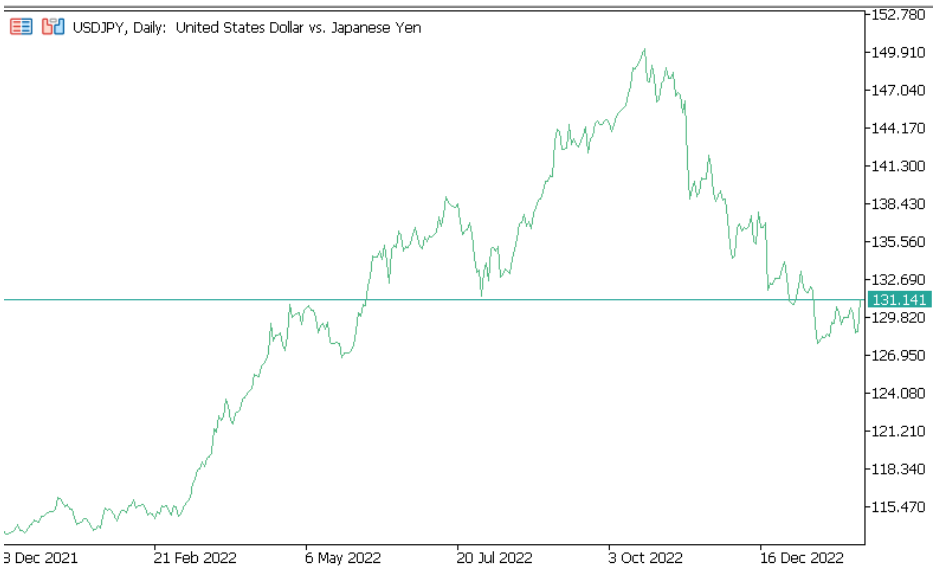
A) Line Chart
B) Bar Chart
C) Candlestick Chart

A) Line Chart

The Line Chart is a straightforward technical analysis tool used in forex trading to display price movement over a specified period. The chart is created by plotting a series of price points connected by a continuous line. In forex trading, Line Charts are widely used to analyze currency pairs' price action.

Line charts are created by plotting the closing price of a currency pair over a set period. For example, if a line chart is created for the daily time frame, each data point on the chart will represent the closing price of a currency pair for a single day. When a line connects these data points, the resulting chart gives traders a clear visual representation of price movement over time; also, it is useful for traders looking to identify long-term trends in the market, as they can help remove short-term price volatility and provide a clearer picture of the overall market direction. Figure (6) below shows a line chart for the USD/JPY currency pair, the example in the year 2022 for the daily timeframe.

Figure (6): Line chart for USD/JPY, Timeframe "Daily"



Source: The Author (From the Metatrader)

According to (HowToTrade.com), on the other hand, many technical analysts, line charts may not offer sufficient price information as they only depict closing prices, and to make proper trading decisions, some traders believe it is essential to consider both opening and closing prices, along with the highest and lowest prices. However, the simplicity of the line

chart is also its major weakness, as they do not account for crucial data that could impact trading strategies. Additionally, if used incorrectly, it can generate false signals on lower time frames, leading to inaccurate trading decisions.

B) Bar Chart

A bar chart in technical analysis is a chart that represents the price movement of a financial instrument over a set period. Each bar represents the price action for the specified time frame, such as 1 hour, 4 hours, daily, or weekly. The chart's horizontal axis represents the time frame, while the vertical axis represents the price. Each bar contains two parts, the vertical and the horizontal line; the vertical line represents the difference between the high and low prices for the specified period, while the horizontal line represents the opening and closing prices. The left end of the horizontal line represents the opening price, while the right end represents the closing price (CFI, 2022).

In Case (1) If the closing price is higher than the opening price, the horizontal line is drawn to the right of the vertical line, indicating an upward trend. In Case (2) If the opening price is higher, the horizontal line is drawn to the left of the vertical line, indicating a downward trend. The vertical line length represents the price volatility for the given period, with longer lines indicating higher volatility (CFI, 2022). Figure (7) illustrates these two cases, While Figure (8) shows a bar chart of the currency pair (Euro/USD), for example, on the last of December 2022, with a timeframe of one hour.

Figure (7): Bar Chart Analysis of Price Movement

Source: Learnstockmarket.in

Figure (8): "Bar Chart of Euro/USD, December 2022, One Hour Timeframe"

Source: The Author (From the Metatrader)

According to (HowToTrade.com), The bar chart, which is commonly used in financial analysis, has been criticized for a few weaknesses. These include its comparative difficulty in reading when compared to candlestick charts, its visual complexity, and the potential for novice traders to struggle with interpreting it. These limitations underscore the importance of selecting the right chart type based on the intended audience and the data being presented.

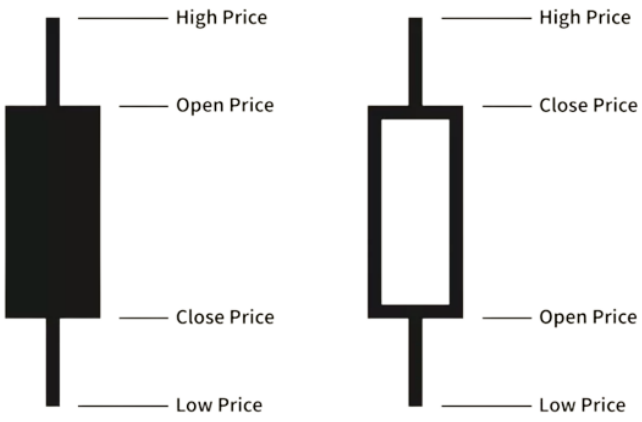
C) Candlestick Chart

Traders widely use candlestick charts to visualize the price movements of currency pairs over a certain period. The chart comprises individual candlesticks, each representing the price movement of a currency pair within a specific time frame, such as 5 minutes, 1 hour, or 1 day. The shape and color of each candlestick provide valuable information about the price action, including price direction, momentum, and volatility (Investopedia, 2022).

The candlestick chart presents the day's highest and lowest prices through a straight line within a rectangle, representing the difference between the opening and closing prices. The rectangle's color holds significance and is used to distinguish bullish and bearish market conditions. If the closing price is higher than the opening price, the rectangle will be colored white, indicating a bullish market. On the other hand, if the closing price is lower than the opening price, the rectangle will be colored black, indicating a bearish market sentiment (Investopedia, 2022).

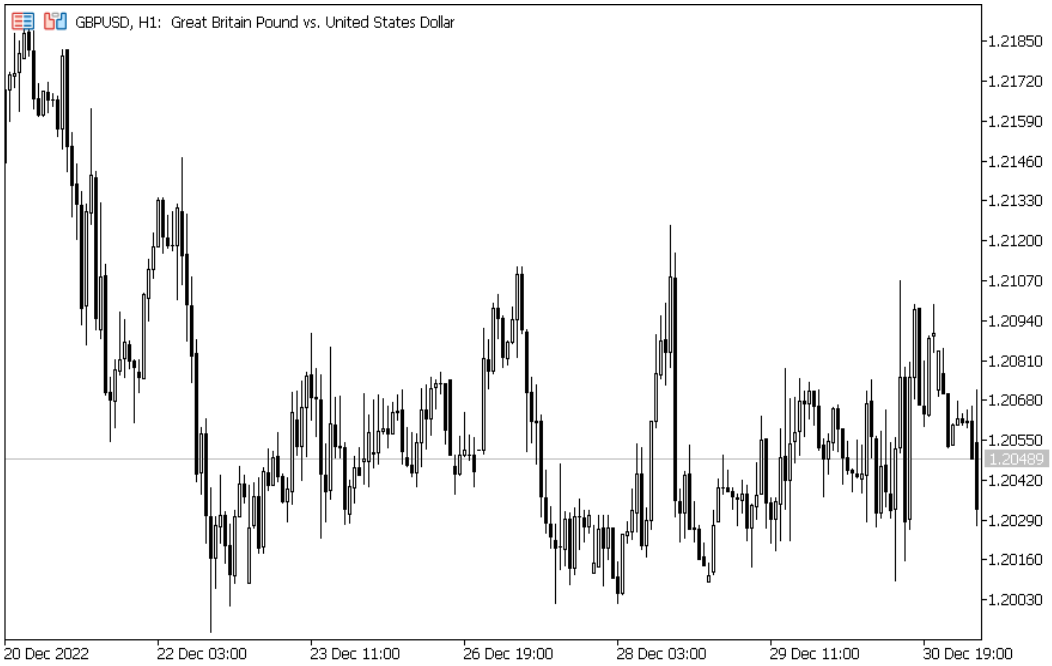
The following figure (9) shows these two forms of the two candlesticks, one white and the other black. In contrast, figure (10) shows a candlestick chart of the currency pair (GBP/USD), on the last of December 2022, with a timeframe of one hour.

Figure (9): Black and white Candlestick shapes



Source: Investopedia, 2022

Figure (10): "Candlestick Chart of GBP/USD, December 2022, One Hour Timeframe"



Source: The Author (From the Metatrader)

In the following chapter, a thorough examination of the origins of candlesticks and their different types and forms is provided.

3.3 Chapter 3 - The Japanese Candlestick: Types and Forms

3.3.1 Introduction

Japanese candlestick is a powerful tool used in technical analysis for analyzing price movements in the financial markets. It was developed in Japan in the 18th century and has since become widely adopted for charting price action. Candlestick charts visually represent the battle between buyers and sellers and give traders a deeper insight into market sentiment and potential reversal points (Achelis, 2000).

Japanese Candlesticks provide traders with a wealth of information that can be used to make more informed trading decisions. By analyzing the patterns on a chart, traders can identify market sentiment, potential reversal points, and the direction of the trend. And unlike bar charts, candlestick charts allow the technical analyst to show the difference between the opening price and the closing price in a way that makes it easier to interpret and analyze (Murphy, 1999).

The thesis will delve into the meaning of Japanese Candlesticks, detailing how they work, the different patterns they display, and offering real-world examples of their use in trading.

3.3.2 Composition of Japanese candlesticks

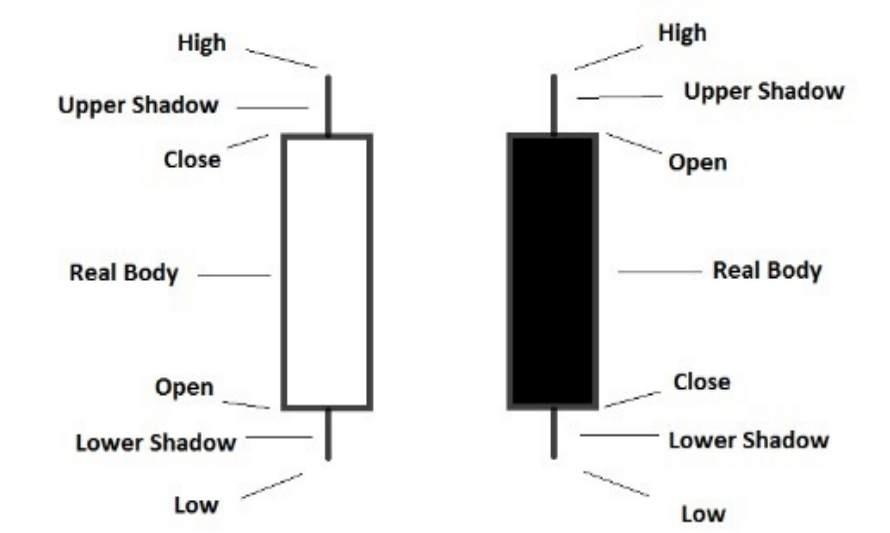
The Japanese Candlesticks in technical analysis encompass the following components Figure (11):

A) Body: The body of a Japanese Candlestick reflects the gap between the opening and closing prices, depicted as a rectangle with the top and bottom marking the opening and closing prices. It is white if the closing price is greater than the opening price and black if the closing price is lower (Nison, 2003).

B) Shadow: Also known as a wick, it is the line that represents the difference between the highest and lowest prices of a stock or asset during a specified period of time. The top part of the shadow represents the highest price during that period and is called the Upper Shadow. On the other hand, the bottom part of the shadow represents the lowest price during that period and is referred to as the Lower Shadow (Pasternak, 2006).

The length of each shadow can provide information about the level of buying and selling pressure during the specified period. A long Upper Shadow can indicate a lot of selling pressure, while a long Lower Shadow can show strong buying pressure (Pasternak, 2006).

Figure (11): Illustration of the body and shadow of a white and black candlestick



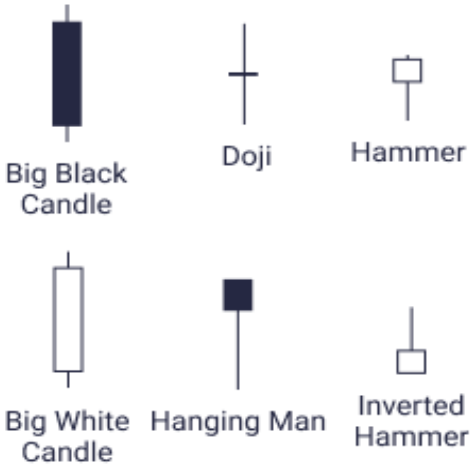
Source: Feedroll.com

3.3.3 Types and connotation of the Japanese candlesticks

According to (Streetdirectory.com), The Japanese candlestick is a visual representation of investor sentiment and behavior in the financial market at a specific time. This technique provides valuable insight into the psychology of investors by highlighting their actions at a particular moment, and the similarity in human behavior in similar situations makes using of candlestick in technical analysis a highly effective tool.

Japanese candlesticks have different shapes, each with special features and meaning. Figure (12) shows some of these types.

Figure (12): Some of Japanese Candlestick shapes



Source: The Author

In order to gain proficiency in the field of technical analysis utilizing Japanese candlesticks, it is imperative to first understand the concepts of support and resistance levels and they are explained as following:

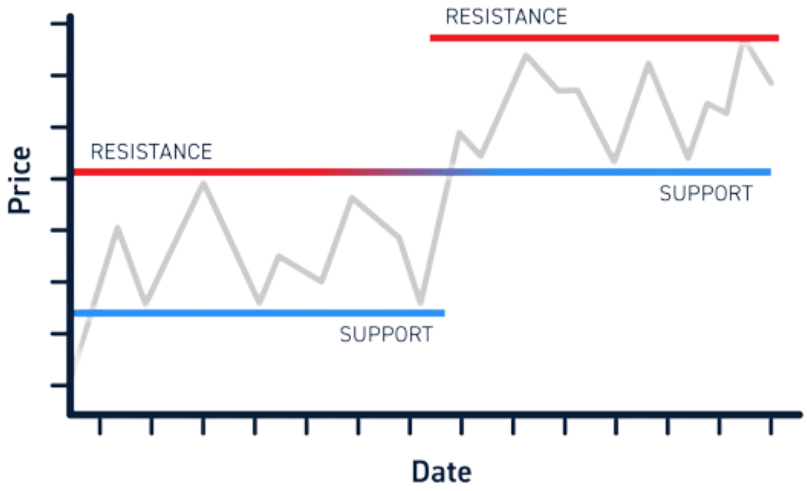
3.3.4 Support and Resistance Levels

Support and resistance levels play a crucial role in the foreign exchange (Forex) market as they help traders identify potential trading opportunities. These levels are determined by analyzing historical price data and are based on the idea that the price of a currency pair will experience difficulty in breaking through certain price points; This creates a sort of "ceiling" or "floor" for the currency pair's price, making it difficult for the price to move beyond these levels (Investopedia, 2022).

The principles of supply and demand can explain the existence of support and resistance levels in the forex market. The currency pair's price is determined by the relative demand for the two currencies that make up the pair. When the demand for one currency is high relative to another, its price will rise, and conversely, when the demand for one currency is low relative to another, its price will fall; so, the support levels occur when the demand for one currency in a currency pair is high enough to counteract the selling pressure, leading to the price bouncing back up. Conversely, resistance levels occur when the selling pressure for one currency is high enough to counteract the buying pressure, leading to the price facing difficulty in breaking through a certain price point (Investopedia, 2022).

When the currency pair's price reaches a support level, many buyers will be willing to enter the market and purchase the currency at that level. This increased demand will help push the price back up, leading to a rebound. On the other hand, when the currency pair's price reaches a resistance level, a significant number of sellers will likely be willing to enter the market and sell the currency at that level. This increased supply will help push the price down, leading to a decline; the following figure shows the support and resistance levels example in the market (Investopedia, 2022); Figure (13) showing what are the levels of support and resistance and how they convert from a level of resistance (Red) to support (Blue) as an example

Figure (13): A simplified chart of support and resistance levels



Source: CenterPoint Securities

Understanding support and resistance levels are crucial to grasp the essence of trend analysis. An upward trend sustains when each support level is higher than the prior one, and each resistance level is higher than the preceding. However, if a corrective decline in the upward trend comes at a lower level than the previous decline, this could be a warning signal that the upward trend has ended. If the price falls below the support level, there is a high probability of the trend reversing from an uptrend to a downtrend. When investors test the resistance level, it is a critical moment for the upward trend, as the price's inability to surpass the resistance level often signals a change in trend. Similarly, a downward trend's price bouncing off a support level usually indicates a trend reversal to the uptrend (Murphy, 1999).

Investors can effectively utilize support and resistance levels by following the below guidelines (Henderson, 2006):

1- In the foreign exchange market, investors must remain cognizant of technical indicators and currency pairs' support and resistance levels. A currency pair breaking its resistance level presents a favourable opportunity for buying, especially if it is accompanied by high volume and confirmation from other technical indicators. Conversely, if a currency pair breaks its support level during a decline, it is considered an opportune point to sell and exit the market, provided there is evidence of a downward trend, such as increasing volume.

2- The rebounding of a currency pair from its support level provides a prime opportunity for investors to enter the market and purchase the currency pair. This is because prices typically ascend to retest the resistance level after a rebound. Conversely, a reversal from the resistance level indicates that the currency pair will descend and retest the support level, thereby becoming an exit point from the market.

3- To execute a successful trade, prudent investors should place a buy order when the currency pair rebounds from the support level and a sell order when the currency pair reaches a point near the resistance level. By doing so, investors can ensure that the transaction is executed safely, and that profit is achieved.

3.3.5 Single candlestick patterns

Certain Japanese candlestick patterns possess a distinct significance, possessing the capability to be interpreted individually without reference to the preceding or subsequent candle formation. Some important patterns will be covered and explained through 3 basic aspects: formation, confirmation, context.

An additional factor to consider is reliability, which applies to all patterns. It serves as a reminder that although these patterns are widely recognized and utilized, they do not guarantee a market reversal or confirmation for continued trends. False signals can arise, necessitating traders to exercise prudence and refrain from exclusively relying on these patterns when making trading decisions.

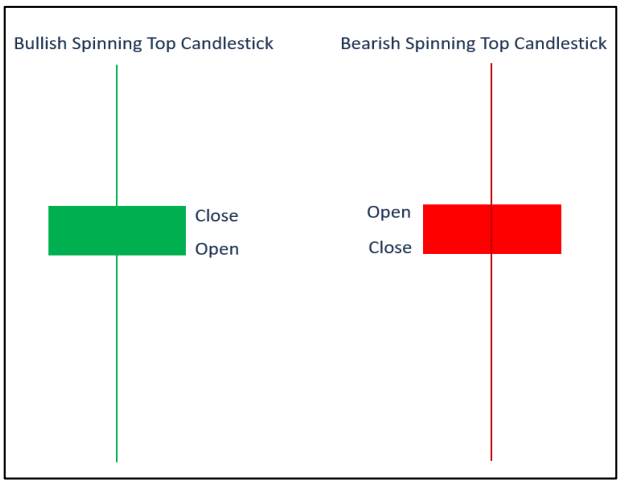
1- Spinning tops candlestick pattern (Figure 14)

Formulation: The spinning top candlestick pattern is characterized by a short body situated between two long wicks, one upper and one lower. This pattern results in an opening and closing price that are equal, indicating a state of indecision among buyers and sellers. Typically found within an uptrend, downtrend, or sideways market, the spinning top signals a potential trend reversal (CFI, 2022).

Confirmation: Active traders are advised to exercise caution and wait for confirmation from technical indicators after the formation of the next candle before entering into a trade. Indicators and signals can be utilized to analyze market movements and protect traders from deviating from their trading plan and adhering to their risk management strategy (CFI, 2022).

Context: The spinning top candlestick pattern is useful in predicting the probability of a price reversal, particularly following a price decline. The bullish or bearish trend following the formation of the spinning top can provide insight into whether the price will increase or decrease until it reaches the opening price. This pattern can signify that a trend reversal is imminent, bearish control is diminishing, and bullish control is emerging. However, confirmation from the next candle is critical in determining whether prices will decline following an uptrend (CFI, 2022).

Figure (14): Spinning Top candlestick Patterns (Bullish and Bearish)



Source: CFI, 2022

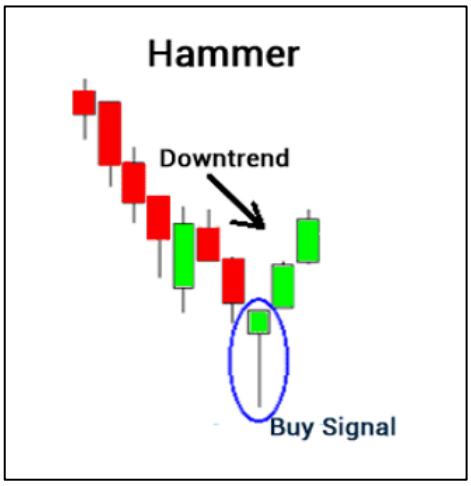
2- Hammer candlestick pattern (Figure 15)

Formation: A hammer is a candlestick charting pattern that can indicate a potential bullish reversal. This pattern occurs when a currency pair trades significantly lower than its opening price but recovers within the period to close near the opening price. The resulting candlestick takes on a characteristic hammer shape with a lower shadow that is at least twice the size of the real body (Investopedia, 2022).

Confirmation: It occurs when the candle following a hammer closes above the closing price of the hammer. The ideal confirmation candle should demonstrate strong buying activity. To limit potential losses for long positions, a stop loss can be placed below the low of the hammer's shadow, and to confirm a hammer signal, subsequent price action must align with the expectation of a trend reversal, meaning the candlestick following the hammer should confirm an upward price movement (Investopedia, 2022).

Context: As stated, an actionable hammer pattern typically occurs during a downtrend, characterized by a series of lower highs and lower lows on the chart. The hammer formation indicates that more optimistic traders enter long positions in the currency pair, signaling a potential reversal of the bearish price trend (Investopedia, 2022).

Figure (15): Hammer candlestick Pattern



Source: Surgetrader.com, 2022

3- Hanging man candlestick pattern (Figure 16)

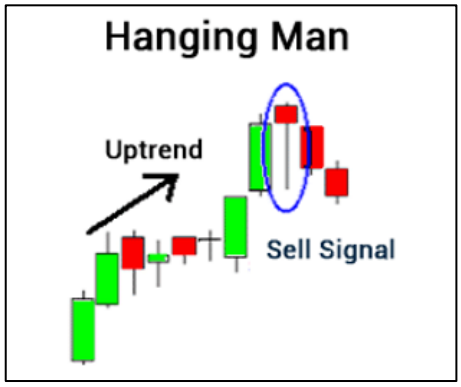
The Hanging Man is a bearish reversal candlestick pattern used by traders to indicate a potential reversal in an uptrend.

Formation: It is a single candlestick pattern that appears on a price chart after a price rise. It is a bearish reversal pattern, indicating that the bulls who were previously in control are losing strength. The pattern is formed by a candlestick with a long lower wick and a short body at the top of the candlestick, with little or no upper wick. The lower shadow is at least two times, preferably three times, the length of the real body, The pattern is named after its shape, which resembles a hammer (Investopedia, 2022).

Confirmation: To confirm the hanging man pattern, traders should look for a price drop the day after the pattern appears. This drop can be verified by a gap lower or the price simply moving down the next day (lower close than the hanging man close). The presence of a confirmation candle is important to ensure the reliability of the pattern in predicting a price drop (Investopedia, 2022).

Context: The interpretation of the hanging man depends on its position on a price chart. It is bearish because it shows that the price had been advancing over successive days, and bulls were firmly in control. But during the session, the bears came in and pushed the price down, indicating that bulls are no longer firmly in control. The hanging man pattern is only useful for gauging short-term momentum and price changes, and traders should look for specific characteristics to increase the chances of a successful trade (Investopedia, 2022).

Figure (16): Hanging Man candlestick Pattern



Source: Surgetrader.com, 2022

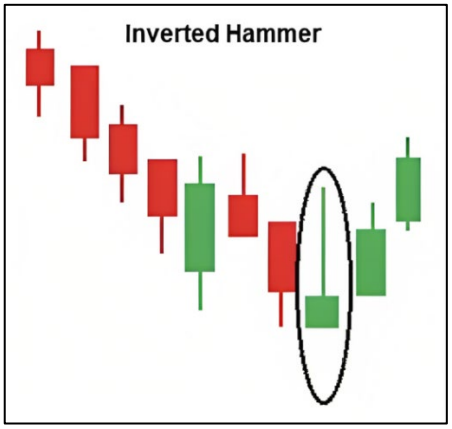
4- Inverted Hammer Candlestick Pattern (Figure 17)

Formulation: The inverted hammer candlestick pattern is a bullish reversal pattern that occurs at the end of a downtrend. It is formed by a short real body and two shadows (wicks), with the upper wick at least twice longer than the real body and the lower wick tiny or non-existent. The pattern is named after its shape, which resembles an upturned hammer (Bybit Learn, 2020).

Confirmation: To confirm the inverted hammer pattern, traders should wait for the next candlestick and check if it opens and closes at a higher price than the inverted hammer pattern. If it does, it means the buyers are still in control, and the bullish momentum is strengthening (Wikipedia, 2022).

Context: The inverted hammer indicates a highly probable trend reversal as bullish traders are ready to change the trend after bearish traders have pushed prices downwards. The upper wick shows the bulls' attempts to push the price up, while the lower wick (if it exists) is caused by the bears who resist getting the price high (Bybit Learn, 2020).

Figure (17): Inverted Hammer candlestick Pattern



Source: Surgetrader.com, 2022

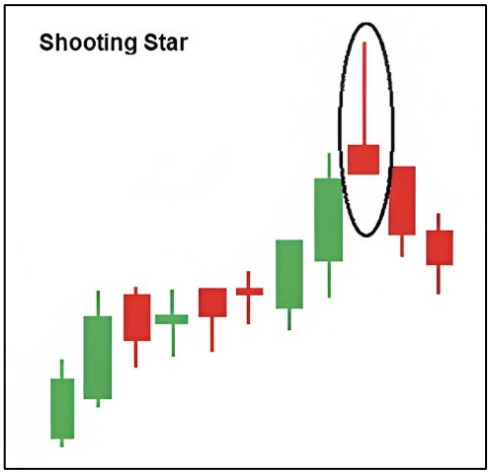
5- Shooting star Candlestick Pattern (Figure 18)

Formulation: A shooting star is a bearish candlestick pattern that appears after an uptrend. It has a long upper shadow, little or no lower shadow, and a small real body near the candlestick's low. The distance between the candlestick's highest price and the opening price must be more than twice as large as the shooting star's body (Investopedia, 2022).

Confirmation: The candle that forms after the shooting star confirms the pattern. The next candle's high must stay below the high of the shooting star and then proceed to close below the close of the shooting star which indicates the price could continue to fall (Investopedia, 2022).

Context: Shooting stars indicate a high probability of a trend reversal. They suggest that the bulls who were driving prices higher during the day have lost control, and the bears have taken over. The long upper shadow represents the buyers who bought during the day but are now in a losing position because the price dropped back to the open. Shooting stars are most effective when they form after a series of three or more consecutive rising candles with higher highs, but they may also occur during a period of overall rising prices (Investopedia, 2022).

Figure (18): Shooting Star candlestick Pattern



Source: Surgetrader.com, 2022

6- Doji star candlestick pattern

Formulation: A Doji candlestick pattern is formed when the candle on a chart has the same or nearly the same opening and closing price, resulting in a candle shape that resembles a cross, inverted cross, or plus sign (Investopedia, 2022).

Confirmation: While a Doji pattern can indicate a trend reversal, it is not a reliable indicator on its own. Traders need to look for confirmation through subsequent candlestick patterns and market analysis to make informed trading decisions (Investopedia, 2022).

Context: The Doji pattern is a rarely occurring phenomenon that signals a conflict between bears and bulls, resulting in a state of indecision in the market. It is frequently observed during periods of consolidation and can aid analysts in identifying potential price breakouts (Investopedia, 2022).

The Doji Star Candlestick pattern can take various forms, including the Gravestone Doji, Long-Legged Doji, and Dragonfly Doji, each unique offering insight into market sentiment and potential reversals, and they are explained as follows (Figure 19):

A- Gravestone Doji

The Gravestone Doji is a bearish reversal candlestick pattern. The pattern consists of a long upper shadow, which suggests that the bulls initially pushed the price action to new highs but eventually lost momentum by the end of the session. While the pattern can be found at the end of a downtrend, it is more commonly found at the end of an uptrend. Traders typically do not act on the Gravestone Doji unless the next candle confirms a reversal. The pattern can suggest a stop-loss placement and profit-taking plan on a downtrend (Investopedia, 2022).

In forex trading, traders analyze various factors to validate the reliability of a candlestick pattern. This includes the trading volume associated with the candlestick and the activity from the previous trading session. For instance, if a currency pair experiences a significant uptrend in trading volume, followed by the appearance of a Gravestone Doji candlestick, it may indicate a potential bearish reversal in the short term (Investopedia, 2022).

B- Long-Legged Doji

The long-legged Doji is a candlestick pattern commonly used to gauge market sentiment. This pattern indicates indecision about the future direction of the price and is most significant when it appears after a strong uptrend or downtrend. Traders may use the pattern to enter long or short positions, although some prefer to wait for confirmation by looking at price movements that occur after the long-legged Doji (Investopedia, 2022).

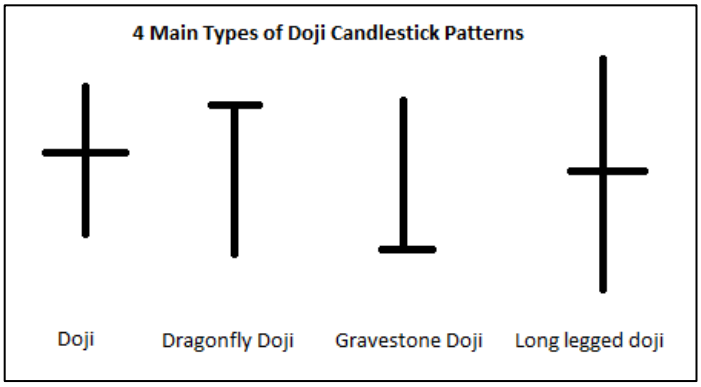
When trading a long-legged Doji, traders should consider several factors, including entry points, risk management, market structure, and taking profits. Traders may wait for the price to move above or below the high or low of the pattern before entering a long or short position. They may also consider market structure by examining major support or resistance levels. Traders should also develop a plan for taking profits, such as using technical indicators (Investopedia, 2022).

C- Dragonfly Doji

A Dragonfly Doji is a type of candlestick pattern formed when the high, open, and close prices are the same, with a long lower shadow, creating a "T" shape. It signals a potential reversal in price, either to the downside or upside, depending on past price action. The long lower shadow indicates aggressive selling during the period, but the price closed near the open, showing that buyers were able to absorb the selling and push the price back up (Investopedia, 2022).

Traders typically wait for confirmation before acting on the pattern, which can occur after a price rise or decline. In the case of a potentially bullish dragonfly, the signal is confirmed if the following candle rises and closes above the close of the dragonfly; on the other hand, for a potentially bearish dragonfly, the candle following it needs to confirm the reversal by dropping and closing below the close of the dragonfly candle. The dragonfly Doji works best with other technical indicators and can appear in a larger pattern, such as the head and shoulders pattern. It is rare but a warning sign that the trend may change direction (Investopedia, 2022).

Figure (19): Doji Candlestick Patterns



Source: Orbex.com, 2022

3.3.6 Multiple candlestick patterns

Single Japanese candlesticks patterns provide technical analysis insights for a limited time and are not considered robust indicators. The strength of their indications can be augmented by combining multiple candles, referred to as multiple candlestick patterns, and there are two main types of multiple candlestick patterns: reversal patterns and continuation patterns. Reversal patterns indicate a potential change in the current trend, while continuation patterns suggest that the trend will continue.

In the following, we will delve into some important patterns in each type and how they can be used to inform investment decisions.

3.3.6.1 Reversal patterns

A- The Head and Shoulders pattern (Figure 20)

The head and shoulders pattern is a widely recognized chart formation that traders and analysts use to predict potential reversals in market trends. It is comprised of three key components: two shoulders and a head, with the neckline connecting the two troughs. The first shoulder typically forms after a prolonged period of bullish activity, followed by the head, which creates a higher peak above the level of the first shoulder. Finally, the second shoulder, often similar in appearance to the first, completes the pattern. Once the price falls below the neckline, it signals a reversal in the trend, indicating a shift from bullish to bearish or vice versa (Ponsi, 2016).

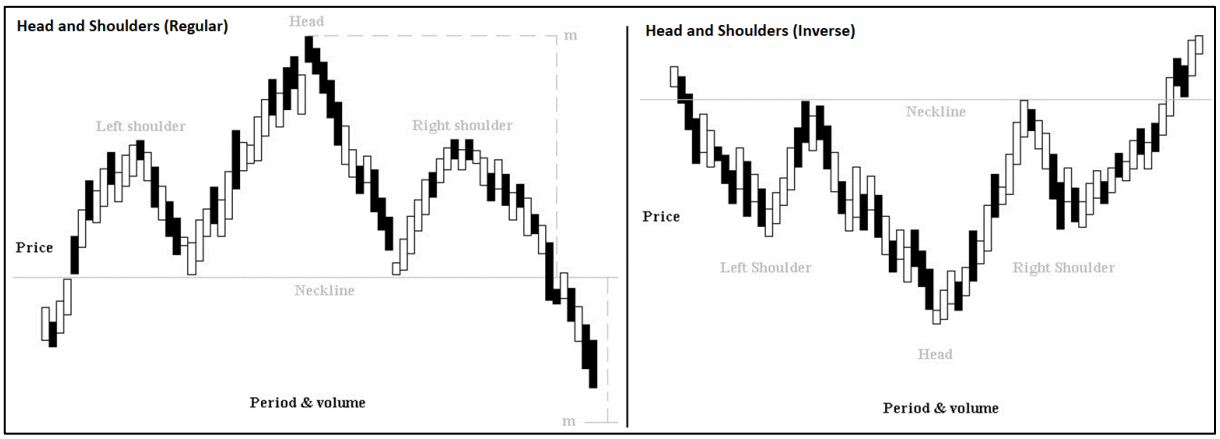
Conversely, the inverse head and shoulders pattern suggests a move from a downtrend to an uptrend. This pattern can be useful for traders to estimate price targets and place stop-loss orders. After the pattern completes, traders can measure the vertical distance from the top of the head to the neckline to gauge potential price movement after the neckline is broken (Ponsi, 2016).

It's essential to wait for the pattern to complete before initiating any trades. Anticipating the pattern's development and basing trades on assumptions can be risky. Traders must watch trends as they develop and be patient to avoid getting caught over-anticipating. Moreover,

it's crucial to plan trades ahead of time and monitor variables that could require a change in entries, stops, and profit targets (CFI, 2023).

An alternative approach for traders is to wait for prices to retrace upward to, or slightly above, the neckline level after the neckline is broken. This method is more conservative and often allows for entering at a more favourable price. However, there is a possibility that the retracement may not develop, leading to missed trading opportunities (CFI, 2023).

Figure (20): Head and shoulders Patterns



Source: Wikipedia, 2022

B- Double-top and bottom patterns (Figure 21)

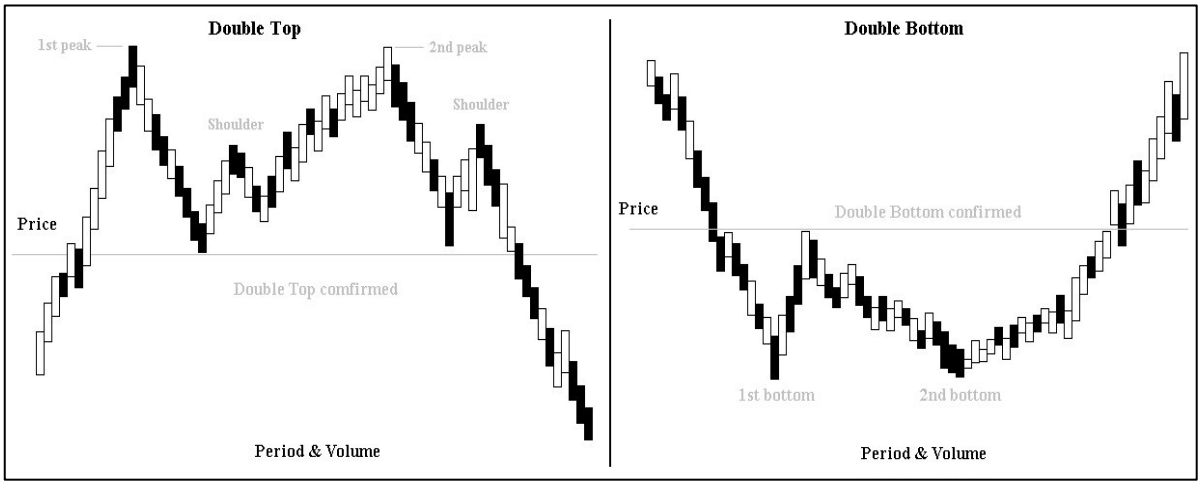
Double top and bottom patterns are widely used in technical analysis to identify potential price reversals. Double-top patterns are formed from two consecutive rounding tops, with the first rounding top forming an upside-down U pattern. The second rounded top will usually be slightly below the first rounded top's peak, indicating resistance and exhaustion. Double bottoms are essentially the opposite of double top patterns, typically occurring at the end of an extended bearish trend. The double bottom formation is constructed from two consecutive rounding bottoms and usually indicates a bullish reversal (Investopedia, 2022).

Double top and bottom patterns are typically formed over a more extended period and do not always resemble a clear "M" or "W" pattern. As a result, it is essential for the treaders to note that the peaks and troughs do not require reaching the same points for the pattern to appear. These patterns are often used in parallel with other indicators since these patterns, in

general, can easily lead to mistaken reversal trends. Therefore, one must be careful and patient before jumping to conclusions (Investopedia, 2022).

While the double top and bottom patterns can be highly effective when identified correctly, they can be extremely detrimental when interpreted incorrectly. For example, a false reading could lead to an early exit from a position. Thus, it is important to identify the significant support level to confirm a double top's identity before making any trading decisions. Additionally, investors should be aware that double tops and bottoms are rare occurrences, and their formation often indicates that investors seek final profits from a bullish trend (Investopedia, 2022).

Figure (21): Double-top and bottom patterns



Source: Wikipedia, 2022

3.3.6.2 Continuation patterns

A- Triangle patterns (Figure 22)

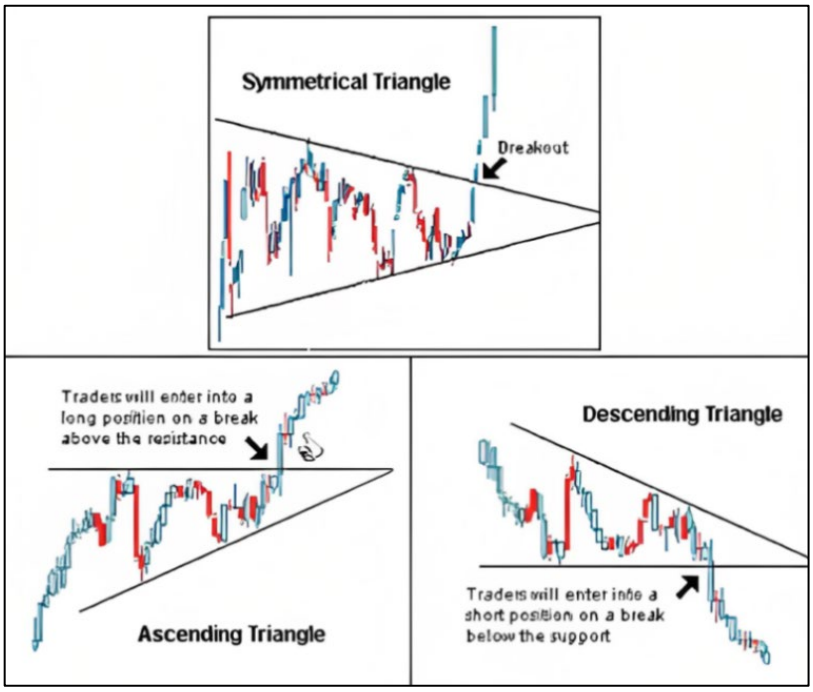
First is the symmetrical triangle, which occurs when two converging trend lines connect a series of sequential peaks and troughs. This pattern occurs when a currency pair's price consolidates in a way that generates two converging trend lines with similar slopes. Traders use the breakout (start of a new bullish trend) or breakdown (start of a new bearish trend) targets to determine potential profit or loss levels and often place stop-loss orders just below the breakout point to manage risk. This pattern is often used in conjunction with other technical analysis tools to confirm trades and determine potential duration. Symmetrical

triangles differ from other triangle patterns and are similar to pennants and flags (Investopedia, 2022).

Another popular chart pattern used in technical analysis is the ascending triangle; this pattern is created by price moves that allow for a horizontal line to be drawn along the swing highs and a rising trendline to be drawn along the swing lows, forming a triangle. Traders look for breakouts, and to trade an ascending triangle, a long position is taken if the price breaks above the top of the pattern, while a short position is taken if the price breaks below the lower trendline. Volume tends to contract during an ascending triangle, and traders look for increasing volume on a breakout as it shows rising interest as the price moves out of the pattern. False breakouts occur if the price breaks out on low volume. A profit target is calculated by taking the triangle's height at its thickest point and adding or subtracting that to/from the breakout point. Wide patterns present a higher risk/reward than patterns that get substantially narrower as time goes on (Investopedia, 2022).

On the other hand, the descending triangle is a chart pattern used in technical analysis that consists of a trend line connecting a series of lower highs and a horizontal trend line connecting a series of lows. This pattern can indicate a weakening demand for the currency pair and is generally considered a bearish continuation pattern with an established downtrend. However, a descending triangle can also be a bullish reversal pattern if there is a breakout in the opposite direction. Traders often initiate a short position following a high-volume breakdown from lower trend line support in a descending triangle pattern, and the price target for this pattern is often equal to the entry price minus the vertical height between the two trend lines at the time of the breakdown. A false breakdown or a rebound to re-test the upper trend line resistance may occur, and the more often the price touches the support and resistance levels, the more reliable the chart pattern becomes (Investopedia, 2022).

Figure (22): Triangle patterns



Source: CFI, 2022

B- Flag patterns (Figure 23)

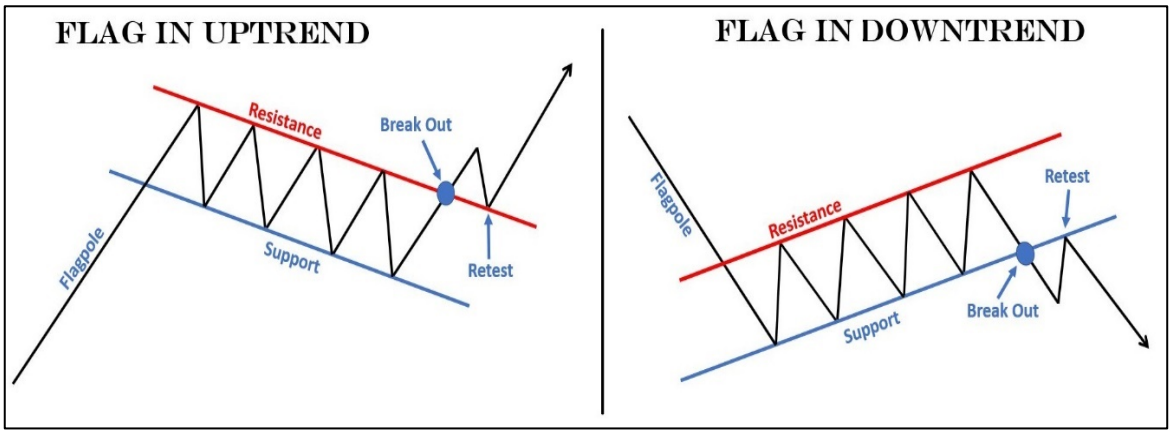
Flag patterns are a popular technical analysis tool traders use to identify potential trend continuation points. These patterns occur when there is a sharp directional movement in price, followed by an area of tight consolidation that moves counter to the prevailing trend. The consolidation period is characterized by parallel markers and is accompanied by diminishing volume. Once the price breaks out of the consolidation period in the same direction as the preceding trend, traders may enter the market with a long or short position (Investopedia, 2022).

There are two types of flag patterns (Figure 25): bullish (Uptrend) and bearish (Downtrend). While they have similar structures, they differ in trend direction and volume patterns. Bullish patterns are characterized by increasing volume during the preceding trend and decreasing volume during consolidation. While Bearish patterns are characterized by increasing volume

initially and then holding at a level since bearish trends tend to increase in volume as time progresses (Investopedia, 2022).

Traders typically set stop-loss points on the opposite side of the flag pattern and use the difference between the parallel trend lines to set a profit target. Flag patterns are among the most reliable continuation patterns used by traders. They signal potential trend reversals or breakouts after a period of consolidation. By paying close attention to position size and overall market trends, traders can maximize success using flag patterns to guide their trading strategies (Investopedia, 2022).

Figure (23): Flag patterns



Source: Howtotradeblog.com, 2020

4 Practical Part

The practical part is divided into

First: As part of the analysis of the MACD and RSI indicators in the forex market, The effectiveness of the MACD and RSI indicators in the forex market has been evaluated through testing on multiple currency pairs under different market conditions. The analysis involves examining the signals generated by these indicators, including their frequency and accuracy, to determine their impact on the price of currency pairs and if they have expected the future price trend properly or not. It is important to note that this testing was conducted on past price data to evaluate the historical effectiveness of the MACD and RSI indicators.

Also, in the analysis, the support and resistance levels were considered to provide a more comprehensive analysis. These levels represent the price points where demand for a currency pair is higher or lower, which can cause the price to either rebound or retreat. By taking into account the support and resistance levels, we can evaluate the strength of the signals generated by the MACD and RSI indicators and their potential impact on the currency pair's price.

Second: Assessing the impact of technical analysis knowledge and experience on the investment decisions of forex traders in the UAE. The study will utilize a questionnaire to examine the extent to which investors in the UAE are familiar with technical analysis and its application in forex trading. The survey will investigate their perception of technical analysis, level of awareness, and ability to utilize technical analysis tools in making investment decisions.

The study also intends to evaluate the factors that impact investors' use of technical analysis and its effectiveness in enhancing investment performance. The research outcomes are expected to offer valuable insights that can enhance the financial literacy of forex investors in the UAE by assessing their current positions and what they need to be better in this field.

4.1 Analyzing the Effectiveness of MACD and RSI Indicators in the forex Market: Testing on Multiple Currency Pairs

In this study, the effectiveness of the MACD and RSI indicators was tested on three currency pairs, including USD/JPY, EUR/USD, and GBP/CAD, respectively, within a 4-hour timeframe. The analysis focuses on different market conditions in the year 2022 to evaluate and investigate the performance of these indicators in predicting the price trend of currency pairs.

The study listed each currency pair separately as an example to analyze how the signals generated by the MACD and RSI indicators impacted the future trend of the market and examined whether the signals accurately reflected the market's future trend or if they were incorrect and failed to achieve the expected outcome. In doing so, the study took into account the levels of support and resistance that were present during the testing period; these levels play a critical role in determining market trends and can significantly affect the accuracy of the signals generated by these indicators.

Example (1)

The following (Figure 24) illustrates the USD/JPY currency pair's trading activity in the H4 time frame on August 2nd, 2022, when the price ranged between 130.38 (Low) to 133.17 (High). Both the MACD and RSI indicators provided a bullish signal, as the MACD line (Blue) crossed above the signal line (Red), indicating a potential uptrend, while the RSI indicator was in oversold territory crossing the 30 level, suggesting a potential reversal to the upside.

Despite attempting to rise on August 10th, the price encountered significant resistance from sellers. Consequently, a large bearish candle was formed in the afternoon. The following day, August 11th, the price tested the strong support level at 131.79 and rebounded to confirm the earlier signals provided by the MACD and RSI indicator regarding the potential reversal to the upside.

Figure (24): USD/JPY Trading Activity and Indicators Analysis on August 2nd, 2022

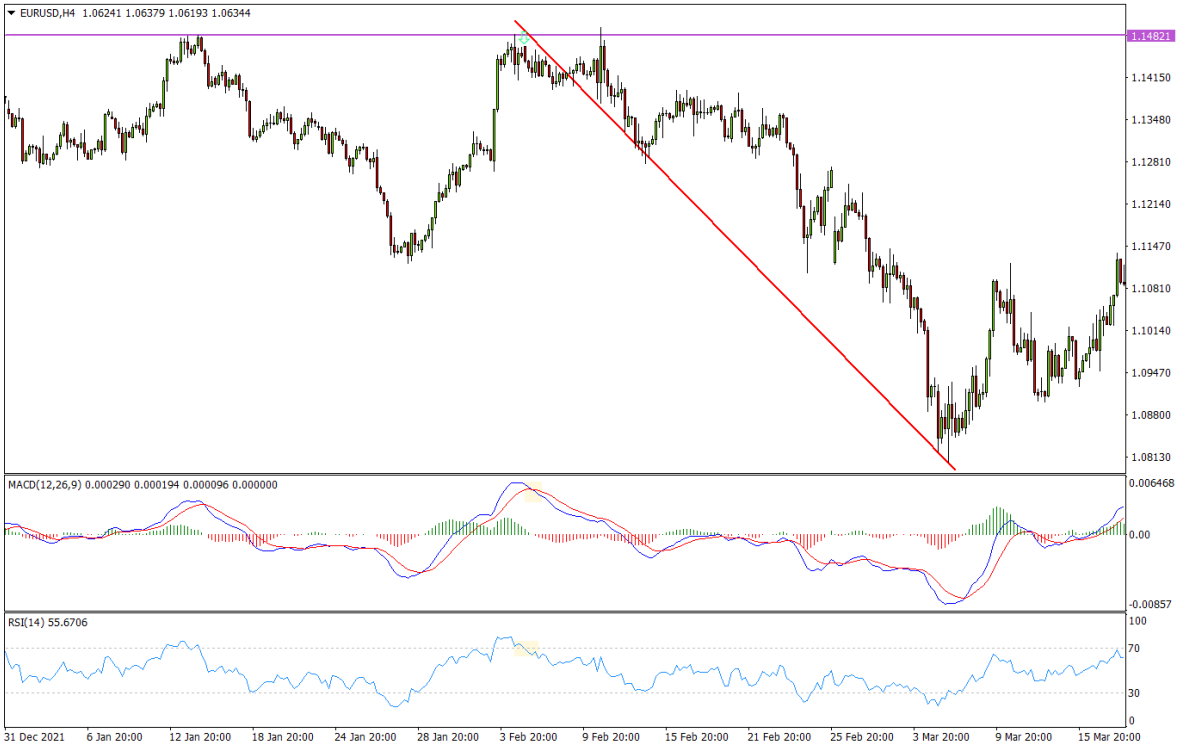
Source: The Author (From the Metatrader)

Example (2)

The following (Figure 25) illustrates the EUR/USD pair currency pair's trading activity in the H4 time frame on February 7th, 2022, when the price ranged between 1.1414 (Low) and 1.1464 (High) in the H4 time frame. Both the MACD and RSI indicators signalled bearish behaviour, with the MACD line (Blue) crossing below the signal line (Red) and the RSI indicator in overbought territory, crossing the 70 level down, hinting towards a potential reversal to the downside.

Following this, on February 10th, 2022, the EUR/USD pair attempted to rise and tested a weak resistance level at 1.1482, leading to a bullish candlestick with equal long tails, indicating a clash between buyers and sellers. However, the price began to decrease and validate the signals provided by the MACD and RSI indicators, as the market reacted to the bearish momentum.

Figure (25): EUR/USD Trading Activity and Indicators Analysis on February 7th, 2022



Source: The Author (From the Metatrader)

Example (3)

The following (Figure 26) illustrates the GBP/CAD pair currency pair's trading activity in the H4 time frame on April 29th,2022, when the price ranged between 1.5909 (Low) and 1.6172 (High) in the H4 time frame. Both the MACD and RSI indicators signalled a potential uptrend, with the MACD line (Blue) crossing above the signal line (Red), indicating a possible trend reversal to the upside. Furthermore, the RSI indicator was in oversold territory, crossing the 30 level to up and validating the bullish signal.

However, at 16:00 on the same day, a large bullish candlestick appeared, indicating that the buyers were in control of the market. After the market closed for the weekend, the GBP/CAD pair returned on May 02nd with small candlesticks, which failed to reveal any clear market dominance. Consequently, the price could not form a clear trend shape and began trading within a price channel. Therefore, the signals provided by the RSI and MACD indicators were not entirely accurate in predicting a potential uptrend in the future, as the price continued to trade within a range instead of showing a clear upward trend.

Figure (26): GBP/CAD Trading Activity and Indicators Analysis on April 29th, 2022

Source: The Author (From the Metatrader)

4.2 The Questionnaire

The questionnaire consists of 25 questions (Asked in Arabic and translated into English), and they are designed for forex investors in the UAE to provide a comprehensive understanding of their investment habits and preferences. The initial eight questions focus on basic demographics, including age, gender, education, sector of work, and years of experience in the financial and forex markets. These questions establish the profile of the respondents and provide insights into how these characteristics relate to their investment decisions. The information obtained from these questions can be used to identify patterns and trends in investment behavior among the target audience, allowing for the development of targeted investment products and educational programs.

The Likert scale was utilized in surveying the remaining 17 questions to measure the responses to these investment forex-related questions. and determine the level of agreement or disagreement with various statements. The mean and weighted percentages are then calculated to analyze and examine the general investment awareness of the respondents per

each question. Questions 9-13 delve into the extent to which investors diversify their investments across different currency pairs, use technical and fundamental analysis, adjust their investment strategies based on current market conditions, and use forex trading software. These questions aim to explore the investment approaches and methods the target audience uses, providing valuable insights into their level of sophistication and experience. The information gathered through these questions can be used to better understand the factors that affect the investment decisions of forex investors in the UAE.

The final set of questions in the survey focuses on the emotions and psychology that impact investment decisions. Questions 14-25 examine the extent to which emotions are separated from investment decisions, the use of stop-loss orders to limit losses, the importance of having a well-defined trading plan, the degree of leverage used, the role of technical trading indicators, support and resistance levels, candlestick patterns, the use of professional advice, the monitoring of investment goals, and the belief in the reliability of past performance. These questions aim to uncover the underlying beliefs, attitudes, and cognitive biases that drive investment decisions, providing important insights into the psychological and emotional factors that shape investment behavior.

In the last 17 questions, the five-point Likert scale is used, particularly as it is a widely used and well-established method of measuring attitudes and perceptions. It is easy to use and interpret and provides a range of response options that can capture the complexity of the respondents' attitudes. Using five weights of response, ranging from strongly disagree (1) to strongly agree (5), allows for a finer distinction between responses, leading to more accurate results, as shown in the following table (2).

Table (2): The five-point Likert scale

Response	Strongly Agree	Agree	Natural	Disagree	Strongly disagree
Weight	5	4	3	2	1

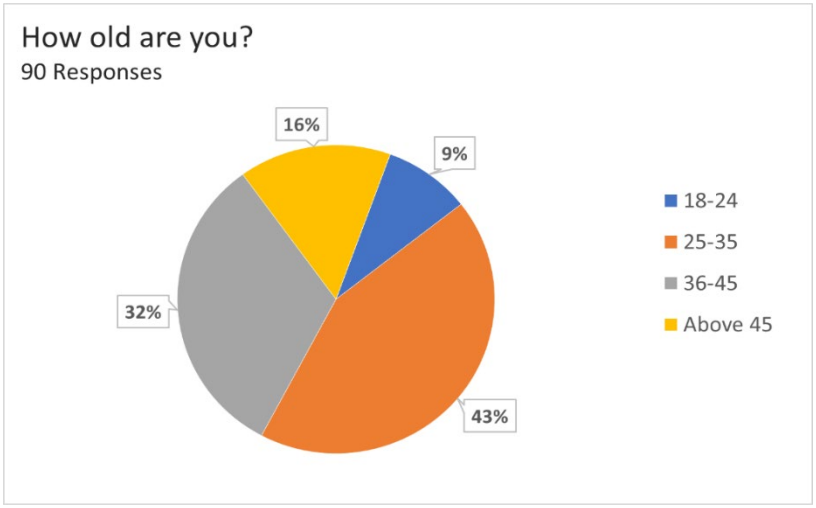
Source: The Author

Note that the following Percentages are close to the nearest valid number.

4.2.1 First Area: Personal characteristics

1- Distribution of respondents by age

Graph (1)

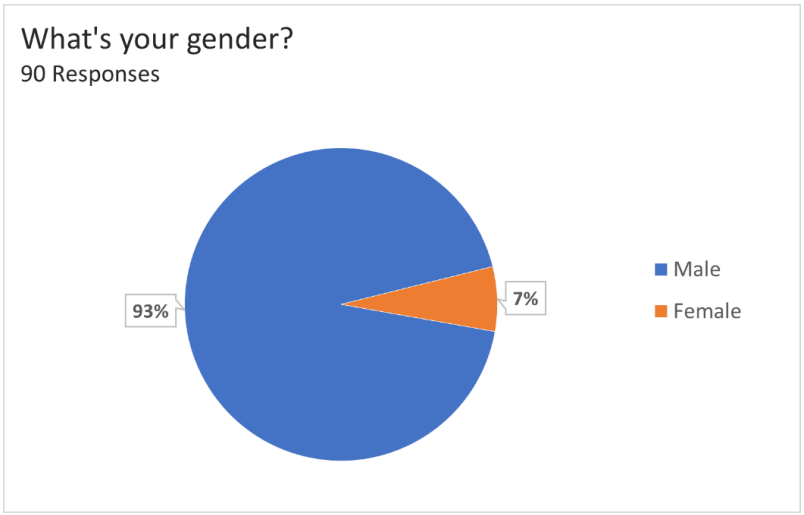


Source: Collected data from the questionnaire

Upon analyzing the questionnaire results, it is apparent that the age range with the most considerable representation among the respondents is 25-35, comprising 43% (i.e., 39 respondents out of 90) of the total sample. The second largest age group was 36-45, comprising 32% (i.e., 29 respondents out of 90). Conversely, the age group of 45 and above comprised 16% (i.e., 14 respondents out of 90). The smallest percentage was observed in the 18-24 age group, comprising 9% only (i.e., 8 respondents out of 90).

2- Distribution of respondents by gender

Graph (2)

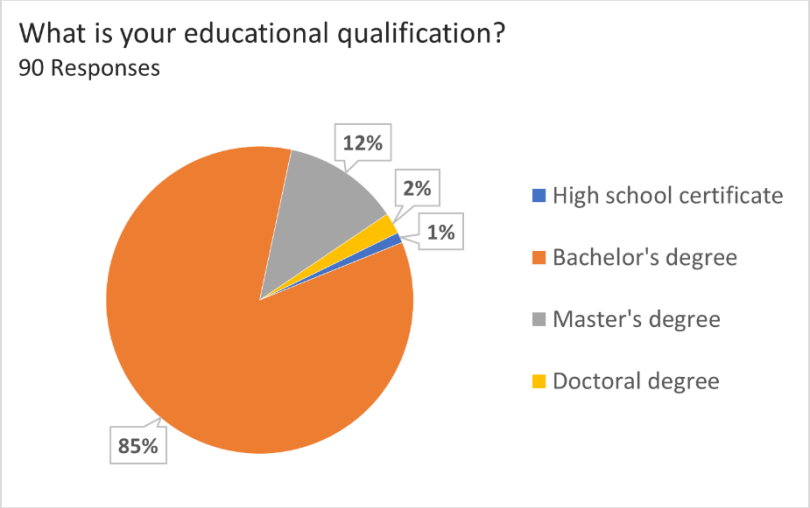


Source: Collected data from the questionnaire

Upon analyzing the questionnaire results, highlight the gender distribution among the 90 survey participants who expressed an interest in investing in the foreign exchange market. The data reveals that males with 84 respondents constitute a significant majority, accounting for 93% of the respondents. In contrast, females comprise a minority with 6 respondents, representing only 7% of the respondents.

3- Distribution of respondents by educational qualifications

Graph (3)

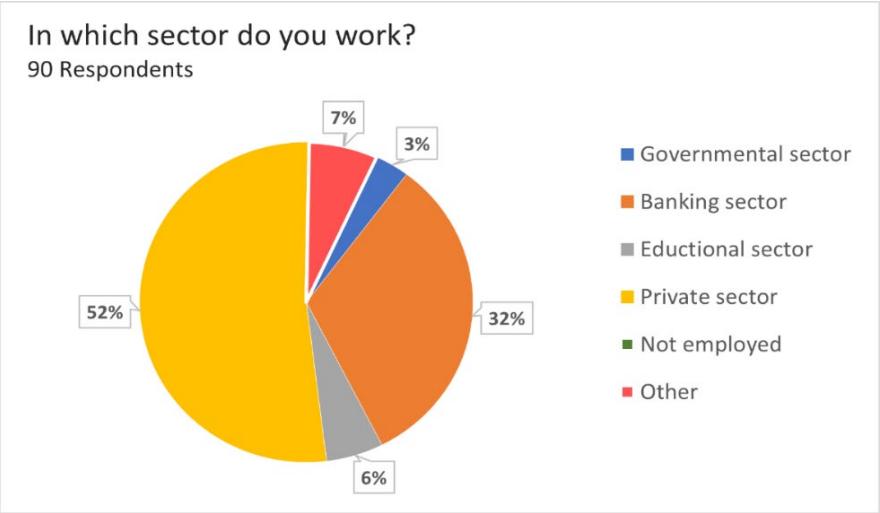


Source: Collected data from the questionnaire

Upon analyzing the questionnaire results, it became apparent that the majority of the study's sample, specifically 85% (i.e., 76 respondents out of 90), hold a bachelor's degree. The second largest percentage of respondents, comprising 12% (i.e., 11 respondents out of 90), hold a master's degree. Additionally, 1% (i.e., 1 respondent out of 90) of the study's sample hold a high school certificate, while another 2% (i.e., 2 respondents out of 90) hold a doctoral degree.

4- Distribution of respondents by Professional field

Graph (4)



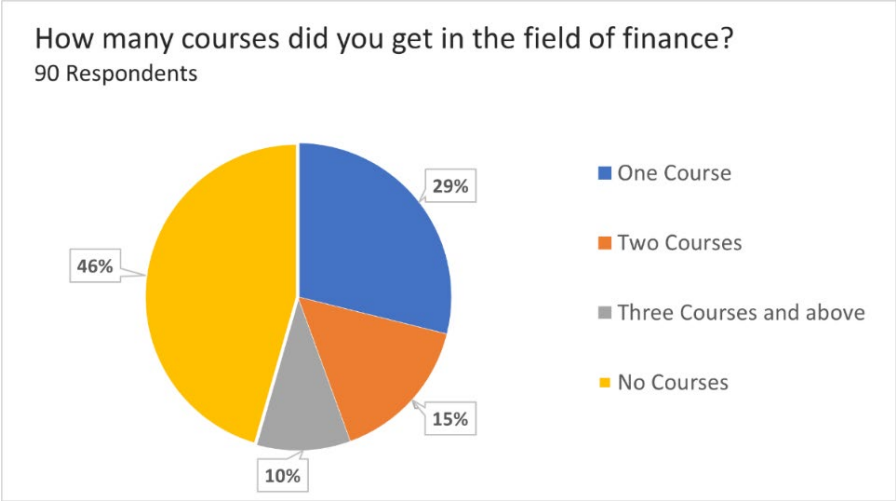
Source: Collected data from the questionnaire

Upon analyzing the questionnaire results, it was found that among the study's sample, 3% (i.e., 3 respondents out of 90) work in the government sector, while 32% (i.e., 29 respondents out of 90) are employed in the banking sector. In addition, 6% (i.e., 5 respondents out of 90) of the study sample work in the educational sector, with the largest percentage being 52% (i.e., 47 respondents out of 90) employed in the private sector. None of the respondents reported being unemployed, and the percentage of respondents working in other sectors was found to be 7% (i.e., 6 respondents out of 90).

4.2.2 Second Area: Professional Competencies and Practical Experience

5- Respondent Distribution Based on the Number of Financial Market Training Courses Attended

Graph (5)

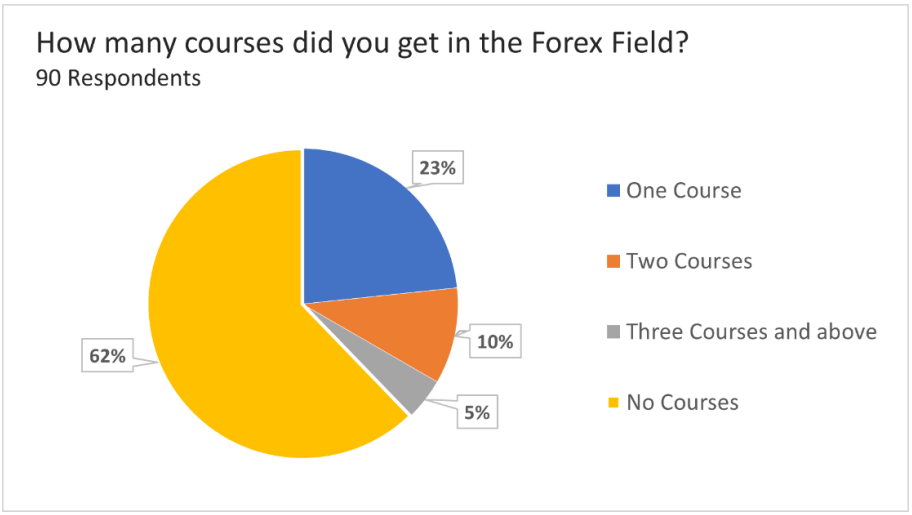


Source: Collected data from the questionnaire

As per the respondents' answers, 29% (26 out of 90) of the participants had completed one financial analysis course. Meanwhile, 15% (14 out of 90) had completed two courses, and 10% (9 out of 90) had completed three or more courses. The majority of respondents, 46% (41 out of 90), had not completed any courses related to financial analysis.

6- Respondent Distribution Based on the Number of Forex Training Courses Attended

Graph (6)

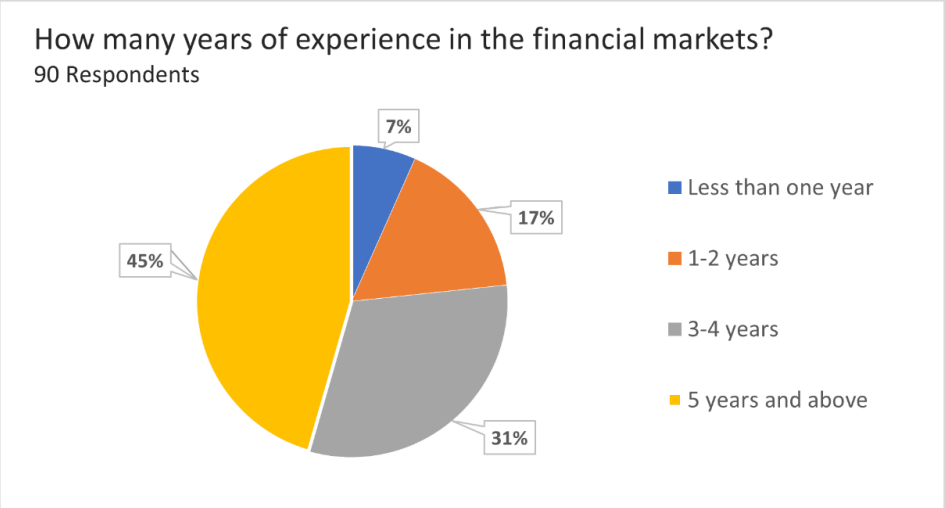


Source: Collected data from the questionnaire

As per the respondents' answers, 23% (21 out of 90) of the participants had completed one forex course. Meanwhile, 10% (9 out of 90) had completed two courses, and 5% (4 out of 90) had completed three or more courses. The majority of respondents, 62% (56 out of 90), had not completed any courses related to the forex market.

7- Respondent Distribution Based on the years of experience in financial markets

Graph (7)

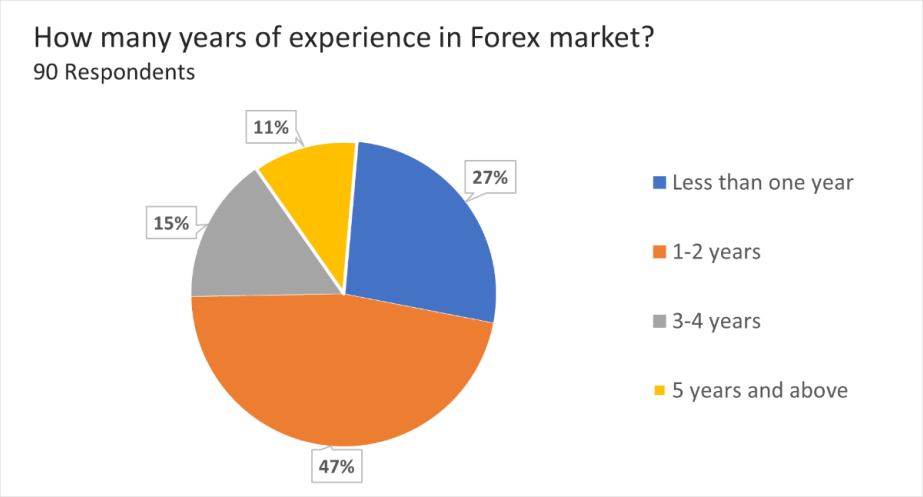


Source: Collected data from the questionnaire

The questionnaire showed that there is 7% (i.e., 6 out of 90) of respondents in the study have less than a year of experience in the field of financial markets, and 17% (i.e., 15 out of 90) of the respondents who have from 1 to 2 years of experience, and 31% (i.e., 28 out of 90) of the respondents who have from 3 to 4 years of experience, and the largest percentage is 45% (i.e., 41 out of 90) of the respondents who have from 5 years and above of experience.

8- Respondent Distribution Based on the years of experience in Forex

Graph (8)



Source: Collected data from the questionnaire

The questionnaire showed that there is 27% (i.e., 24 out of 90) of respondents in the study have less than a year of experience in the forex market, and 47% (i.e., 42 out of 90) of the respondents who have from 1 to 2 years of experience, and 15% (i.e., 14 out of 90) of the respondents have from 3 to 4 years of experience, and the lowest percentage is 11% (i.e., 10 out of 90) of the respondents who have from 5 years and above of experience.

4.2.3 Third Area: Examining the general investment awareness

Table (3) The investment awareness scores of the questionnaire respondents

#	Statements	Strongly Agree		Agree		Natural		Disagree		Strongly disagree		Mean	Percent %
		N	%	N	%	N	%	N	%	N	%		
9	Do you diversify your investments across different currency pairs?	27	30	11	12.22	15	16.67	13	14.44	24	26.67	3	60.9
10	Do you believe that technical analysis is a useful tool for predicting price changes in the forex market?	25	27.78	36	40	14	15.56	11	12.22	4	4.44	3.7	74.9
11	Do you believe that fundamental analysis is a useful tool for predicting price changes in the forex market?	14	15.56	7	7.78	36	40	23	25.56	10	11.11	2.9	58.2

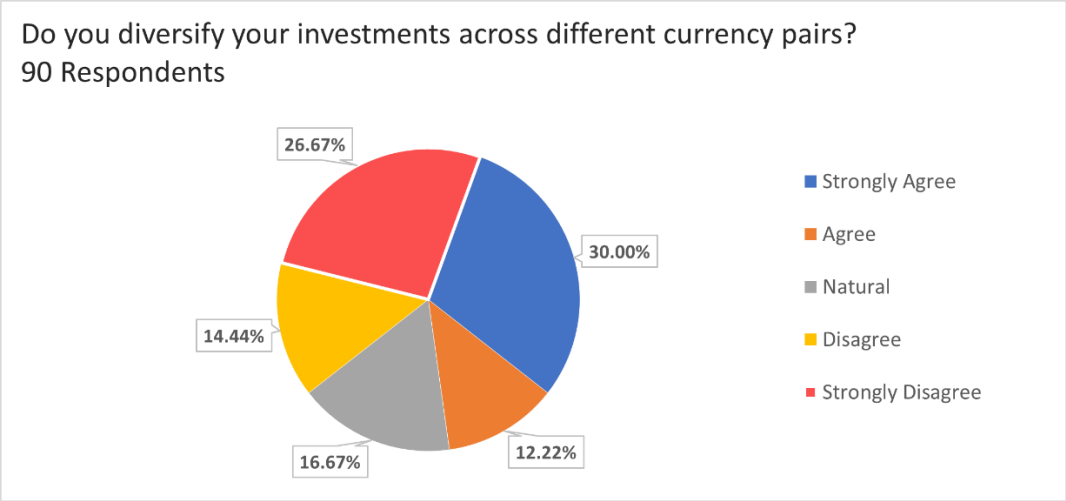
12	**Do you adjust your investment strategies based on current market conditions?**	**35**	**38.89**	**18**	**20**	**8**	**8.89**	**21**	**23.33**	**8**	**8.89**	**3.6**	**71.3**
13	**Do you use forex trading software or tools to assist you in making investment decisions?**	**56**	**62.22**	**20**	**22.22**	**10**	**11.11**	**4**	**4.44**	**0**	**0**	**4.4**	**88.4**
14	**Do you believe that emotions should be kept separate from investment decisions in the forex market?**	**45**	**50**	**14**	**15.56**	**18**	**20**	**11**	**12.22**	**2**	**2.22**	**4**	**79.8**
15	**Do the outcomes of your previous investments influence your current investment decisions in the forex market?**	**15**	**16.67**	**31**	**34.44**	**10**	**11.11**	**23**	**25.56**	**11**	**12.22**	**3.2**	**63.6**
16	**Do you stay up to date with news and events that may impact the forex market?**	**13**	**14.44**	**17**	**18.89**	**27**	**30**	**20**	**22.22**	**13**	**14.44**	**3**	**59.3**
17	**Do you use stop-loss orders to limit your losses in the forex market?**	**32**	**35.56**	**21**	**23.33**	**14**	**15.56**	**7**	**7.78**	**16**	**17.78**	**3.5**	**70.2**
18	**Do you believe that it is important to have a well-defined trading plan before entering the forex market?**	**49**	**54.44**	**14**	**15.56**	**19**	**21.11**	**6**	**6.67**	**2**	**2.22**	**4.1**	**82.7**
19	**Do you believe that a high degree of leverage is necessary to make significant profits in the forex market?**	**40**	**44.44**	**25**	**27.78**	**12**	**13.33**	**2**	**2.22**	**11**	**12.22**	**3.9**	**78**
20	**Do you consider using the technical trading indicators in your forex investment?**	**31**	**34.44**	**11**	**12.22**	**21**	**23.33**	**8**	**8.89**	**19**	**21.11**	**3.3**	**66**
21	**Do you seek advice from professional sources before making investment decisions in the forex market?**	**42**	**46.67**	**12**	**13.33**	**19**	**21.11**	**3**	**3.33**	**14**	**15.56**	**3.7**	**74.4**

22	**Do you monitor your trades to ensure that you are meeting your investment goals?**	**32**	**35.56**	**18**	**20**	**24**	**26.67**	**6**	**6.67**	**10**	**11.11**	**3.6**	**72.4**
23	**Do you believe that past performance is a reliable indicator of future performance in the forex market?**	**35**	**38.89**	**21**	**23.33**	**11**	**12.22**	**7**	**7.78**	**16**	**17.78**	**3.6**	**71.6**
24	**Do you agree that understanding support and resistance levels is important for successful investment in the forex market?**	**28**	**31.11**	**40**	**44.44**	**17**	**18.89**	**5**	**5.56**	**0**	**0**	**4**	**80.2**
25	**Do you agree that knowledge of Japanese candlestick patterns is important for making informed investment decisions in the forex market?**	**17**	**18.89**	**9**	**10**	**35**	**38.89**	**16**	**17.78**	**13**	**14.44**	**3**	**60.2**

Upon analyzing the responses provided by the participants to each question, it is evident that...

9- Respondents' awareness of currency pairs diversity

Graph (9)



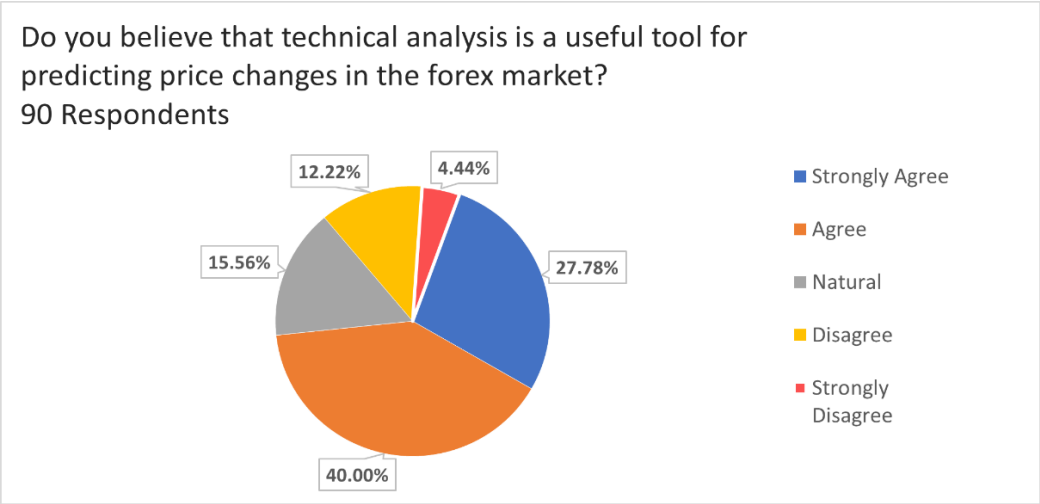
Source: Collected data from the questionnaire

The results showed that (30%) of the respondents strongly agreed and (12.22%) agreed, and (16.67%) are neutral, (14.44%) disagreed, and (26.67%) strongly disagreed with the idea of

diversification. The mean score is 3, indicating a slight tendency towards an agreement with diversification. The weighted percentage of 60.9% suggests that more than half of the forex investors in the UAE who participated in the survey favoured diversifying their investments, while the rest had mixed opinions.

10- Respondents' awareness of technical analysis as a tool to predict the prices changes

Graph (10)

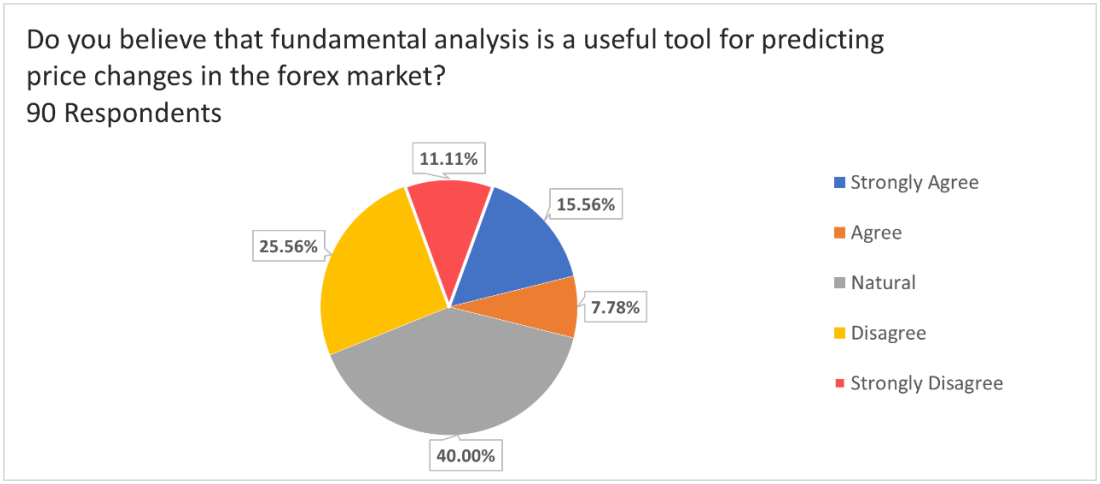


Source: Collected data from the questionnaire

The results showed that (27.78%) of respondents strongly agreed and (40%) agreed, (15.56%) are neutral, and (12.22%) disagreed, and (4.44%) strongly disagreed with the usefulness of the technical analysis. The mean score is 3.7, indicating a tendency to agree that technical analysis is useful for predicting price changes. The weighted percentage of 74.9% suggests that most respondents believed in the usefulness of the technical analysis.

11- Respondents' awareness of fundamental analysis as a tool to predict the prices changes

Graph (11)

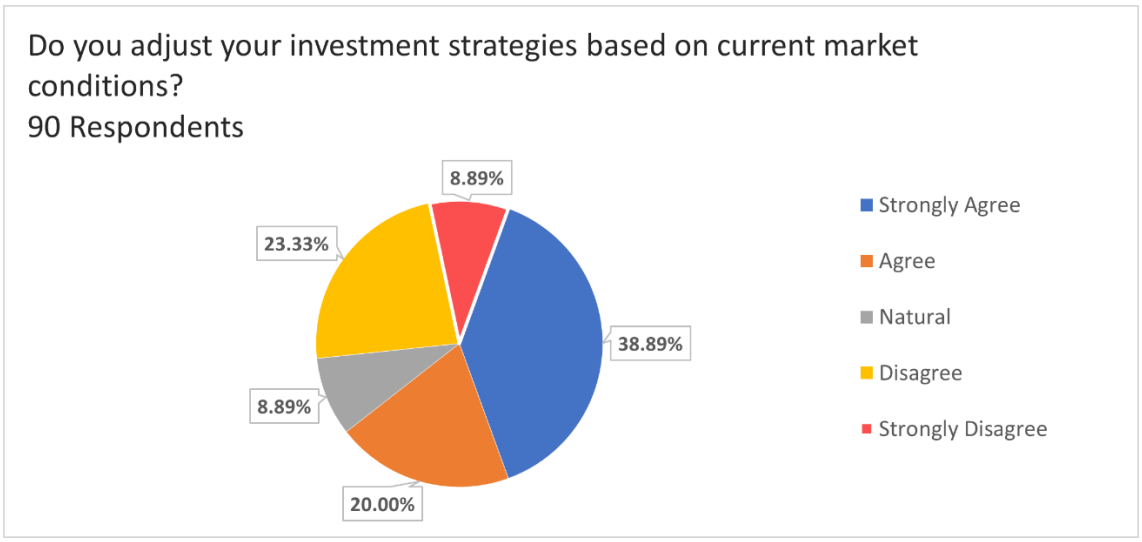


Source: Collected data from the questionnaire

The results showed that only a small percentage (15.56%) strongly agreed, while another (7.78%) agreed with the idea. In contrast, (25.56%) disagreed, and (11.11%) strongly disagreed. The majority of the respondents, (40%) had a neutral stance on the effectiveness of fundamental analysis. The mean score is 2.9, indicating a slight tendency towards disagreement with the effectiveness of fundamental analysis. The weighted percentage of 58.2% suggests that a majority of forex investors in the UAE who participated in the survey held a neutral stance or did not consider fundamental analysis to be effective.

12- Respondents' Attitudes Toward Adjusting Investment Strategies Based on Current Market Conditions

Graph (12)

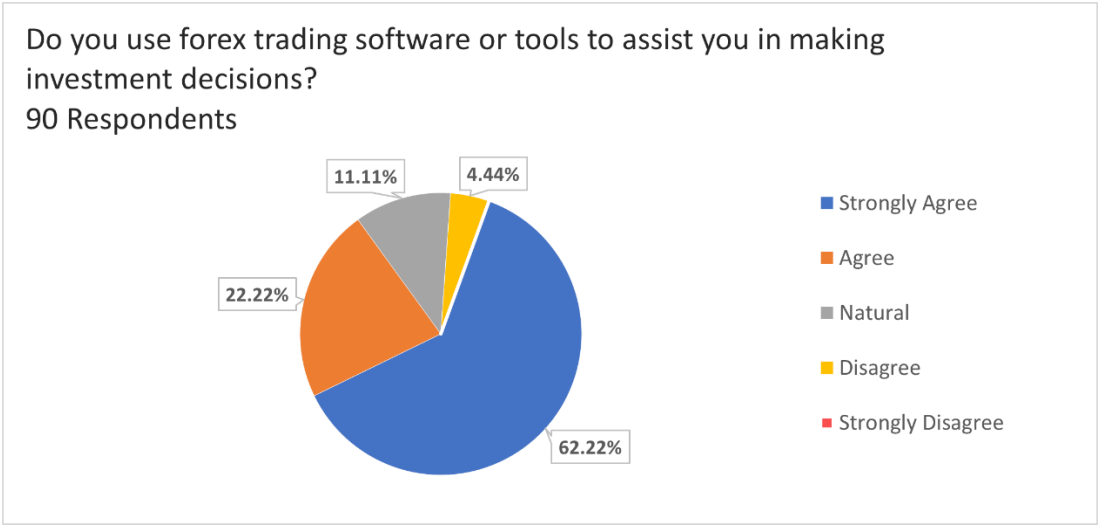


Source: Collected data from the questionnaire

The results showed that the majority of respondents, 58.89% in total either strongly agreed (38.89%) or agreed (20%) with the idea of adjusting their investment strategies based on current market conditions. In contrast, (23.33%) disagreed, with (8.89%) strongly disagreeing and only (8.89%) remaining neutral. The mean score is 3.6, indicating a moderate tendency towards an agreement with adjusting investment strategies based on current market conditions. The weighted percentage of 71.3% suggests that most respondents believe in the importance of adjusting investment strategies based on current market conditions.

13- Respondents' Attitudes Toward Using Software or Tools to Assist in Investment Decisions

Graph (13)

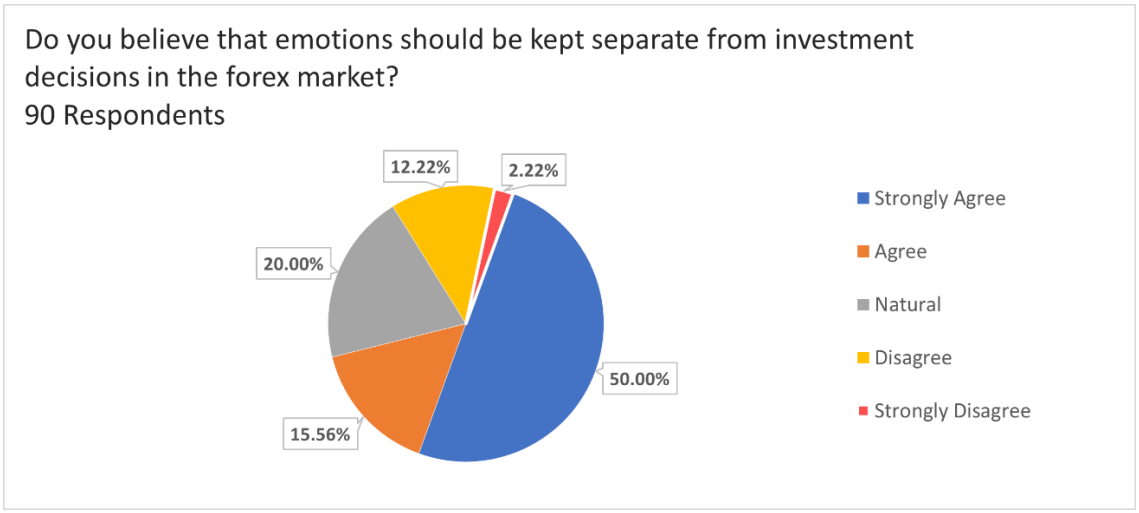


Source: Collected data from the questionnaire

The results indicate that most respondents, 84.44% in total either strongly agree (62.22%) or agree (22.22%) that they use forex trading software or tools to assist them in making investment decisions. Only (4.44%) disagreed with the statement, and none of the respondents strongly disagreed, and only (11.11%) remaining neutral. The mean score is 4.4, indicating a strong agreement with using forex software or tools to assist in investment decisions. The weighted percentage of 88.4% suggests that most respondents use forex trading software or tools.

14- Respondents' beliefs Regarding the Role of Emotions in Investment Decisions

Graph (14)

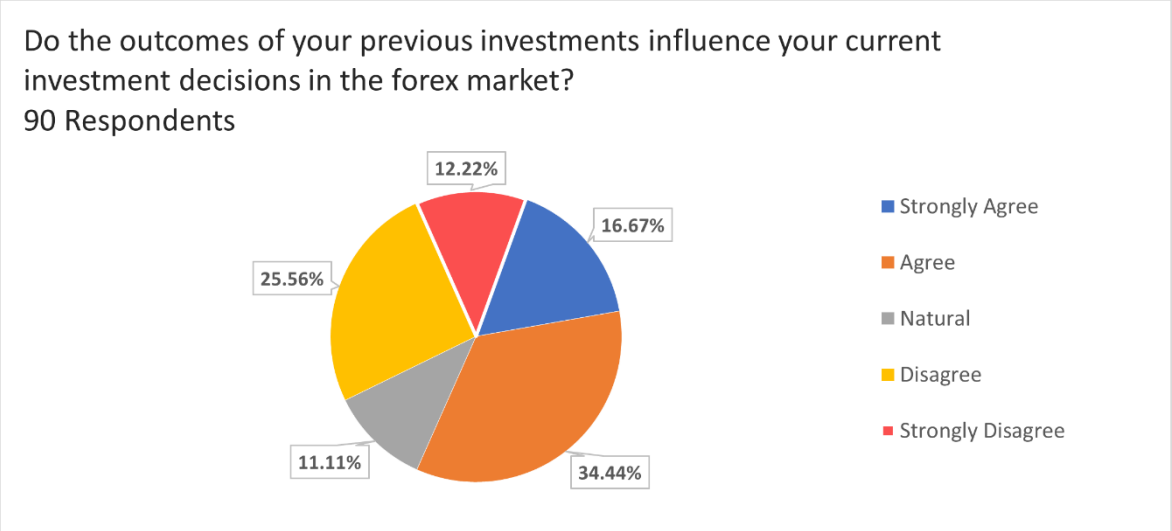


Source: Collected data from the questionnaire

The results show that most respondents, 65.56% in total either strongly agree (50%) or agree (15.56%) that emotions should be kept separate from investment decisions in the forex market. Only (12.22%) of respondents disagreed with the statement, while (2.22%) strongly disagreed, and only (20%) remaining neutral. The mean score is 4, indicating a tendency towards an agreement with the idea of separating emotions from investment decisions. The weighted percentage of 79.8% suggests that most respondents believed in the importance of keeping emotions separate from investment decisions in the forex market.

15- Respondents' Perceptions on the Influence of Past Investment Outcomes on Current Decisions

Graph (15)

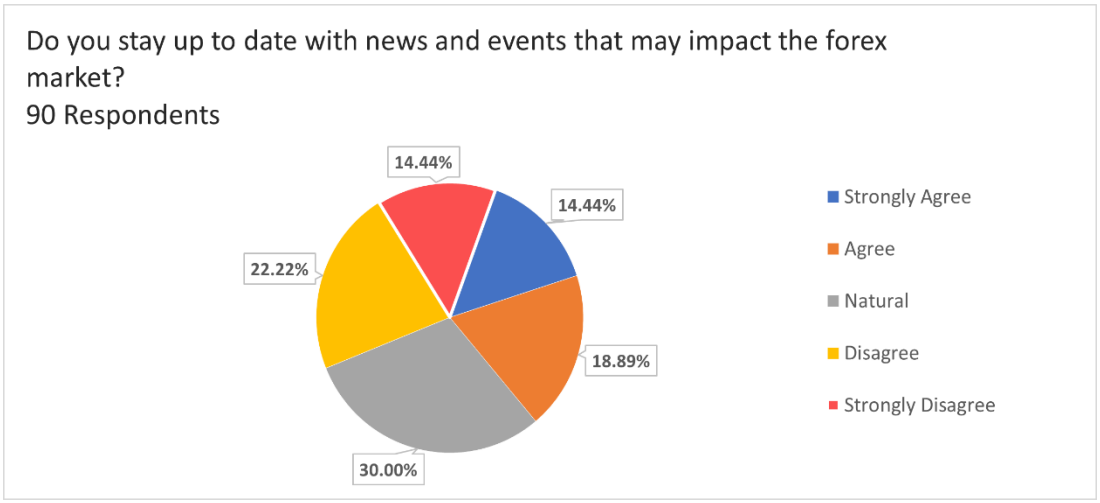


Source: Collected data from the questionnaire

The results suggest that most respondents 51.11% in total either strongly agree (16.67%) or agree (34.44%) that their previous investment outcomes have an impact on their current investment decisions. On the other hand, a significant number of respondents 37.78% in total either disagree (25.56%) or strongly disagree (12.22%) with the statement, and only (11.11%) remaining neutral. The mean score of 3.2 indicates a slight tendency towards agreement with the idea that previous investment outcomes impact current decisions. The weighted percentage of 63.6% suggests that a majority of respondents do consider their previous investment outcomes when making current investment decisions.

16- Respondents' Perceptions on Staying Informed of News and Events Impacting the Market

Graph (16)

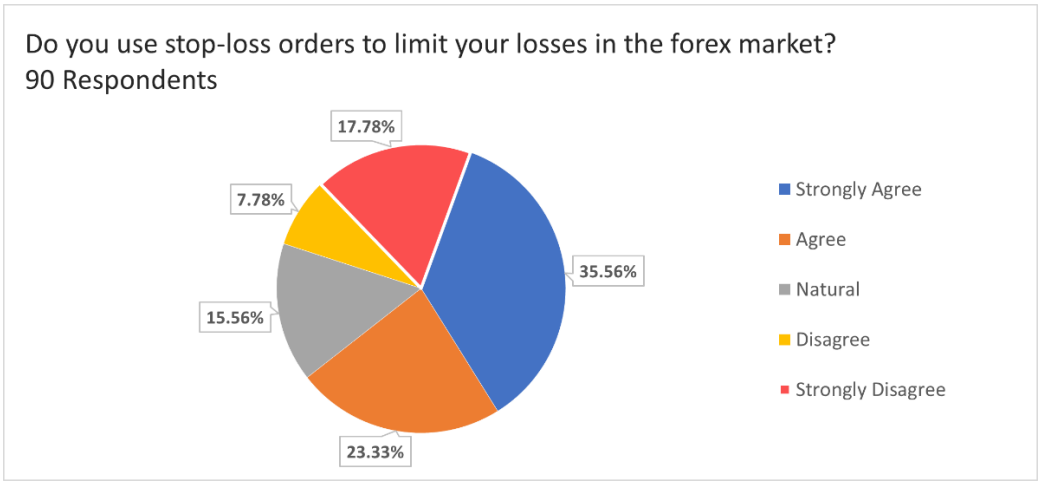


Source: Collected data from the questionnaire

The results suggest that while most respondents 33.33% in total either strongly agree (14.44%) or agree (18.89%) with the statement, a significant number of respondents 36.66% in total either disagree (22.22%) or strongly disagree (14.44%) with the idea, and only (30%) remaining neutral. The mean score of 3 indicates a tendency towards an agreement with the importance of staying up to date with news and events that could impact the forex market. The weighted percentage of 59.3% suggests that most respondents consider it important to stay informed about these factors.

17- Respondents' Perspectives on the Role of Stop-Loss in Forex trading

Graph (17)



Source: Collected data from the questionnaire

The results suggest that a majority of respondents 58.89% in total either strongly agree (35.56%) or agree (23.33%) with the statement, indicating that they do use stop-loss orders to limit their losses. However, a significant number of respondents 25.56% in total either disagree (7.78%) or strongly disagree (17.78%) with the idea, and only (15.56%) remaining neutral. The mean score of 3.5 indicates a tendency towards an agreement with the use of stop-loss orders to limit losses in the forex market. The weighted percentage of 70.2% suggests that most respondents use stop-loss orders to manage their losses.

18- Respondents' Beliefs on the Importance of a Trading Plan for Entering the Forex Market

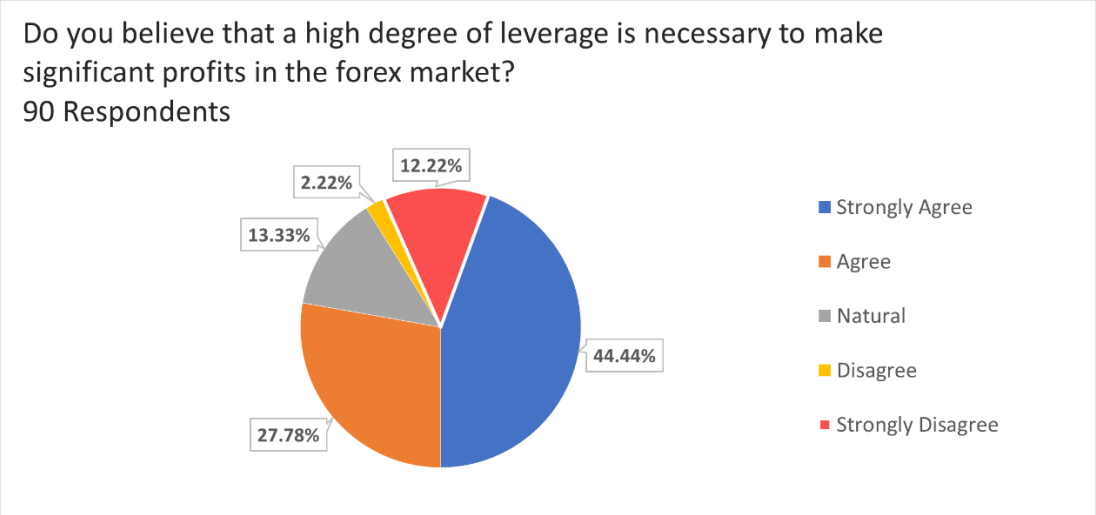
Graph (18)

Source: Collected data from the questionnaire

The survey results indicate that most of the respondents 70% in total either strongly agreed (54.44%) or agreed (15.56%) with the importance of having a well-defined trading plan before entering the forex market. A smaller proportion of respondents 8.89% in total, either disagree (6.67%) and strongly disagreeing (2.22%), and (21.11%) indicating neutral responses. The mean score of 4.1 suggests a moderate to strong agreement with the idea of having a well-defined trading plan before entering the forex market. Additionally, the weighted percentage of 82.7% indicates that a significant proportion of respondents believe in the importance of having a well-defined trading plan.

19- Respondents' Beliefs on the Necessity of High Leverage for high Profits in the Forex

Graph (19)

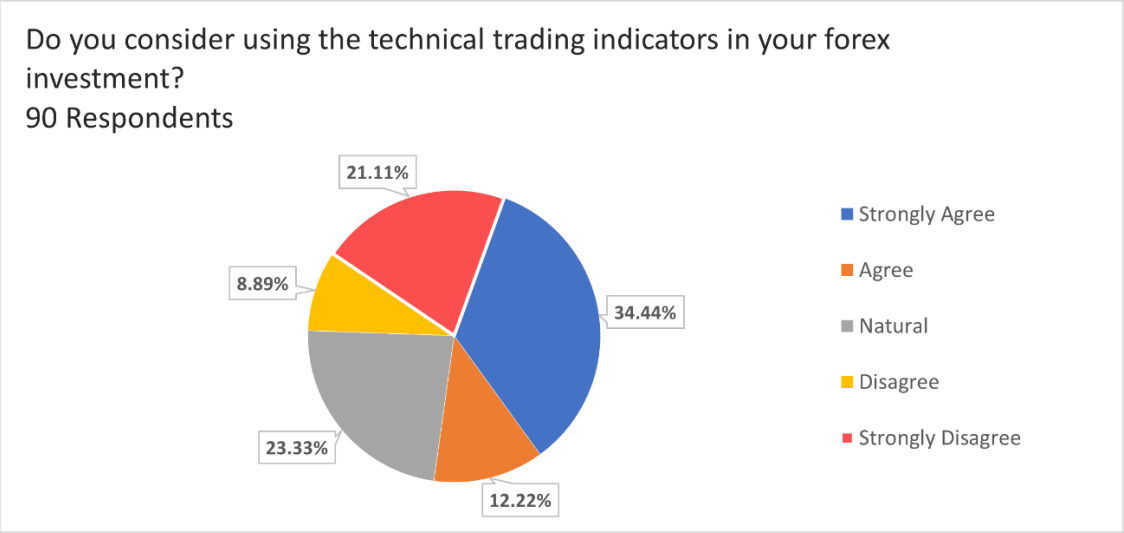


Source: Collected data from the questionnaire

The results indicate that a majority of respondents in total 72.22%, either strongly agreed (44.44%) or agreed (27.78%) with the idea that a high degree of leverage is necessary to make significant profits in the forex market. However, a notable proportion of respondents in total 14.44%, either disagreed (2.22%) or strongly disagreed (12.22%) with this statement, and the remaining 13.33% indicated a neutral response. The mean score of 3.9 suggests a moderate to strong agreement with the notion that a high degree of leverage is necessary to make significant profits in the forex market. Furthermore, the weighted percentage of 78% indicates that a significant proportion of respondents believe in using high leverage to achieve significant profits.

20- Respondents' Attitudes Towards the Use of Technical Trading Indicators in Forex Investment

Graph (20)

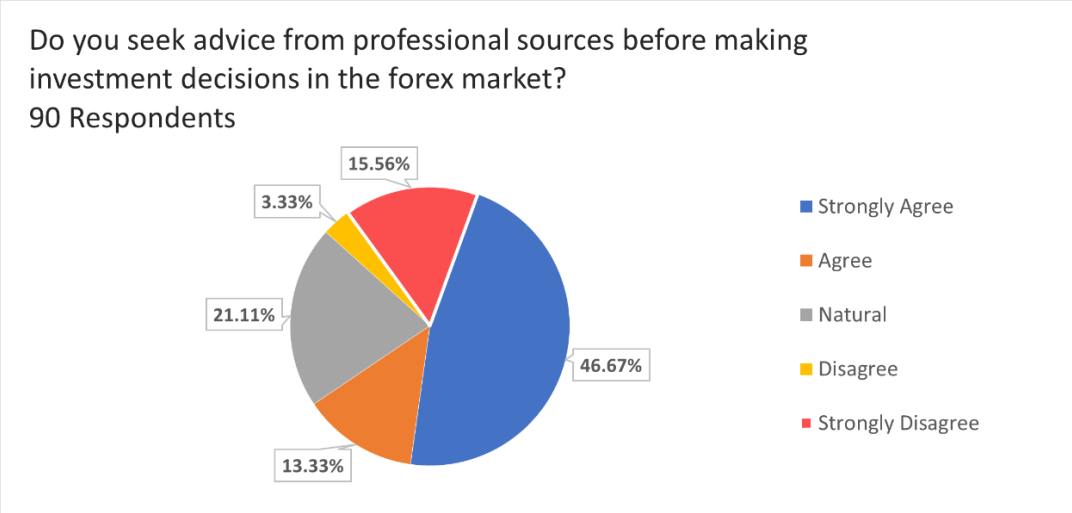


Source: Collected data from the questionnaire

The results indicate that a majority of respondents, 46.66% in total either strongly agree (34.44%) or agree (12.22%) with the idea of using technical trading indicators in their forex investment. However, a significant proportion of respondents 30% in total either disagreed (8.89%) or strongly disagreed (21.11%) with this statement. The remaining 23.33% indicated a neutral response. The mean score of 3.3 suggests a moderate to weak agreement with using technical trading indicators in forex investment. Furthermore, the weighted percentage of 66% indicates that a significant proportion of respondents consider using technical indicators in their forex investment.

21- Respondents' Usage of Professional Advice for Investment Decisions in the Forex

Graph (21)

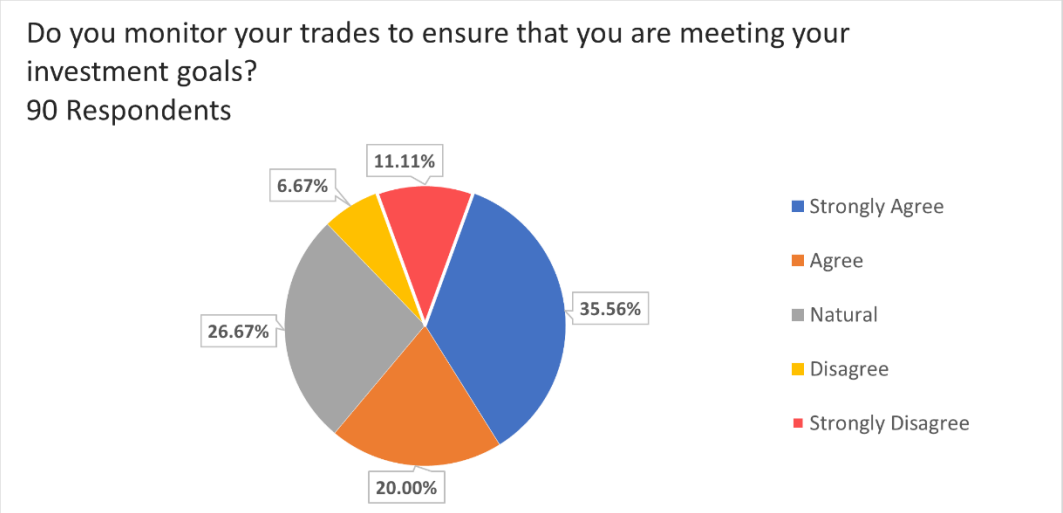


Source: Collected data from the questionnaire

The results suggest that seeking advice from professional sources before making investment decisions in the forex market is a common practice among respondents with 60% in total, either strongly agreeing (46.67%) or agreeing (13.33%) with this statement. In contrast, a significant proportion of respondents in total 18.89%, either disagreed (3.33%) or strongly disagreed (15.56%) with this notion. The remaining (21.11%) indicated a neutral response. The mean score of 3.7 indicates a moderate to a strong agreement with seeking advice from professional sources before making forex investment decisions. Furthermore, the weighted percentage of 74.4% suggests that most respondents consider seeking professional advice an important aspect of forex investment.

22- Respondents' Practices in Monitoring Trades to Meet Forex Investment Goals

Graph (22)

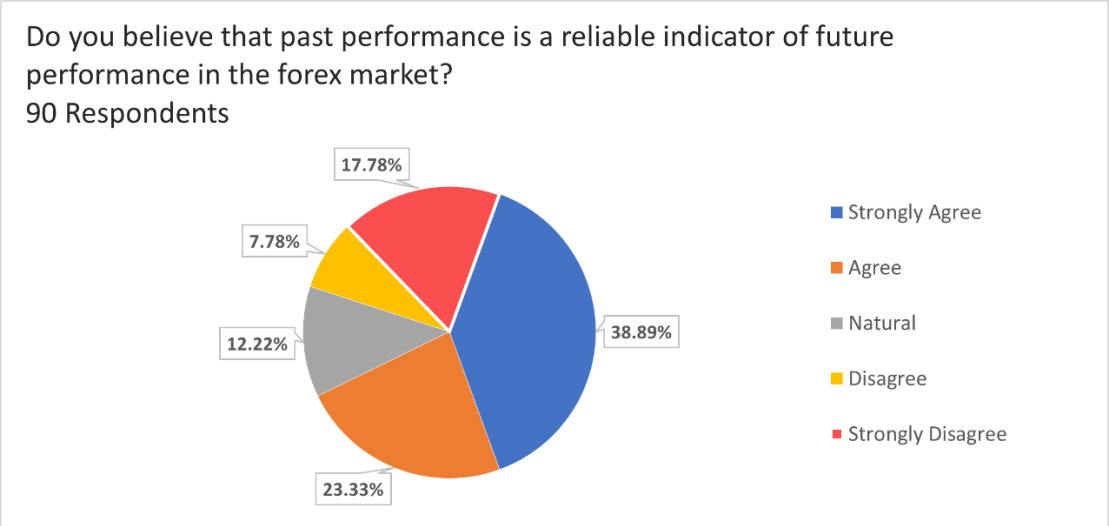


Source: Collected data from the questionnaire

According to the results, a significant proportion of respondents in total 55.56%, either strongly agree (35.56%) or agree (20%) with monitoring their trades to ensure that they are meeting their investment goals. However, a notable proportion of respondents 17.78% in total, either disagreed (6.67%) or strongly disagreed (11.11%) with this statement, while the remaining (26.67%) indicated a neutral response. The mean score of 3.6 suggests a moderate to strong agreement with monitoring trades to ensure investment goals are met. Additionally, the weighted percentage of 72.4% indicates that most respondents view monitoring trades as an important aspect of forex investment.

23- Respondents' Beliefs on the Reliability of the Past in Predicting Future Performance in the Forex

Graph (23)

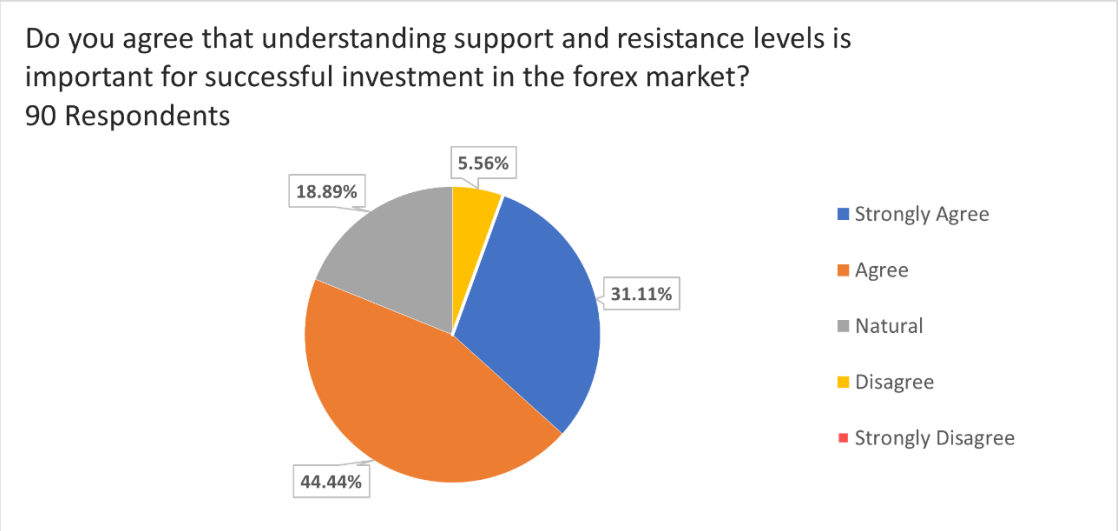


Source: Collected data from the questionnaire

The results indicate a diversity of opinions among respondents regarding the reliability of past performance as an indicator of future performance in the forex market. While a substantial proportion of respondents 62.22% in total, either strongly agree (38.89%) or agree (23.33%) that past performance is a reliable indicator of future performance, a notable percentage of respondents, 25.56% in total either disagree (7.78%) or strongly disagree (17.78%) with this statement. The remaining (12.22%) of respondents expressed a neutral stance. The mean score of 3.6, suggests a moderate agreement that past performance is a reliable indicator of future performance in the forex market. The weighted percentage of 71.6% also indicates that most respondents lean towards this viewpoint.

24- Respondents' Agreement on the Support and Resistance Levels for Successful Forex Investment

Graph (24)

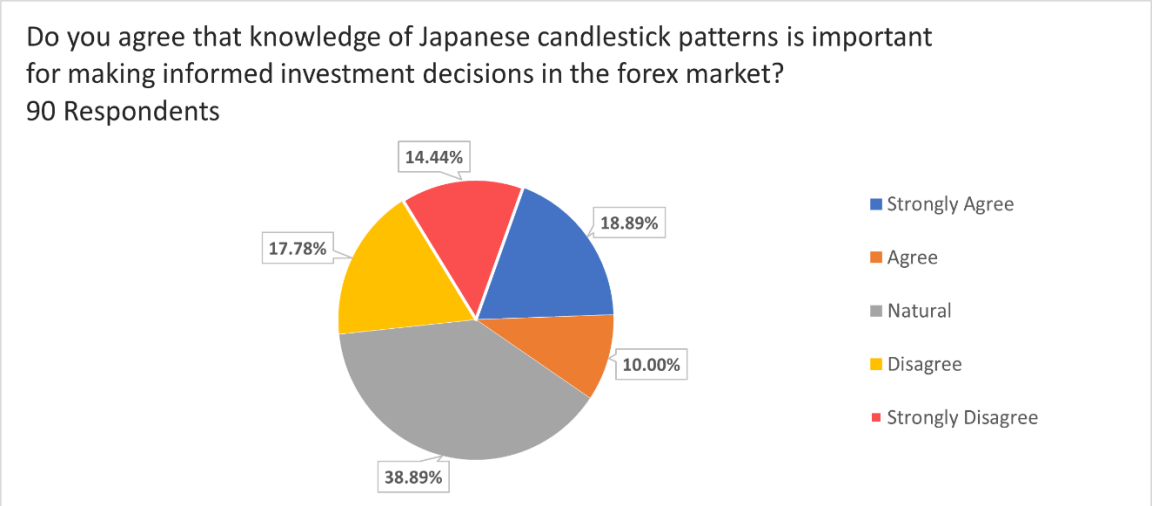


Source: Collected data from the questionnaire

According to the survey results, a significant majority of respondents 75.55% in total, either strongly agree (31.11%) or agree (44.44%) that understanding support and resistance levels is important for successful investment in the forex market. A smaller proportion of respondents (18.89%) indicated a natural response, while only a very small minority disagreed (5.56%) with the idea, and none of respondents selected "Strongly Disagree". The mean score of 4 indicates a strong agreement among respondents that understanding support and resistance levels is crucial for successful investment in the forex market. The weighted percentage of 80.2% also suggests that most respondents hold this viewpoint.

25- Respondents' Agreement on the Importance of Japanese Candlestick Patterns in the Forex Investment Decisions

Graph (25)



Source: Collected data from the questionnaire

According to the survey results, the biggest percentage of the respondents (38.89%) had nature responses, which indicates a confusion between agree and disagree that knowledge of Japanese candlestick patterns is important for making informed investment decisions in the forex market, a second big number of respondents 32.22% in total either disagree (17.78%) or strongly disagree (14.44%) with the statement, and the rest number of respondents 28.89% in total either strongly agree (18.89%) or agree (10%). The mean score of 3 suggests a lack of strong agreement or disagreement among respondents. The weighted percentage of 60.2% also indicates a relatively weak inclination towards the idea that knowledge of Japanese candlestick patterns is important for informed investment decisions.

5 Results and Discussion and Recommendations

This chapter presents the results of the thesis study and provides an in-depth analysis of the practical part. The findings are interpreted and discussed in light of the thesis objectives and questions, and practical implications are presented for investors. The recommendations provided in this chapter may help investors improve their investments' value.

Overall, the chapter contributes to understanding the thesis problem and provides insights that practitioners and researchers in the field can utilize.

5.1 Indicators test results and recommendations

Based on the analysis of the MACD and RSI indicators' effectiveness in predicting the price trend of three currency pairs, namely USD/JPY, EUR/USD, and GBP/CAD, within a 4-hour timeframe, it can be concluded that these indicators can provide valuable insights into market trends. The study found that the MACD and RSI indicators were effective in generating signals for potential price movements, and these signals were corroborated by the levels of support and resistance present in the market. For instance, in the case of the USD/JPY currency pair, the MACD and RSI indicators provided a bullish signal, and the price eventually rebounded to confirm this trend. Similarly, in the case of the EUR/USD currency pair, the indicators signalled bearish behaviour, and the price decreased in line with the signals provided.

However, the study also revealed instances where the signals generated by the MACD and RSI indicators did not accurately reflect the market's future trend. For example, in the case of the GBP/CAD currency pair, the indicators signalled a potential uptrend, but the price remained within a price channel, failing to show a clear upward trend.

Based on the analysis, it is highly recommended that traders and investors take a holistic approach when using technical indicators like MACD and RSI to evaluate market trends. While these indicators can be useful, they should not be relied upon exclusively to make investment decisions. It is crucial to incorporate other important factors, such as support and resistance levels, candlesticks patterns, market sentiment, and economic news, into the analysis to understand the market's direction. By doing so, traders and investors can reduce

the risks associated with investing in the stock market and make more informed decisions. It is essential to understand that markets are constantly evolving, and what works well today may not work tomorrow. Therefore, it is crucial to remain flexible and adaptable, constantly seeking new and innovative ways to analyze and interpret market trends. By taking a comprehensive approach incorporating technical indicators and other critical factors, traders and investors can stay ahead of the curve and make better investment decisions aligning with their risk tolerance and investment goals.

5.2 Questionnaire results and recommendations

In the first area of analysis, which pertains to personal characteristics, the findings indicate that the sampled individuals possess an age range that allows them to make informed financial decisions, highlighting their possession of the financial maturity required to make sound choices. Additionally, the results provide a clear picture of the gender demographics of the respondents interested in participating in the foreign exchange investment market. Regarding educational qualifications, the findings suggest that the respondents have obtained a considerable level of educational proficiency, which attests to their commitment to personal and professional development. Finally, the results indicate a strong inclination among private sector entities to invest in the foreign exchange market to diversify their sources of income, despite the inherent risks associated with such investments.

The second area of analysis pertains to Professional Competencies and Practical Experience; in the finance industry, the findings indicate a lack of awareness among investors and brokerage firms regarding the significance of financial education and training. This inadequacy in knowledge may result in suboptimal investment decision-making, which underlines the need for improved education and training initiatives. The questionnaire data strongly suggest that investors have not received enough courses to sufficiently prepare them for safe and secure investment practices, revealing a larger problem within the training programs focusing on the forex markets. Additionally, the study reveals significant variability in investors' experiences, implying that individuals bring different levels of knowledge, skill, and expertise to the financial markets. Furthermore, the data highlights a notable lack of experience in the forex market among the investors under the study, with a significant proportion of the participants having limited exposure to forex trading with varying levels of familiarity and knowledge of this complex and dynamic market.

The Third analysis area focuses on examining the respondents' general investment awareness. The survey results indicate that while the majority of forex investors in the UAE favour the concept of diversification, there are some who remain neutral or opposed to it. Consequently, it is imperative to educate forex investors in the UAE about the potential advantages of diversification to enhance their investment knowledge.

The findings highlight the prevalence of technical analysis among forex investors in the UAE and its potential effectiveness in forecasting price changes. Nevertheless, it is essential to acknowledge that some investors may have reservations or scepticism regarding technical analysis, and there may be other investment strategies that are worth considering. As a result, the results highlight the importance of continuous education and awareness-raising initiatives among forex investors in the UAE to ensure a well-rounded understanding of different investment strategies and tools available in the forex market.

Additionally, the survey indicates that respondents have mixed opinions on using fundamental analysis in predicting price changes in the forex market. As a result, Forex investors in the UAE require education on the potential advantages of using fundamental analysis in their trading strategies. This could include training on effectively using fundamental analysis to make informed trading decisions, as investors with a good understanding of fundamental analysis would be better equipped to take advantage of its benefits and reduce the risks associated with forex trading.

the survey findings suggest that Forex investors in the UAE believe in the significance of adapting their investment strategies to the current market conditions. This finding is consistent with the commonly accepted notion that adapting to market changes is essential to successful trading. Therefore, it is recommended that investors regularly monitor market conditions and adjust their investment strategies accordingly to improve their chances of success in the forex market.

Additionally, the survey results reveal that Forex investors in the UAE use software or tools to assist them in making investment decisions; this finding is consistent with the growing trend of using technology to facilitate trading in the forex market.; Therefore, it is

recommended that forex investors consider incorporating trading software or tools into their investment strategy to increase the efficiency and effectiveness of their trading decisions. Moreover, education and training on using forex trading software or tools can help investors make more informed decisions and maximize the potential benefits of these technologies.

The survey findings also emphasize the importance of developing strategies and techniques that help investors manage their emotions while making investment decisions. forex traders should consider developing a systematic and objective approach to trading, backed by data and analysis, to avoid making decisions based on emotions. Additionally, investing in education and training on managing emotions in the forex market may help investors make more informed and effective investment decisions.

The survey results suggest that a significant number of the respondents believe that their previous investment outcomes impact their current investment decisions. This finding highlights the importance of learning from past experiences and using them to make more informed investment decisions in the future. However, investors should also avoid making decisions based solely on past outcomes and incorporate current market conditions and trends into their investment strategy.

Furthermore, the survey findings highlight the importance of staying updated with news and events that could impact the forex market. Investors who are aware of significant events such as economic data releases or central bank announcements may be better equipped to make informed investment decisions. However, it is also important to exercise caution when making decisions based solely on news or events and consider other factors, such as technical analysis, to ensure a well-rounded and informed investment approach.

The survey findings indicate that most respondents agree that using stop-loss orders is an effective way to manage risk in the forex market. However, it is important to note that using stop-loss orders alone may not be sufficient to manage risk effectively. forex investors should also consider incorporating other risk management techniques, such as position sizing and diversification, into their trading strategies to ensure a well-rounded approach to managing market risks.

The survey results suggest that most respondents believe having a well-defined trading plan is essential for success in the forex market. This finding aligns with the widely accepted notion that a structured trading plan can increase an investor's chances of success in any market. Therefore, it is recommended that investors take the time to create a comprehensive trading plan that outlines their investment goals, risk tolerance, and strategies for managing positions in the forex market.

Furthermore, the survey results show that while most respondents believe in the potential benefits of high leverage, a significant proportion of respondents recognize the associated risks; since the leverage can amplify potential gains, it can also increase potential losses, making it a high-risk strategy. It is crucial for investors to carefully consider the risks of using high leverage and implement appropriate risk management strategies when using this trading tool to prevent significant losses.

The findings suggest that while a majority of participants acknowledge the effectiveness of technical trading indicators in forex investment, a notable portion of respondents hold divergent views. Technical indicators can provide significant information on market patterns and price variations, but it is crucial to recognize that they are not infallible and should be complemented with other analytical approaches and risk management techniques. It is advisable for investors to carefully consider the advantages and disadvantages of employing technical indicators in forex investment and make informed choices based on their investment objectives.

The survey results indicate that seeking professional advice before investing in the forex market is recommended. Professional advice can help investors better understand market conditions, potential risks and opportunities, and appropriate investment strategies. However, investors should use professional advice to supplement their research and analysis to make informed investment decisions aligning with their individual investment goals and risk tolerance.

The survey results suggest that monitoring trades is essential for successful forex investment. It is crucial for investors to establish clear investment goals and regularly assess their trades to ensure they are aligned with these goals and identify potential issues or opportunities. By

doing so, investors can make more informed investment decisions and maximize their returns.

The survey results reflect that respondent's majority believe that past performance is a reliable indicator, but it should be considered that while historical data can provide valuable insights into market trends and patterns, there is no consensus on the reliability of past performance as an indicator of future performance in the investment community. Therefore, investors should consider various factors, including economic indicators and market sentiment, when making investment decisions in the forex market.

The survey results showed a strong consensus among respondents that understanding support and resistance levels is crucial for successful forex investment. This finding reflects the growing recognition among investors of the significance of technical analysis in forex trading. However, investors should use support and resistance with other techniques to manage risk effectively and maximize returns.

Finally, the survey findings indicate a division of opinions on the importance of understanding Japanese candlestick patterns in forex trading. While some investors consider them useful, most do not consider them essential. However, it is crucial to note that no single strategy can guarantee success in investment decisions; therefore, investors should use various tools and techniques, including technical analysis tools like Japanese candlestick patterns, fundamental analysis, and market trends, to make informed investment decisions in the forex market.

6 Conclusion

- The forex market has a rich history and has evolved significantly over time, making it a dynamic and exciting field to study and invest in.

- Understanding the basics of currency exchange rates and margin trading is essential for successful forex trading.

- Technical analysis is a popular approach to forex trading, and traders can choose from various theories and indicators to develop their strategies.

- MACD and RSI indicators are widely used by traders, and our study has shown that they can provide reliable signals for upcoming price trends.

- Support and resistance levels are crucial factors that should be taken into account when interpreting technical indicators and developing trading strategies.

- Forex investors in the UAE understand technical analysis well, and their experience and knowledge can positively impact their investment decisions.

- The questionnaire outcomes have provided valuable insights into the knowledge and experience of technical analysis among forex investors in the UAE.

- The combination of fundamental and technical analysis can be an effective approach to forex trading, as it can help traders make informed decisions based on both market trends and economic factors.

- Forex trading is a high-risk activity, and traders should always be cautious and manage their risks effectively.

- Successful forex trading requires discipline, patience, and a continuous effort to learn and improve.

- The availability of online resources and trading platforms has made forex trading accessible to a broader audience, and it is now possible to trade forex from anywhere in the world.

- The forex market is continually evolving, and traders should be prepared to adapt to new market conditions and adjust their strategies accordingly.

- The thesis focuses on the forex market and technical analysis. By studying these topics in-depth, the thesis presents valuable information that can help traders develop effective trading strategies and provides a comprehensive guide that is useful for traders and investors; ultimately, this can help traders achieve their financial goals.

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8 Appendices

Appendix (1): Snapshot of Likert Scale Questions Calculations from the Excel File

Question No.	Strongly Agree		Agree		Natural		Disagree		Strongly Disagree		Mean	Weighted Percentage
	N.	%	N.	%	N.	%	N.	%	N.	%		
9	27	30.00%	11	12.22%	15	16.67%	13	14.44%	24	26.67%	3.0	60.9%
10	25	27.78%	36	40.00%	14	15.56%	11	12.22%	4	4.44%	3.7	74.9%
11	14	15.56%	7	7.78%	36	40.00%	23	25.56%	10	11.11%	2.9	58.2%
12	35	38.89%	18	20.00%	8	8.89%	21	23.33%	8	8.89%	3.6	71.3%
13	56	62.22%	20	22.22%	10	11.11%	4	4.44%	0	0.00%	4.4	88.4%
14	45	50.00%	14	15.56%	18	20.00%	11	12.22%	2	2.22%	4.0	79.8%
15	15	16.67%	31	34.44%	10	11.11%	23	25.56%	11	12.22%	3.2	63.6%
16	13	14.44%	17	18.89%	27	30.00%	20	22.22%	13	14.44%	3.0	59.3%
17	32	35.56%	21	23.33%	14	15.56%	7	7.78%	16	17.78%	3.5	70.2%
18	49	54.44%	14	15.56%	19	21.11%	6	6.67%	2	2.22%	4.1	82.7%
19	40	44.44%	25	27.78%	12	13.33%	2	2.22%	11	12.22%	3.9	78.0%
20	31	34.44%	11	12.22%	21	23.33%	8	8.89%	19	21.11%	3.3	66.0%
21	42	46.67%	12	13.33%	19	21.11%	3	3.33%	14	15.56%	3.7	74.4%
22	32	35.56%	18	20.00%	24	26.67%	6	6.67%	10	11.11%	3.6	72.4%
23	35	38.89%	21	23.33%	11	12.22%	7	7.78%	16	17.78%	3.6	71.6%
24	28	31.11%	40	44.44%	17	18.89%	5	5.56%	0	0.00%	4.0	80.2%
25	17	18.89%	9	10.00%	35	38.89%	16	17.78%	13	14.44%	3.0	60.2%
Likert Scale Weight	5		4		3		2		1			

The Respondants Number	90

Source: Author's own creation