



Assessing the Level of Competence in Automated Trading Among Malaysian Traders

Zarith Sofia Zulkifli^{1*}, Hairuddin Mohammad², Miswan Surip³, Nurnadiah Zamri¹, Mustafa Mamat¹, Sahimel Azwal Sulaiman⁴

¹Faculty of Informatics and Computing,
Universiti Sultan Zainal Abidin, Besut Campus, Besut, 22200, Terengganu, MALAYSIA

²Department of Civil Engineering,
Universiti Tun Hussein Onn Malaysia, Batu Pahat, 86400, Johor, MALAYSIA

³Department of Information Technology,
Universiti Tun Hussein Onn Malaysia, Batu Pahat, 86400, Johor, MALAYSIA

⁴Centre of Mathematical Sciences, College of Computing and Applied Science,
Universiti Malaysia Pahang Al Sultan Abdullah, Gambang, 26300, Pahang, MALAYSIA

*Corresponding Author

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Abstract: In today's technology world, financial trading instrument such as stock, currencies, futures, and acts is now done electronically via the internet due to technological improvements. Financial market trading traders apply technical and fundamental analyses to forecast the best price when buying or selling the finance instrument, and they develop their trading tactics and strategies with technical analysis tools. The objective of this research is to figure out the level of competence that Malaysian retail traders have in Automated or Algorithmic Trading (AT) focusing on currency trading. The searches were conducted on a sample of Malaysian retail traders. The viewpoints of retail traders were investigated using a questionnaire designed specifically for this purpose. The data was analyzed using statistical software (SPSS). The findings of this study reveal that Malaysian traders have an excellent comprehension of AT. This study is useful for traders and researchers who want to design their own AT systems in the future.

Keywords: Automated trading, algorithmic trading, competence, Malaysian survey, foreign exchange

1. Introduction

The use of computer algorithms to make trading choices and execute financial market transactions is known as automated trading, sometimes known as algorithmic trading or algo trading. It entails automating trade execution by the development of rules or trading systems that are strictly adhered to while placing orders [1]. According to [2], algorithmic trading is dependent on mathematical models and algorithms for the analysis of market data, the identification of trading opportunities, and the execution of trades at fast speeds.

There are many aspects to the significance that automated trading plays in today's modern financial markets. For starters, it boosts market liquidity by raising trading volume and narrowing bid-ask spreads. Automated trading systems

can complete trades far more quickly than human traders, which boosts market liquidity and trading activity. This liquidity benefits market participants by increasing their opportunities to buy and sell securities at competitive rates. The precision and efficiency of trading are improved by automated trading, too. As a result of algorithmic trading minimizing the effect of human emotions and biases, the potential for illogical decision-making is eliminated, and the precision of trade execution is improved [3]. In their article, [3] also said that automated trading systems can analyze enormous volumes of market data and execute transactions based on predetermined rules and algorithms, which results in faster and more accurate trade execution. This efficiency can save traders and investors money while also improving overall market efficiency [4]. It is possible that automated trading will reduce market manipulation. Although some critics argue that algorithmic trading drives market manipulation, it is important to keep in mind that algorithmic trading can also be applied to identifying and avoiding manipulative practices. In their article, [2] recommends that automated trading systems be created to track the market as well as notify the relevant authorities of any unusual trading activity that would highlight market manipulation.

Strategies are the backbone of systematic decision-making in financial markets in algorithmic trading. Trend Following, Mean Reversion, Arbitrage, Market Making tactics, and High-Frequency Trading (HFT) tactics are some examples of algorithmic trading strategies. These are the five most common algorithmic trading strategies. These methods, complemented by complex mathematical models and analysis of historical data, intend to profit from certain market situations or inefficiency. Trend-following techniques ride market momentum, whereas mean reversion strategies look for opportunities when prices diverge from historical norms. Besides, Arbitrage techniques take advantage of price differentials between markets, whereas market-making strategies supply liquidity through continuous buying and selling. Additionally, High-Frequency Trading (HFT) methods are a specific category within algorithmic trading, identified by their fast execution and high trading volumes. HFT traders apply advanced algorithms and powerful processing systems to execute transactions in parts of a second, intending to focus on minute price fluctuations. Successful implementation of these strategies required not only a thorough understanding of market dynamics but also an advanced technology infrastructure capable of carrying out trades efficiently and precisely. As markets grow, algorithmic strategies for trading adapt, which highlights the importance of keeping knowledgeable and innovative in this constantly evolving field.

The objective of this research is to measure the competence level in automated trading. To achieve this objective, the survey using an online questionnaire was distributed. The data collected for this research focuses on a group of Malaysian retail traders that come from the Forex exchange group. The findings of this research are expected to be useful not only for Malaysian traders but also for all worldwide financial trading traders and academicians in developing and researching a more systematic future trading approach, particularly through the use of Automated or Algorithmic Trading (AT). From that, the main objectives of the study have been highlighted. How much do Malaysian retail traders know about AT in currency trading, and what are their preferences. To achieve the objectives of this study, a quantitative methodology was applied.

2. Related Work

2.1 Financial Market Trading

In today's globalized economy, trading on the financial markets is indispensable, as it determines the future of sectors, affects investment decisions, and creates enormous amounts of wealth. At its core, this practice is the purchasing and selling of numerous financial products, ranging from popular stocks and bonds to complex futures and online currencies. Financial market trading, as an interface between capital and investment, involves a wide range of markets, techniques, and participants, making it an interesting and complicated field to study.

Financial markets have a variety with many asset types and structures. Equities markets deal with company ownership shares, bonds markets deal with debt securities, foreign exchange markets handle global currency exchange, and commodities markets deal with physical things like gold, oil, and agricultural products. According to [5], financial markets provide a medium through which individuals, businesses, and governments may participate in the buying and selling of different financial instruments, including stocks, bonds, currencies, and commodities. The derivatives markets facilitate the use of complicated legal documents to minimize risk while participating in trading. Each market has its behavior, which influences trading strategies and levels of risk. Financial markets are important to the global economy because they help allocate capital and make economic growth possible. For the economy to be stable and grow, the financial markets must work well [6].

Trading in the financial markets is not a guessing game, but rather a combination of science and art. Traders use several types of strategies that are based on technical and fundamental analysis. Technical analysis is the process of analyzing price patterns, charts, and indicators to predict future price movements. Fundamental analysis evaluates the financial stability of a business, macroeconomic data, and geopolitical issues to determine underlying worth. Additionally, quantitative trading uses algorithms and statistical models to execute trades at high speeds, profiting on small market imperfections.

In the area of trading on the financial markets, many different strategies and analysis methods have been developed to help traders make the best decisions and make the most money. Research on trading strategies and analysis in the financial markets involves a wide range of methodologies with the common goal of improving traders' results and profits. The use of mathematical algorithms, technical analysis indicators, innovative accounting techniques, and machine learning techniques are only a few of the topics that have been covered in many studies about this topic.

The financial market trading landscape comprises an extensive variety of methods and strategies, each designed to the specific characteristics of different assets and online marketplaces. Stock, Forex, Commodity, Future, and Options Trading are some forms of financial market trading. In stock trading, buyers and sellers of stocks participate in this activity to make a profit, whether it's in the short term or over a long period. Forex trading involves the global exchange of currencies, with the main objective of focusing on movements in exchange rates to generate profits. Commodity trading mostly focuses on physical goods, including different groups such as metals, energy resources, and agricultural items. In the field of options trading, the concept of agreements is introduced, which offers the owner the ability to buy or sell assets at a specific price. Conversely, in futures trading, agreements are made that facilitate the transaction of assets at fixed prices on specified future dates. The financial markets offer a variety of possible earnings, which are dependent upon an individual's specific combination of competencies, level of willingness to take risks, and expertise in the market.

2.2 Foreign Exchange Trading

Over the last several years, Foreign Exchange has become progressively crucial to many financial institutions and individuals. With billions of daily transactions and a place where currencies are traded, Forex, which refers to Foreign Exchange and Currency Trading, is the world's largest yet most liquid financial market. The Forex market is open for trading 24 hours a day, 5 days a week; profits can be earned in both the bear (sell) and bull (buy) markets. 5% of the trillions of Forex markets are retail foreign exchange markets that are monopolized by retailers or small traders. Retail Forex trading is a tiny part of the wide foreign exchange market in which a person or small business speculates on the exchange rate between several currencies [7]. Since entering a market position is now at the tip of one's finger due to technological advancements, retail Forex traders can trade Forex online with actual market data.

Even though technology has improved nowadays, people still have difficulties in trading whether due to a lack of time or a lack of analysis. To profit and be a successful trader in the Forex market, a trader requires a powerful trading strategy and trades that follow it. Since the inception of the Forex market, several existing trading methods have been developed [8]. Some strategies are based on fundamental research, while the rest are focused on technical research. Even if they have a great trading technique, many traders still lose money in Forex trading. The majority of the problem is caused by human trading behaviours [9]. As a consequence, a Forex expert advisor or Forex robot, which automates the trading activity, is invented. 'Retail Forex trading' allows you to buy and sell currencies in a few seconds. It is part of the Forex market whereby investors try to profit from the differences in currency exchange rates. Since the emergence of online trading, anyone can use an online broker to access the same trades as banks and large financial institutions in the worldwide marketplace. To make a deal, investors can go to a broker's website. Investing in the foreign exchange market appeals to investors since it is open 24 hours a day and is rarely affected by recessions.

Forex trading has become popular in Malaysia in generating income. This is because people nowadays choose jobs that offer flexible working hours; also, many Malaysians look for a quick way to make some extra cash. Forex trading is always one of the first options for gaining alternative income because it is straightforward to execute. Forex trading in Malaysia is always done in a precise order. The largest source of currency demand is customer or retail trading. The process begins with the customer calling the bank (business to customer). The corporate dealer completes the transaction with a consumer who wishes to trade. The bank serves as a market maker, providing quotes to customers. Customers are unable to trade on the interbank market. Trading with a counterparty directly involves credit risk for the customer, which a bank might be able to handle more efficiently. To cover their customer transactions, a corporate dealer in a bank's treasury uses the interbank (business to business) market. Interbank trading accounts for 60 percent to 80 percent of the total Forex trading volume. The trader has the option to trade in the interbank market (i.e., trading using a broker or direct dealing) [10].

2.3 Competencies

According to Google, competence is defined as a set of observable attributes and skills that enable and increase a job's efficiency or performance. When considering what is inside 'competency', either technical or non-technical knowledge, skills, and abilities/attitudes (KSA) become the major components [11]. This study therefore emphasizes the question and survey relating to the concept of efficiency in AT where the focus is only on technical competency. Competence, as defined in the field of automated trading, indicates an individual or the program's level of skill and expertise in performing specified trading activities constantly. To be proficient in automated trading, one must have the knowledge, skills, attitudes, and behaviors required to make profitable trades in the financial markets [12]. Competence level in automated trading plays an essential role in assessing the success and effectiveness of trading strategies executed through computer algorithms. These competencies constitute an extensive range of skills and

knowledge that traders and developers must have to cope with the challenges of financial markets using automated processes. One of the criteria for assessing technical proficiency in automated trading is having extensive experience with algorithmic trading techniques. Traders must have programming and data analysis abilities to create and implement effective trading algorithms. Continuous learning, outcome monitoring, and performance analysis are essential for maintaining and improving technical knowledge in automated trading.

The level of competence and expertise required to effectively use automated trading systems is referred to as technical proficiency in automated trading. Automated trading, commonly referred to as algorithmic trading, is the use of computer programming to execute trade orders in real time. These systems apply configured algorithms and statistical models to determine trading options and submit orders to markets. With advances in telecommunications and technological advances in computers, the development and execution of automated trading systems have become more varied. Individuals must have a solid knowledge of algorithmic trading methods, statistical and machine learning approaches, and fundamental hardware and software systems to be able to develop technical proficiency in automated trading. They must be able to develop and implement effective trading algorithms that are capable of processing market data, identifying trading opportunities, and efficiently executing transactions. In addition, an understanding of programming languages and data analysis tools is necessary for developing and evaluating trading algorithms [13]. Furthermore, technical proficiency in automated trading requires continuous learning and adaptation to changing market conditions. Traders need to stay updated with the latest advancements in algorithmic trading techniques and market trends.

When it comes to automated trading, competency comprises more than just technical skills and trading strategies; it also includes attitudes and behaviors that have an important effect on a trader's success. The competence of a trader in automated trading is significantly influenced by their attitude towards risk, adaptability, and ethical considerations. A skilled automated trader exhibits a careful risk management approach, creating algorithms that reduce prospective losses and building emotional fortitude to resist market changes. They acknowledge the importance of capital safeguarding, avoiding excessive leverage, and ensuring algorithms can deal with unexpected fluctuations in the market. Traders who practice automated trading indicate versatility and a willingness to gain knowledge, actively assessing the performance of their algorithms and implementing requisite adjustments in reaction to changing market conditions. The definition of continuous improvement involves not just technical factors but also includes integrating market trends, developing technology, and changes in regulations. Whenever addressing automated trading, emphasis must be placed on the incorporation of ethical concerns and the promotion of openness. Ethical traders place a premium on openness and honesty in making algorithmic trading decisions, checking that their strategies are consistent with their core morals and not intended to deceive investors. Participants in the market perform ethically, avoid behaviors that might negatively impact the market, and show they understand their responsibilities to both investors and competitors. To maintain public trust in the financial system, professional trader takes personal responsibility for the effects of their decisions.

3. Methodology

In a research study, data is a piece of information that assists the analysis and evaluation of the given topic. The data for this study was obtained from respondents who were Malaysian retail traders; the data collecting instrument was a questionnaire. First and foremost, the researchers utilized survey data collection by distributing online questionnaires to retail traders in Malaysia. The survey highlights the level of understanding (knowledge and preference) of AT among retail traders in Malaysia. There are 37 questions in the survey and the traders were required to answer all questions in the questionnaires. The survey is divided into two parts the first part is about trader demographics, experience as well as money, and risk management when they are on trade, while the second part is about AT. Next, the data was gathered and entered into SPSS v.22 before the data was interpreted using descriptive analysis.

Table 1- Summary of the research objectives and methodologies

No./Phase	Objective	Methodology	Analysis
1	To identify the competencies for Forex AT.	Qualitative – Document analysis (manual)	<i>Multi-Layered Thematic (MLT)</i>
2	To analyze the level of competencies for Malaysian Forex AT.	Quantitative – Questionnaire survey (automatic)	SPSS – descriptive analysis

3.1 Methodology Phase I

Under the first objective, this research will apply the central phenomenon approach whereby previous documents or references will be qualitatively reviewed to identify the competencies required for Forex AT. The intended analysis will be aided by the MLT method [11] . Thus, the process performed through MLT is summarized as shown in Figure 1. Referring to Figure 1, a total of three phases in MLT are outlined. Since there was a lot of previous research on the

background of Forex and AT, this study set out the criteria in Phase 1, while Phase 2 was dedicated to the process of downloading appropriate references. Finally, in Phase 3, the topics were generated based on relevancy to discover competencies in Forex AT founded by previous research. Beginning with Phase 1, the MLT processes were repeated several times to ensure high-quality and consistent findings.

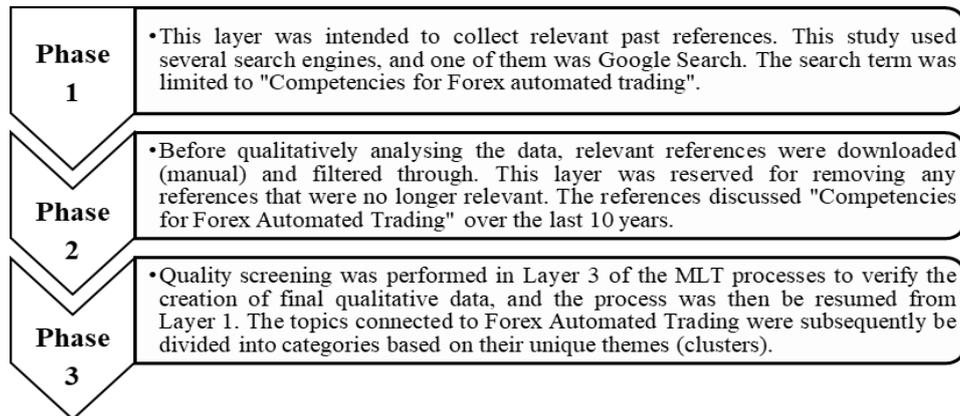


Fig. 1 - An overview of the MLT processes

3.2 Methodology Phase II

In Phase 2, on the other hand, a more generalized approach was adopted, owing to the necessity for a reasonably high response rate in a short amount of time, as well as the ability to better represent a large population [14]. The results from Phase 1 (i.e., issues relating to AT) were used to construct the questionnaire. The questionnaire manuscript was split into two sections: (1A) demographic details and (1B) trading experience. (1C) money management, (1D) risk management, and (2) AT. Because of the given features, the questionnaire platform used the Survey Monkey online software, which allows for the preparation of the questionnaire, preliminary analysis, control, and dissemination, as well as the automatic download of SPSS format files. Furthermore, convenience sampling was carried out by the limits of the COVID-19 pandemic, which limited the technique of disseminating surveys through social media platforms such as Telegram and WhatsApp. The gathered information was descriptively analyzed with the SPSS software to give the study additional meanings.

4. Result and Analysis

4.1 Descriptive Analysis Part 1

To meet the objective of this study, descriptive tests involving mean, median, mode, frequencies, and percentages were used in this paper. We started the analysis with the demographic part, then continued with trading experience, money, and risk management in trading. Last but not least was the deep explanation of the analysis of the AT section. Some questions in this survey used the Likert scale, and because of that, specific concerns were addressed to preserve the validity and novelty of the questions. A value of 0.765 was discovered using reliability analysis (i.e., Cronbach's alpha) where the performance standard of internal consistency was higher than 0.7 [15] (see Table 1). This indicates that those constructs were able to accurately measure their original purpose as well as strong evidence that the questions were tightly connected as a group, implying good reliability.

4.1.1 Demographic Information

Percentages and frequency distribution tables were used to evaluate the first section of the questionnaire, which dealt with the respondents' profiles. 355 traders filled out the questionnaire and participated in the research; however, only 252 of them were chosen after being filtered since the rest did not complete the questions. In the demographic part of the questionnaire, there are six items: gender, employment, age, source of income, highest education background, and area of study of the respondents. A summary of the demographics of the respondents is computed as shown in Table 1. Table 2 displays that 94 percent of the respondents were male while only a few, which represent 6 percent, were female. Most of the respondents were self-employed (36.9 percent) while the rest worked in the private sector (31.3 percent), public/semi-public sector (21 percent) and some were unemployed (10.7 percent). 46 percent of the respondent's age were 31 to 40 years old, which represents the highest frequency, followed by those aged 21 to 30 years old (27 percent), 41 to 50 years old (20.2 percent), 51 years old and above (4.8 percent). The age of 20 years old and below had the lowest frequency, with a percentage of only 2 percent. In the questionnaire given, we also asked about the source of income of the respondents. This is important because as we know, traders need capital to run an AT. The

main source of income among the respondents was Service (Government/Private) (51.6 percent), tailed by Self-Employment (Business) (34.1 percent), Student/Not working (7.9 percent) and others (6.3 percent).

In terms of education, the majority of respondents owned either a diploma (35.7 percent) or a degree (35.5 per cent) as their highest education. The difference between both certificates was small with a value of 0.2 per cent. Besides diplomas and degrees, the respondents held either a Sijil Pelajaran Malaysia (SPM) (13.9 percent), a Certificate (9.5 percent), a Master (4.8 percent), or a PhD (0.4 percent). Since higher knowledge of technology is needed in AT, no wonder more than half of the respondents came from the Engineering/Technology field of study (50.8 percent). Meanwhile, the rest studied Commerce, Economics, Management (19.4 percent), Art, Humanities, Others (11.9 percent), Social Science (10.7 percent) and Science, Mathematics (7.1 percent). Overall, we can see that the majority of Malaysian traders have a professional and educated background.

Table 2 - Demographic of respondent

Reliability (α)		0.765	
Actual respondent		355	
Accepted responses (minus incomplete, blank, and unsuitable responses)		252	
A. Demographic Information		Frequency (f)	Percentage (%)
Gender	Male	237	94
	Female	15	6
Employment	Self-Employment	93	36.9
	Unemployment	27	10.7
	Private Sector	79	31.3
	Public/Semi-Public Sector	53	21
Age (years)	20 and below	5	2
	21 – 30	68	27
	31 - 40	116	46
	41- 50	51	20.2
Source of income	51 and above	12	4.8
	Service (Government/Private)	130	51.6
	Student/Not working	20	7.9
	Self-Employment (Business)	86	34.1
Highest Education Background	Others	16	6.3
	Sijil Pelajaran Malaysia (SPM)	35	13.9
	Certificate	24	9.5
	Diploma	90	35.7
Area of Study	Degree	90	35.5
	Master	12	4.8
	PhD	1	0.4
	Art, Humanities, Social Science	27	10.7
Area of Study	Commerce, Economic, Management	49	19.4
	Engineering, Technology	128	50.8
	Science, Mathematics	18	7.1
	Others	30	11.9

4.1.2 Demographic Information

Being a Forex trader is not as simple as many people believe; traders with less expertise and experience are more likely to be inconsistent and, in a worst case, they lose a lot of money in trading. Consequently, one of the sections in this survey inquired about the respondents’ Forex trading experience. This section of the survey was significant since it not only asked about the respondents’ experience but also provided and proved that any respondent who participated was qualified to answer all of the questions. The analysis in this section began with how long had the respondents been in Forex trading. Based on Table 3, it is shown that the largest number of respondents was for 4-6 years’ trading experience (96, 38.1 per cent); the mean value was 2.75 while the values of median and mean were 3. From that result, we can easily identify that most respondents had around 3 years’ trading experience.

Forex traders can choose either to be full- or part-time traders depending on their comfort level since they are not tied to any organization or individual. According to the finding, 208 (82.5 percent) out of 252 respondents were part-time traders while the remaining 44 (17.5 percent) respondents were full-time traders. We can observe that most

Malaysians nowadays are working two jobs at the same time to survive in their everyday lives. Thus, trading is the best alternative since it offers numerous benefits such as the ability to trade anywhere and at any time.

Out of all respondents in this survey, 14 of them held a certificate in trading Chartered Financial Analyst (CFA), Financial Risk Manager (FRM), Chartered Market Technician (CMT), Chartered Financial Technician (CFTe), and Certified Malaysia Planner (CFP). However, the other 238 respondents did not have any trading credentials. Analysis of movements in the Forex market can be done in two ways. The first is through technical analysis, which involves the use of charting tools. The other way is through fundamental analysis, which is based on economic or Forex related data and events. The results of the analysis can then be used by a trader to decide whether to buy or sell a currency pair at any specific time [16]. Throughout the survey in this research, respondents were asked how they analysed the Forex market in this study. Most of them used technical analysis to analyze the Forex market (137, 54.4 percent), followed by those who used both technical and fundamental analysis (103, 40.9 percent), other analysis (7, 2.8 percent), and fundamental analysis (5, 2.0 percent) to analyze the best time to trade.

4.1.3 Money and Risk Management

The most important, easiest to learn, and most difficult to practice is the use of a decent money management approach [17]. Every open trade is a risk regardless of how strong the analysis points to a particular trend. The price of Forex in the future is unpredictable, and no trading strategy, whether through technical or fundamental analysis, can guarantee a 100 percent accuracy. Therefore, trading analysis, risk management and money management are the most critical aspects to control in Forex trading [18]. In this section of the survey, respondents were asked about their money and risk management in trading, and the results are summarized in Table 3.

Based on the results recorded in Table 3, we need to look at the mean value of the first and the second question in the money and risk management part to find out how the respondents would answer the questions and their views (i.e., they agree or disagree). The mean values for the 'Forex require large capital' and the 'can manage money' question are 2.48 and 3.12, respectively. Both mean values show that the respondents disagreed and had a negative view on the 'Forex requires large capital' question; however, they agreed and had a positive view that they can manage their money when trading.

For the question of whether they could 'manage risk' when trading, 241 (95.6 percent) respondents replied 'Yes' and 11 (4.4 percent) respondents said 'No'. In addition, 204 respondents would check the spread before they began any trading activity, whereas the rest (48 respondents) would not. We can conclude from the statistics that Malaysian traders have a good understanding of money and risk management in Forex activities. Undoubtedly, Forex trading has its own risks and margin calls in trading are common, but how should we reduce them? Therefore, money and risk management are a very important aspect. 202 respondents experienced more than one margin call, 37 respondents experienced only one margin call, and 13 respondents did not experience any margin call in Forex trading.

Table 3 - Trading experience, risk and money management descriptive statistic

Item	Frequency (f)	Percentage (%)	Mean	Median	Mode	Standard Deviation
B. Trading Experience						
a) Years						
i. Less than 1	31	12.3				
ii. 1-3	75	29.8				
iii. 4-6	96	38.1	2.75	3	3	
iv. 7-9	25	9.9				
v. 10 Above	25	9.9				
b) Types of traders						
i. Full time	44	17.5				
ii. Part-time	208	82.5				
c) Certificate						
i. Yes	14	5.6				
ii. No	238	94.4				
d) Technique Analysis						
i. Technical	137	54.4				
ii. Fundamental	5	2.00				
iii. Both	103	40.9				
iv. Others	7	2.8				
C. Risk and Money Management						
a) Forex requires large Capital						
i. Strongly Disagree	113	44.8	2.48	2	2	0.80

ii. Disagree	90	35.7				
iii. Agree	27	10.7				
iv. Strongly Agree						
b) Can Manage Money						
i. Strongly Disagree	2	0.8				
ii. Disagree	14	5.6	3.12	3	3	0.52
iii. Agree	186	73.8				
iv. Strongly Agree	50	19.8				
c) Manage risk						
i. Yes	241	95.6				
ii. No	11	4.4				
d) Margin Call						
i. Yes, once	37	14.7				
ii. Yes, more than one	202	80.2				
iii. No	13	5.2				

4.2 Descriptive Analysis Part 2

AT (also known as algorithmic trading, black-box trading, or algo trading) involves placing a deal using a computer program that follows a set of instructions (an algorithm). Besides saving human traders' time from doing analysis, AT also minimizes the chances of them making mistakes due to emotional and psychological reasons when trading. In this section of the survey, respondents were asked to answer questions regarding AT. This survey intends to determine the extent of respondents' understanding (knowledge and preference) of AT. Table 4 includes topics discussing the respondents' preferences for AT activities. The first point concerns broker selection. 143 respondents chose ECN broker, 67 respondents chose STP broker, 23 respondents chose Market Maker broker while 19 respondents chose others. It is crucial to choose the right broker. This is because every trader requires a reliable and stable broker to ensure that capital deposits and profit withdrawals do not encounter issues such as underpaid profits or disrupted trading charts. Any entry set in AT is important in the case of reducing any risk. Instant entry is the ideal order to set up automatic trading, according to 143 respondents, as compared with pending order which was chosen by only 92 respondents. Only 17 respondents preferred others (e.g., using both orders).

Every entry in trading is imperative. Placing size rules is one of the aspects that must be taken seriously to ensure that trading is done at the lowest possible risk. In this survey, respondents were asked to choose the size rule in trading they would use. Historically, the term 'martingale' refers to a group of betting techniques prominent in 18th-century France, and the method was introduced by a mathematician named Paul Pierre Levy. According to the results of the survey, 118 out of 252 respondents used the Martingale positing size style when trading, while 20 respondents used Anti-Martingale, 100 respondents preferred fixed positing size, and the 14 remaining respondents used other methods.

Depending on one's preference, he or she can choose from a variety of time frames. If he or she is a scalper who prefers short trades, time frames like M5, M15, and M30 would be great; whereas, if he or she is an intraday trader, time frames like H1, H4, and D1 are very suitable. Weekly and monthly time frames are great choices for swing traders. However, as traders, they have the choice to rely on their comforts and styles. In this survey, 66 respondents preferred the H1 time frame for carrying out AT activities, while 52 respondents preferred the M5 and M15 time frames. This is followed by 47 respondents who chose H4, 13 respondents who chose M30 and others (weekly and monthly), and last but not least, 9 respondents who chose the D1 time frame.

There are several authorized currencies in use around the world, but only a few are traded in the Forex market. Typically, adequate amounts of the most economically or politically stable and liquid currencies are demanded in currency trading. Currency pairings are divided into several categories: major, minor, exotic, indifferent, and others. The most commonly traded currency pairs in the world are known as major currency pairs. You can trade them almost always since they have a bunch of liquidity. A major currency pair is a currency that is paired with the US dollar (USD), such as GBP/USD. A minor currency pair or a cross-currency pair, such as EUR/GBP, does not involve the United States dollar. A major currency and the currency of a developing economy (such as in Brazil or South Africa) form an exotic currency pair, for example, EUR/TRY. 210 respondents chose primary currency as their favorite currency in AT. It is a large number of respondents as compared with 13 respondents who chose minor currency, 6 respondents who preferred exotic currency, 5 respondents who chose indifferent currency, and 18 respondents who chose others.

Table 4 - AT descriptive analysis

Item	Frequency (<i>f</i>)	Mean	Standard Deviation
1. Broker			
a) STP	67		
b) ECN	143	1.67	0.75
c) Market Marker	23		
d) Other	19		
2. Order			
a) Instant	143	1.29	0.59
b) Pending Order	92		
c) Others	17		
3. Positing size rule			
a) Martingale	118		
b) Anti- Martingale	20	1.81	1.03
c) Fixed Position Sizing	100		
d) Others	14		
4. Timeframe			
a) M5	52		
b) M15	52		
c) M30	13	2.97	1.68
d) H1	66		
e) H4	47		
f) D1	9		
g) Others	13		
5. Forex Pair			
a) Major Pair	210		
b) Minor Pair	13	1.09	0.63
c) Exotic Pair	6		
d) Indifferent	5		
e) Other	18		

Forex trading can be done without human involvement using an EA (Expert Advisor) through automated analyses and transactions. The goal of employing an EA to negotiate Forex transactions is to eliminate human intervention, which is often impacted by emotions, anxiety, tension, and other factors. Thus, trading using an EA has become a viable option for removing the risky aspects of human participation [19]. The descriptive analyses as presented in Table 5 are based on how the respondents replied to the questions, as well as whether or not they agreed or disagreed with some points of view on EA. Based on the mean value for ‘Opinion on Expert Advisor/Robot’ in the AT section, we can conclude that the respondents agreed (had a good opinion) since most of the mean values were close to 3.00 which means agree. In addition, the mode and median values were also at level 3.00, which indicates that the choice is agreed upon. There are 7 items in this question. An item with the highest value in this opinion question is Item 4, ‘The choice of brokers in Expert Advisor (EA)/Robots is very important’ ($M=3.05$, $SP=0.81$). The mean value for the first item, ‘Expert Advisor (EA)/Robots in Forex trading are helpful’ ($M=2.83$, $SP=0.79$) followed by the second item, ‘Do you agree that using indicator tools in Expert Advisor (EA)/Robots can produce a good and profitable result?’ ($M=2.80$, $SP=0.76$), and Item 3, ‘Indicators are important tools in Expert Advisor (EA)/Robot Forex trading’ ($M=2.87$, $SP=0.74$). An average number of respondents agreed with Item 5 ($M=2.68$, $SP=0.79$) where the Expert Advisor/robot assisted them for a short period, as well as Item number 6 ($M=2.60$, $SP=0.79$); so, it is no surprise that the mean value for this item is lower than the other items. The last item is about how emotions affected respondents when using EA in AT. The result for Item 7, ‘Expert Advisor (EA)/Robots are not affecting a person’s emotions when trading’ shows that the majority of respondents agreed that trading using EA in AT guards the trader’s emotions more closely compared with manual trading ($M=2.79$, $SP=0.90$).

Table 5 - Opinion on expert advisor/robot in automatic trading

Item	Do you agree that using Indicators are major helpful tools in Expert Advisor (EA)/Robots, The choice of brokers in Expert Advisor (EA)/Robots is very important, Expert Advisor (EA)/Robots are helpful in the short-term, Expert Advisor (EA)/Robots may fail in the long term, Expert Advisor (EA)/Robots do not affect a person's emotions when trading						
	Expert Advisor (EA)/Robots in Forex trading are helpful	Indicator tools in Expert Advisor (EA)/Robots can make a good and profitable result?	Indicators are major helpful tools in Expert Advisor (EA)/Robots, Forex trading	The choice of brokers in Expert Advisor (EA)/Robots is very important	Expert Advisor (EA)/Robots are helpful in the short-term	Expert Advisor (EA)/Robots may fail in the long term	Expert Advisor (EA)/Robots do not affect a person's emotions when trading
<i>f and %</i>							
1	23 9.1	21 8.3	16 6.3	15 6.0	24 9.5	20 7.9	28 11.1
2	34 13.5	39 15.5	40 15.9	32 12.7	54 21.4	88 34.9	50 19.8
3	157 62.3	161 63.9	157 62.3	131 52.0	152 60.3	116 46.0	120 47.6
4	38 15.1	31 12.3	39 15.5	74 29.4	22 8.7	28 11.1	54 21.4
Mean	2.83	2.80	2.87	3.05	2.68	2.60	2.79
Median	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Mode	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Std. Deviation	0.79	0.76	0.74	0.81	0.76	0.79	0.90
Minimum	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Maximum	4.00	4.00	4.00	4.00	4.00	4.00	4.00

Notes: 1-Strongly disagree, 2-Disagree, 3-Agree, 4-Strongly agree

In early 2020, the world was stunned by a new epidemic, which is summarized as COVID-19. This illness, which has been classified as a pandemic, has affected nearly all aspects of the life of the society. Malaysia is no exception for the Malaysian government has announced the implementation of the Movement Control Order (MCO) that started on 16 March 2020. This MCO directive had been implemented in phases until 2021. For almost 2 years of living with the situation of COVID-19, the effect has been very much felt by the community when their movements are limited, thus hampering the smooth running of education, social, cultural, and even the economy as a whole. Therefore, generating income from home has been the main choice among Malaysians, and one of them is through trading since this activity does not require them to go outside and engage with a large number of people. In the last question of this survey, the respondents answered a question about how far they agreed or disagreed with the question. Based on the recent COVID-19 situation, do you feel that AT helps in generating income? The last table, Table 6, displays the results from the responses to this question. As described in the table, more than half or, to be exact, 147 (58.3 %) respondents agreed that AT can help them generate income during the COVID-19 pandemic, while 82 (32.5 %) respondents strongly agreed to this question. However, only 16 (6.3 %) and 7 (2.8 %) respondents of this survey respectively disagreed and strongly disagreed with this question. The results of the mean (3.21) and mode (3.00) for this question themselves show that most respondents supported and agreed with the question given.

Table 6 - Opinion on automated trading in pandemic (COVID-19) situation

Item	Scale	Frequency (f)	Percentage (%)	Mean	Mode
Based on the recent situation of COVID-19, do you feel that automated trading helps in generating income?	Strongly disagree	7	2.8	3.21	3.00
	Disagree	16	6.3		
	Agree	147	58.3		
	Strongly agree	82	32.5		
Total		252	100.0		

5. Conclusion

AT is not only common among Forex traders in Malaysia but also in other countries of the world. With today's rapid technology and its advantages, AT has become the first preference among traders. This paper explores the level of knowledge, attitude, and skill on AT among Malaysian Retail Forex traders. Based on the results of the survey and the descriptive analysis, it can be concluded that Malaysians have a good understanding and expertise on AT. Individual

traders or academician researchers who have traded currencies or any financial instrument or intend to start trading in this financial market trading may find this study useful. The information provided in this study is also useful for manual traders in learning how to employ AT, which can help them maximize their profits. This type of trading, among other things, can assist them in efficiently overcoming some of the challenges that occur with manual trading.

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