

CHAPTER I

INTRODUCTION

1.1 Background of the Study

Globalization is a complex, multifaceted phenomenon involving various dimensions such as economic, technological, and market aspects. It refers to the increasing global economic integration facilitated by the movement of goods, services, capital, labor, and technology across borders. As globalization progresses, the adoption of digital technology also tends to rise. Policies aimed at accelerating digital technology uptake should focus on enhancing the globalization index to promote knowledge dissemination and boost competitive forces (Skare & Riberio Soriano, 2021). This intricate process, driven by human innovation and technological advancement, leads to the expansion of global trade through the reduction or elimination of trade barriers like import tariffs.

Skare & Riberio Soriano (2021) argue that globalization is a crucial channel through which digital technology penetration impacts innovation and significantly influences global competition and multifactor productivity. The dynamics of globalization underscore the interconnected nature of the global economy, shaping modern international economic relations. The interplay of economic forces, technological progress, and barrier removal drives the ongoing evolution of this global phenomenon. As countries become increasingly interconnected, the effects of globalization permeate various sectors, affecting trade patterns, economic policies, and the global market's overall structure

The development of the international economy and investment is shaped by multiple factors, including the historical trajectory of economic globalization, technological advancements, and human innovation. This process has provided consumers with a broader range of goods at lower prices and stimulated job creation, especially in developing countries. Despite the challenges and disparities in global economic growth, there are opportunities for investment and economic development. Countries must focus on maximizing the benefits of incoming investment flows and exploring the feasibility of redistributing these investments across regional groups to foster economic growth. Efforts should also be made to enhance investment, tax, and exchange rate policies to effectively manage foreign economic activities (Trusova et al., 2022).

The foreign exchange (Forex) market is one of the largest financial markets globally. Accurate exchange rate predictions can provide investors with valuable insights to make informed decisions, enhance returns, and mitigate risks (Hu et al., 2021). The Forex market facilitates currency buying, selling, exchanging, and speculation, enabling currency conversion for international trade settlements and investments. It operates 24 hours a day, 5.5 days a week, handling trillions of dollars in daily trading activity. Unlike a single centralized market, the Forex market comprises a global network of computers and brokers.

This study uses Deriv as the chosen broker, a trusted platform used by traders worldwide. Deriv Broker offers a diverse range of markets, including forex, commodities, stocks, ETFs, cryptocurrencies, and other financial markets. With

over two decades of experience and compliance with global regulations, Deriv operates under five entities and provides eight proprietary platforms tailored to various trading needs. The broker offers a comprehensive selection of deposit and transaction options and access to various trader tools, such as margin, swap, pip, PnL, and multipliers calculators. Deriv also provides Deriv MT5 signals for copy trading and maintains a blog with market reports and educational articles on topics like Forex, Commodities, and Strategies and Tips (Deriv, 2023).

The Forex market's unique characteristics include its large trading volume, geographical dispersion, continuous operation, and the variety of factors influencing exchange rates. It offers numerous trading options, including long and short positions, contracts of various sizes and currencies, and varying leverage degrees. The Forex market consists of three key types of markets: the spot forex market, the forward forex market, and the futures forex market.

Traders in the Forex market can buy, sell, or exchange currencies for hedging and speculative purposes, often trading large amounts of currency with a margin for leverage. The market is characterized by high liquidity, real-time currency price quotes, and a decentralized structure with no central oversight.

Trading, a fundamental element of financial markets, involves acquiring and selling financial instruments to achieve financial gain. This complex activity encompasses a range of assets, including stocks, shares, funds, and currencies, with various strategies, including day trading.

Algorithmic trading within Forex involves using automated strategies and expert advisors to execute trades based on predefined rules and algorithms. This method allows traders to automate manual trading strategies, saving time and effort and reducing susceptibility to human errors. Algorithmic trading represents a shift towards leveraging technology to enhance precision and efficiency in financial markets. It streamlines trade execution, optimizes outcomes through systematic algorithm application, and fosters a disciplined, rule-based trading environment. This integration reflects a strategic response to the evolving financial landscape, where technology and trading methodologies intersect to achieve competitive advantages. Algorithmic trading aligns with the focus on leveraging technological advancements to boost operational efficiency, achievable through Expert Advisors.

Expert Advisors (EAs) are automated applications that help traders execute transactions in the Forex market without constant oversight. These programs follow predefined rules and strategies, minimizing the need for manual trading and allowing traders to focus on other responsibilities.

MetaTrader 5 (MT5) is a popular platform for deploying expert advisors, offering a user-friendly interface and robust toolkit for creating, testing, and implementing automated strategies. MT5 supports various trading instruments and timeframes, catering to diverse trader needs.

The development of expert advisors relies on MetaQuotes Language 5 (MQL5), a programming language for crafting automated trading strategies compatible with MT5. MQL5's power and flexibility enable traders to create

complex algorithms and implement various trading strategies, covering technical analysis, risk management, and custom indicator creation.



Source : <https://www.forex.com>, 2023

Figure 1.1 Articles about the significance of mental attitude for traders.

A trader's mindset heavily influences Forex trading, with emotions and psychology significantly impacting decision-making. Social media adds complexity, with constant availability, unpredictable outcomes, and significant effects on sentiment and social influence, particularly challenging for novice traders who may be swayed by media exposure or FOMO sentiments (Delfabbro, King, & Williams, 2021). Greed and emotions can lead to financial losses and difficulties in Forex trading. Traders often exhibit excessive optimism during market upswings, taking undue risks and neglecting sound risk management strategies. Conversely, they may react impulsively to market downturns by selling assets at significant losses due to fear and anxiety.

Cognitive and emotional biases can cloud traders' judgment and affect their market view. Common biases include confirmation bias, illusion of control bias, loss aversion bias, and overconfidence bias, leading to flawed decision-making. For example, confirmation bias can cause traders to seek information that confirms their beliefs while ignoring contradictory evidence, resulting in biased decisions. Overconfidence bias can lead to excessive risk-taking and avoidable losses. Traders must be aware of these biases and take steps to avoid them. Algorithmic trading helps overcome the negative effects of psychological biases in Forex trading. While human traders are prone to cognitive biases and emotional influence, algorithms follow predetermined rules free from such biases. Automating Forex trading eliminates the emotional rollercoaster, reducing impulsive and irrational decisions. Algorithms systematically analyze large amounts of market data, identify profitable opportunities, and execute trades with precision and consistency, unaffected by human emotions.

Being aware of biases and overcoming them can lead to better decision-making and improved trading performance. Algorithmic trading offers a disciplined and systematic approach, mitigating psychological biases' adverse effects. Through education, self-awareness, and embracing algorithmic trading strategies, traders can navigate Forex markets with greater confidence and resilience. However, automated trading programs face limitations in adapting to unforeseen market conditions. They may struggle to respond to sudden market changes that deviate from historical patterns, leading to potential losses during high volatility periods (Lee, 2022).

Manual trading also faces technical and psychological challenges, inflexible hours, time-consuming processes, and the potential for human error, preventing traders from effectively capitalizing on market opportunities and leading to costly mistakes (Smith, 2021).

Based on the background of the study above, the researcher is interested in writing a scientific work titled **“Expert Advisor Development Utilizing RSI (Relative Strength Index) and Standard Deviation Indicators in Forex Trading on USD/CAD Currency Pair”**.

1.2 Problems of the Study

The identification of problems in this research, based on the explanation provided in the previous background, is as follows.

1. A structured automated trading strategy is required to assist traders in managing risks in the forex market, particularly for the USD/CAD currency pair, considering the limited time traders have to continuously monitor the market.
2. The development of an Expert Advisor utilizing the technical indicators Relative Strength Index (RSI) and Standard Deviation is crucial for generating precise trading signals and achieving consistent profitability. This conclusion is supported by rigorous backtesting and real-time testing, which validate the system's effectiveness in various market conditions.
3. A statistical analysis is required to determine whether there are significant differences between the results of backtesting and real-time testing of the developed Expert Advisor, focusing on key variables such as profit,

balance, and total deal trade.

4. Performance metrics such as risk to reward ratio, win ratio, profit factor, recovery factor, Sharpe ratio, expected payoff, and drawdown are necessary to assess the consistency of the Expert Advisor's performance in generating sustainable profits and to evaluate the effectiveness of the applied trading strategy.

1.3 Scope of the Study

In reference to the identified issues in the background, this research will be concentrated on specific aspects to ensure that the scope remains focused and does not deviate into unrelated topics:

Therefore, this research is confined to several specific aspects as follows.

1. The platform employed for trading in this study is MetaTrader 5. Therefore, this research does not address other platforms aside from MetaTrader 5.
2. This research utilizes MetaEditor 5, provided by the MetaTrader 5 platform, as a compiler tool for the code generated by the Expert Advisor to enable the implementation of automated trading strategies.
3. This study solely relies on real-time and online data obtained from the Deriv broker's server.
4. This study focuses on the utilization of RSI and Standard Deviation indicators as trading methods.
5. The study concentrates on traders with accounts in compliance with Deriv's policies.
6. The research is concentrated on technical analysis conducted during the

study, excluding discussions on external factors such as changes in market regulations, geopolitical issues, and other related matters.

7. This research analyzes the effectiveness of RSI and Standard Deviation indicators on H1, and H4 time frames using historical and real-time market data through a Deriv demo account. It does not consider any other time frames available on the MetaTrader 5 platform.
8. This research focuses solely on testing conducted in the forex market for the USD/CAD currency pair, excluding other financial markets.

1.4 Formulations of the Study

The formulation of the research problem in this study is as follows:

1. How does the performance of the Expert Advisor developed using the technical indicators Relative Strength Index (RSI) and Standard Deviation in generating profits based on backtesting and real-time testing?
2. Is there a significant difference between the backtesting and real-time testing results of the Expert Advisor developed based on the variables of profit, balance, and total deal trade?
3. How can an organized automated trading strategy be developed to help traders manage risk in the forex market for the USD/CAD currency pair, considering the limited time traders have to continuously monitor the market?
4. How consistent is the performance of the Expert Advisor in generating sustainable profits, and what is the effectiveness of the applied trading strategy based on the analysis of performance metrics?

1.5 Objectives of the Study

The objectives of this research are as follows:

1. To fine-tune RSI and Standard Deviation parameters within an Expert Advisor to improve the precision of entry and exit points for the USD/CAD currency pair in forex trading.
2. To design and develop a trading method that operates automatically 24 hours a day, ensuring continuous trading without human intervention.
3. To analyze the impact of RSI and Standard Deviation indicators on trading decisions, determining their effectiveness in improving trading outcomes.
4. To address and reduce the challenges inherent in manual trading, such as inflexible trading hours, time-consuming processes, and susceptibility to human error, by implementing automated trading through the MetaTrader 5 platform.

1.6 Significance of the Study

The significances of this research are as follows:

1.6.1 Theoretical Significance

1. This study helps traders design structured and effective trading strategies in the forex market, particularly for the USD/CAD currency pair.
2. It offers automated solutions for executing transactions in the forex market through Expert Advisors (EAs), reducing the time and effort required from

traders.

3. The study assists traders in improving their risk management practices by applying proven technical indicators and trading strategies.

1.6.2 Practical Significance

1. The research presents empirical evidence on the successful use of the Relative Strength Index (RSI) and Standard Deviation indicators in automated trading strategies in the forex market.
2. It broadens the understanding of developing and implementing Expert Advisors in forex trading activities.
3. The study provides a deep understanding of the performance consistency and effectiveness of automated trading strategies utilizing a combination of RSI and Standard Deviation indicators.

1.6.3 Academical Significance

1. This research serves as a reference for further studies on the development of Expert Advisors and automated trading strategies in the forex market.
2. It contributes to the advancement of knowledge in forex trading, particularly in the application of technical indicators and automated trading systems.
3. The study adds value to academic literature on the development and application of Expert Advisors in forex trading, including statistical analysis of the performance of automated trading strategies.