CHAPTER II

LITERATURE REVIEW AND HYPOTHESIS

In this chapter of literature review, the writer provides knowledge and information from all aspects all over the world related to the topic of the research. The purpose is to maintain both the writer's validity and reliability to conduct the research. The aim of this study is to analyze the strength of technical analysis for estimating the profitability of XAU/USD trading in the Foreign Exchange (FOREX) market.

The financial markets have always attracted investors from all over the world (Bech, 2012). One the financial markets that have shown a significant growth over the last few decades are the foreign exchange market. The foreign exchange market, also known as FX or simply FOREX is a marketplace for the activity of exchanging national currencies against one another, whether it is for the purpose of trading, commerce, or tourism. It has become the largest and also the most liquid financial market in the world due to its worldwide reach of trade and finance (Chen, 2020). In 2013, the Bank for International Settlements has also reported that the daily trading activity volume in the foreign exchange market had amounted to an average of $5 trillion. The foreign exchange (FOREX) market has attracted many individuals as the market is available for any trader to conduct the trading activity by opening an account in a brokerage company (Kermanshahi, 2014). Even with a small balance account, any individual can trade in the foreign exchange (FOREX) market.

2.1 Trading vs. Investing

In the financial market, the word "trading" is defined as the activity of purchasing shares of a certain company in the hope of making profit by then selling the shares when the value increases (Hayes, 2021). In a much simpler explanation, trading is when one purchases for a certain price and then selling it again for another. The concept of the supply and demand can be applied in the financial market, whereas the values of the shares depend and changes based on the supply and demand. If the demand of the shares increases, the price will increase, and vice versa. However, when the supply increases, the price will begin to decrease. Due to the advancement of technology and high speed internet, trading activities can be conducted online thus becoming an easy access for everyone to get involved in. Individuals are able to trade almost anything online, such as currencies, commodities, stocks, and many others. In the Foreign Exchange (FOREX) market, the concept of trading is applied through a certain currency against another (Investopedia, 2021). For instance, an individual is able to exchange the U.S Dollar for the Japanese Yen in the

FOREX market. Trading in the Foreign Exchange (FOREX) market can be perceived exactly like exchanging money when going on a vacation to another country and utilizes the concept of the demand and supply, in the same way that has been mentioned previously. When two currencies are exchanged, it would come with a certain price called the exchange rate and individuals can use this advantage to earn a profit.

Investing is the act of distributing money and other resources in order to obtain profit. In simple words, investing is defined as the act of spending money in order to obtain more money in the future (Buffett, 2013). However, investing can also result in a loss of money and the amount depends on the length of risks an investor would take. The risk and return are related to one another; low risks would lead to low expected returns, while taking a higher risk can lead to higher returns and profit. Investment is put into three important categories; the first category which belongs to the "safe" category, this includes savings accounts, bonds, and many other currency-based instruments. However, these safe investments usually gives out low rate of returns and do not keep up with inflation (Lee, 2013). It is worth considering that although bonds are provided by the government or a specific company thus considered as a safe investment, but one risk that should be taken into notice is the chance for bankrupt which would result in a loss for the investors. On the other hand, investment like a savings account offers low returns but the risk is primarily zero. Another category for investments is cash equivalents like money market funds, which can effectively be transformed back to cash in a short notice. Similar to a savings account, money market funds can be purchased at any bank. However, the investor would be able to receive a rate of interest slightly higher in money market funds. The last type of investment are ownership investments, which include running a business, stocks, real estate, collectibles and precious objects such as gold and even one of a kind paintings. These types of investments are considered the most volatile and profit-making level of investment where the buyer or investor will expect that the value of their investment would increase over time (Beattie, 2019).

Hence, what is the difference between investing and trading? (Folger, 2020) mentioned that each carry a different approach in making an effort to obtain profit in the financial markets. Generally, both traders and investors have the same purpose to obtain profits in the market; however the only difference is that an investor would go after larger amount of profit or returns by holding its purchase position in the market throughout an extended period of time, whether it is in years or more (Coombes, 2020). On the contrary, a trader would go after smaller but frequent profits or returns by taking advantage of both the rising and falling conditions of the market, and would open and then close positions over a shorter period of time (Investopedia, 2020). In conclusion, investing uses a long-term approach to the financial markets while trading uses a short-term approach along with suitable strategies to make its profit.

2.2 Gold during the Financial Crisis

Economists evaluated the 2008 financial crisis to be one of the most major economic collapses since the Great Depression that occurred in the 1930s (Temin, 2010). (Investopedia, 2021) mentioned that the financial crisis was due to the government's act of eliminating restrictions in the financial industry, which triggered a housing price bubble in the United States and many other places. As a result of the crises, many property owners in America were in debt due to their mortgages being higher than the worth of their homes, thus they were not able to sell their houses without paying back the mortgages to their lender. Nevertheless, the 2008 financial crisis and also during other economic recessions like the COVID-19 outbreak has led the value of gold to increase significantly and become a very important asset which many investors have taken as their investments in order to obtain profit. So it can be taken into notice that during a rise in the price of gold, it also signals that the economy is doing poorly and that investors would purchase gold as protection. Meanwhile, a fall in the price of gold would be a signal that the economy is healthy and during this time many investors will most likely to purchase less gold. In addition, this condition would also mean that there is an inverse relationship between the prices of gold and the stock market. During an unhealthy economic such as the financial crisis, the stock market would fall. Thus, the price of gold would fall when the stock market is performing well, and vice versa. The price of gold would be rising while the stock market is collapsing.

Due to the fact that the probability of gold having no value is almost impossible, gold is considered as one of the safest options for investment. Since many individuals are using gold as investment purposes, its liquidity in the market tends to be very high. However, XAU/USD may fluctuate and is most volatile at a specific time in the Foreign Exchange (FOREX) market, therefore conducting short-term trading can also be a good idea for the individuals seeking to take advantage of the fluctuations and make a profit. The activity of purchasing gold among individuals depends on one’s preferences. Some individuals would prefer to purchase physical gold, for example in the form of jewelry and other high quality gold-based products, others are purchasing gold in the form of currency pair (XAU/USD) in the Foreign Exchange (FOREX) market.

2.3 XAU/USD in the Foreign Exchange (FOREX) Market

Precious metals such as gold, silver, platinum are now considered mostly as investment and industrial commodities. Among all these precious metals, gold has been considered the safest and has become the most well-known investment across countries (Low, Yao, Faff, 2015). Even since the ancient times, gold has been considered as a symbol of wealth and has maintained to have proven its importance in investments. In the Foreign Exchange (FOREX) market, gold is known as the XAU/USD, a currency pair that informs the trader how many US Dollar ($) are needed to purchase one ounce of gold. According to the ISO 4217 standard code, XAU is considered as a currency for one ounce of gold. 1 ounces of gold equals to a pip value of $0.01 or 1 micro lot (1000 units). (Dong, Chen, Lee, and Sriboonchitta, 2017) conducted a research that studies the correlation between gold and USD exchange rates. The conclusion that was able to be taken was that there was an inverse relationship between the gold and USD exchange rate returns. This simply means that when the gold prices increase, the USD value will decrease and vice versa.

2.4 Methods for Analyzing the Market

2.4.1 Fundamental Analysis

The fundamental analysis is a method of measuring the intrinsic value, or the "fair value" by observing the economic and financial factors from a macro to micro perspective. Investors usually receive information from public corporations about the overall economic health and their abilities that will influence and have an impact on prices. Some important indicators that traders can monitor:

- Gross Domestic Product (GDP): this indicator is considered as the most important factor in determining the economic strength of a country. It consists of the total value of production during the period and also the purchases of goods and services by an individual, business, country, or government (Shamah, 2013).
- Producer Price Index (PPI): this translates to the measure of the average level of prices of a fixed basket of goods received in primary markets by producers (Shamah, 2013, p.153).
- Consumer Price Index (CPI): this is defined as the measure of the average level of prices of a fixed market basket of goods and services purchased by consumers (Shamah, 2013, p.152).

2.4.2 Technical Analysis

Previous studies regarding technical analysis were conducted by researchers Allen and Taylor in the year 1990-1992 and were considered as the first systematic study to ever occur. They reported that technical analysis is an important tool in 90% of the decision making for FOREX traders. Menkhoff and Taylor later in 2007 conducted similar research about the importance of using technical analysis in the foreign exchange (FOREX) market and reported that applying technical analysis in FOREX trading would be profitable. Another study conducted by Roudgar (2012) analyzed the successfulness of using the technical analysis in the FOREX market using three different timeframes. The result proved that using technical analysis is an important method in predicting the future of the market. In a motivation to find out whether common technical analysis such as the Relative Strength Index (RSI), Bollinger Bands (BB), and Moving Average Convergence Divergence (MACD) would bring profitability for individual currency traders, Abbey and Doukas (2012) conducted further research whether these technical analyses are being used by individual traders and to prove whether there is a correlation between the technical analysis and the performance of the individual trader. The result shows that individual traders apply well-known technical indicators in their currency trading activity. However, there is an inverse relationship between performance and the utilization of the technical indicators.

The technical analysis method is a popular trading approach which is based on identifying the trends and patterns on the price movement based on an analysis of the past price behavior (Menkhoff & Taylor, 2007). Traders will then look for the perfect time and point for entering the market and earning profit from the trade. Technical analysis in the foreign exchange (FOREX) market is conducted using qualitative method, such as identifying certain patterns in the data from visual observation of a time-series plot, quantitative method, such as using the moving-average, or a combination of both (Menkhoff & Taylor, 2007).

2.4.3 Market Trend Analysis

This analysis utilizes the combination of both technical analysis and fundamental analysis. When a trader obtains both signals, they will then make a decision and identify the best time and price for entering and closing their positions in the market (Booker, 2016). The market trend analyses are usually conducted by traders who are experts and has experienced in both of the fundamental and technical aspects of the analysis.

2.5 Facts and Challenges in the FOREX Market

Due to the development of technology, the popularity of the market continues to increase as it has become more accessible to all individuals around the world. It is important to understand and be familiar with several facts and challenges in the FOREX market:

- The FOREX market operates 24 hours a day across the world except for the weekends. The US dollar currency dominates the market with approximately 80% of its contribution in the FOREX trades (Chen, 2009).

- Minimum capital required – Many FOREX brokers only requires a minimum initial deposit as much as $50 or no minimum or initial deposit at all to open up an account and start the trading activity. This makes FOREX one of the most accessible financial markets in the world and individuals can easily trade currency pairs of their choice. However, it is important to understand that putting less money will limit the returns. Traders can increase their deposit for more flexibility and get slightly higher returns (Mitchell, 2021).

- Buy Low Sell High – Traders are able to take advantage of the market fluctuation by purchasing a currency pair at a low price and then sell the currency at a higher price. This can be done under overbought or oversold condition in the market (Roudgar, 2012).

- There are several types of currency trading platforms to choose from, which includes: Meta Trader 4, Act Trader, Trade Station, and many others. These platforms are basically software in which traders use as a gateway to enter the trading markets. Each platform may offer different features depending on the quality of its service.

- There is a positive yet a negative side to the 24-hour changes in the FOREX market. Traders have the flexibility to open a position in the market whenever they want. However, traders do not have full supervision on the prices, for instance when they are asleep or doing other activities, as the prices are always changing (Segal, 2020).

- Internet connection failure – Connection failure is likely to happen and would interfere with the trading activity, such as during an open position and traders are not able to monitor the prices. It should be taken into notice that the trading platforms do not take responsibility for problems like connection failure and this is a major disadvantage for the traders.

- Volatility – The FOREX market is known to be fast and volatile. This situation become one of the disadvantages for the traders as they are able to obtain profit very quickly but is also able to lose their money very quickly as well. Traders must be able to find the most suitable strategy and analysis in predicting the future prices.

2.6 Opening a Portfolio in Online FOREX Trading

There are several steps for investing in the Foreign Exchange (FOREX) market:

1. *Finding and opening a brokerage account* – The first step that must be done is find a suitable place to hold the foreign currency pair that you would like to invest in, and that is a brokerage account. There are several FOREX brokers available such as Hot Forex (HF Markets Ltd.), XM, IC Markets (International Capital Markets Pty Ltd), FXTM Global (FT Global Ltd), Global Prime Pty Ltd, and many others. Traders can choose one that meets their requirements.

2. *Funding the account* – After deciding on a broker, traders are able to log in to their online account and deposit money based on their country's currency. Funding can be done by using credit card, debit card payments, or bank wire transfers, depending on the types of payment accepted by the broker.

3. *Acquire access to a FOREX trading platform* – Traders must be able to obtain access to a FOREX trading platform. The most used online trading platform supported by FOREX brokers are third party platforms like the Meta Trader 4 (MT4) and Meta Trader 5 (MT5). Traders can simply download these

platforms using their smartphone, laptop, or tablet with the use of internet connection.

4. *Figure out a strategy* – It is essential that every trader should conduct an educated trading by find the most suitable strategy and not just purchase or sell a currency pair based on their intuition. There are several strategies to look for, whether it is based on the type of market analysis used, the time frames, and many more.

5. *Starting the trading activity* – Traders can start their trading activity by finding the currency pair that they would want to purchase or sell and open a position based on a suitable strategy. It is known that the volatility of the FOREX market tends to be high, which means the movement of the price, can change drastically and traders would have to carefully consider the risks.

2.7 Candlestick Patterns

In the Foreign Exchange (FOREX) market, the candlestick chart is a technique used in technical analysis to help traders predict the future short-term direction of the price based on the past price and volume of the trading (CMC, 2021).

Traders will observe the past market trend which will then help them to make decisions on the buying or selling of a currency pair. There are several components of the candlestick chart, which consist of four price points (open, close, high, and low) in a form of a "real body".

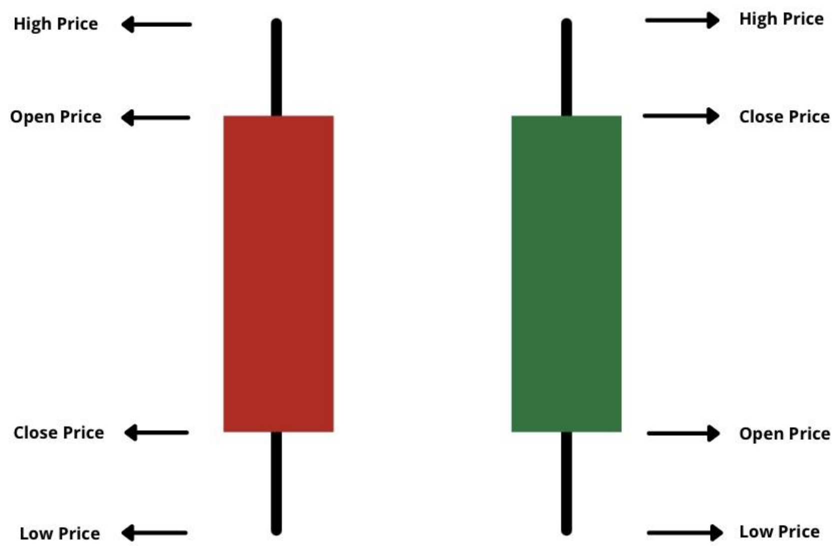

Figure 1.1 Candlesticks Bullish & Bearish Body

The figure above shows the body of the candlestick chart, where the body would be filled in red if the closing price was lower than the opening price and be filled in green if the closing price was higher than the opening price. However, the Meta Trader 4 and Meta Trader 5 platform enables the trader to modify the colors of the candlestick body to their preferences. As an example, the red color can be altered to black and the green color can be altered to white. In this study, the trader will set the candlestick color to green and red.

As the candlesticks are being formed by the rising and falling movements of the price, the patterns are likely to be discovered by traders to analyze in order to make their trading decisions. The patterns are divided into two, bullish patterns which show that the price is likely to rise and bearish patterns which shows that the price is likely to decrease. There are several well-known single candlestick patterns that can be used by trader to identify potential zones in the market.

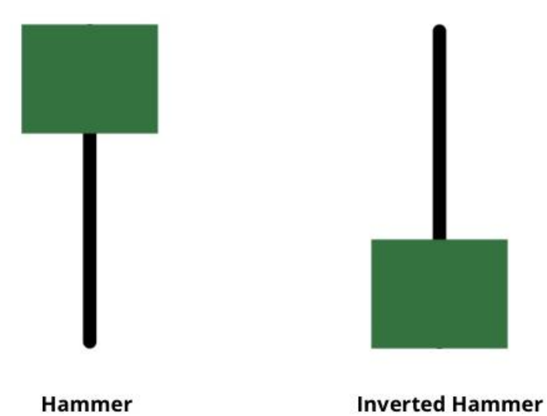

Figure 1.2 Hammer & Inverted Hammer (Bullish Reversal Pattern)

The hammer candlestick occurs when the price falls after the open price but then closed near the open price, which results in a hammer-like pattern that have a small real body and a long lower shadow. The inverted hammer candlestick usually takes place at the bottom of a downtrend and just like the normal hammer candlestick, it will be a sign that the price will eventually go up (a potential bullish reversal pattern).

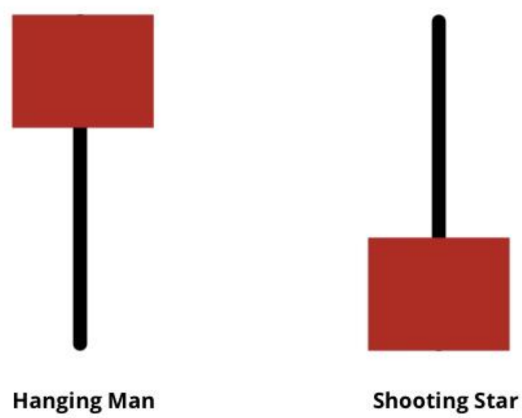

Figure 1.3 Hanging Man & Shooting Star (Bearish Reversal Pattern)

The shooting star candlestick looks similar to the inverted hammer candlestick; however the difference is that it occurs when price has been rising (during an uptrend) and just like the hanging man candlestick, it will be a sign that the price will eventually go down (a potential bearish reversal pattern).

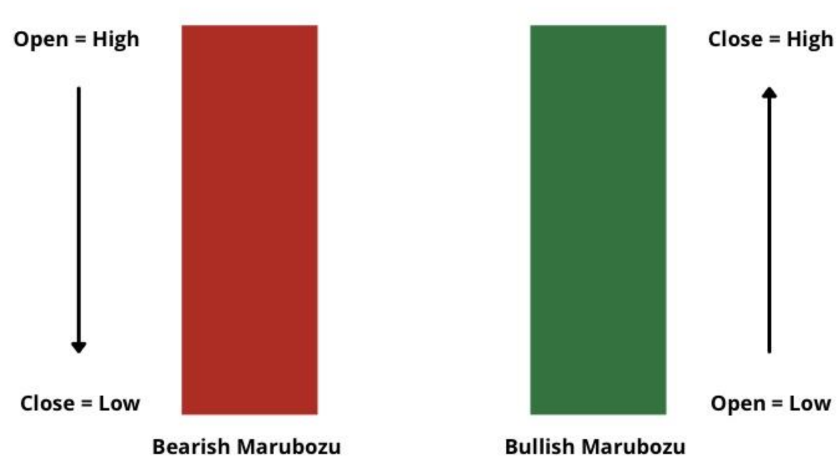

Figure 1.4 Marubozu Candlestick Pattern

The Marubozu is identified as a candlestick with only the real body and no upper or lower shadow. In the figure above, the red candlestick illustrates the bearish Marubozu and then green candlestick illustrates the bullish Marubozu. The reason for the nonappearance of the upper and lower shadow in the bullish Marubozu is due to the low is equal to the open price and the high price is equal to the close price (Open

= low, High = close). On the other hand, the reason for the nonappearance of the upper and lower shadow in the bearish Marubozu is due to the high price is equal to the open price and the low price is equal to the close price (Open = high, Close = low)

2.8 Technical Trading Indicators

2.8.1 Relative Strength Index (RSI)

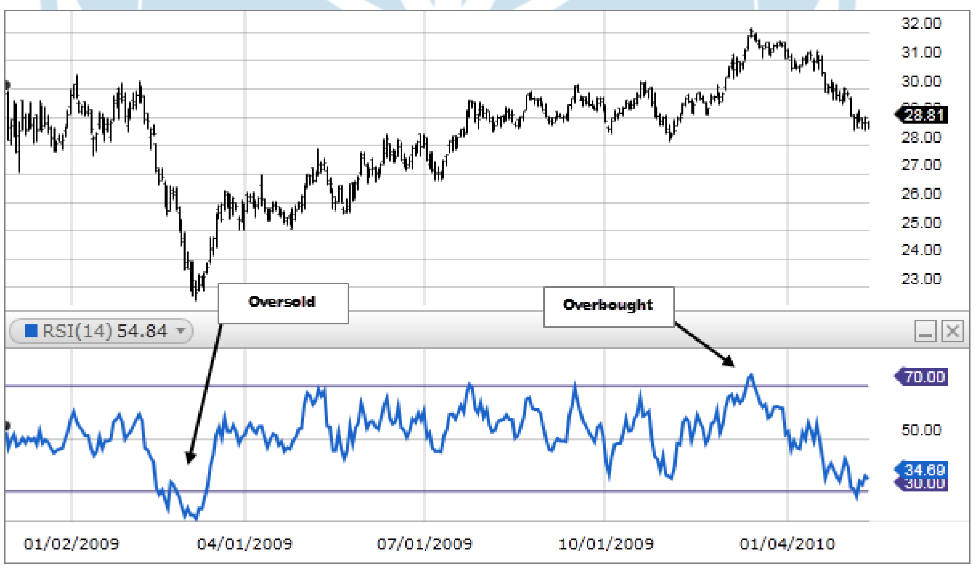

Figure 2.1 Relative Strength Index

Source: Fidelity (2021)

The Relative Strength Index (RSI) is a momentum indicator that acts as the measurement of the speed and change of price movements (Chen, 2020). It is categorized as a leading indicator, which means that signals would usually be shown before the price. The RSI is considered one of the most suitable indicators for traders to know if the currency that they purchased is overbought or oversold. The Relative Strength Index (RSI) oscillates between zero and 100. An overbought (RSI above 70) will show the uptrend in the market, thus traders will buy the currency for a long time. On the other hand, an oversold (RSI under 30) will show the downtrend in the market and traders will sell a currency for a long time and now the market will change its direction (Archer, 2012). Furthermore, there is also a trend called centerline crossovers in the Relative Strength Index which traders also tend to look for as a confirmation for trend formations. There is a possibility that a downtrend is occurring when the RSI is below 50 and a possible uptrend when the RSI is above 50. The Relative Strength (RSI) indicator will be explained in more detail in the next chapter.

The equation for calculating the RSI:

$$Relative\ Strength\ Index$$

$$= 100 - \left[\frac{100}{\left(1 + \frac{Average\ of\ Upward\ Price\ Change}{Average\ of\ Downward\ Price\ Change}\right)}\right]$$

2.8.2 Bollinger Bands

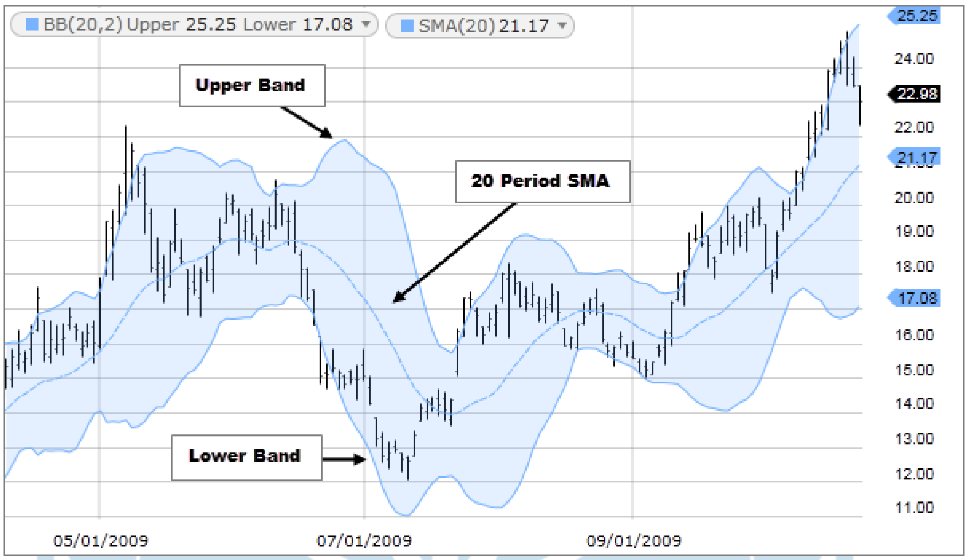

Figure 2.2 Bollinger Bands Indicator

Source: Fidelity (2021)

The Bollinger band is another well-known technical indicator that is defined by a set of trend lines. The function of Bollinger bands is to help determine whether the trading prices are high or low on a relative basis (Fidelity, 2020). In order to calculate the Bollinger band indicator, the first step is to enumerate a simple moving average. Commonly, a 2-day SMA (Standard Moving Average) is used which would average out the closing prices for the first 20 days as the first data point, and so on for the next data (Investopedia, 2020). By using the formula, the upper and lower bands will be produced (Hayes, 2020). In spite of the fact that the Relative Strength Index (RSI) is an effective technical indicator, it would be much more effective to combine the tool with other technical indicators in making decisions for opening a position. This is due to the fact that the RSI is considered as a leading indicator, which typically means that it send signals before the prices on the chart which can result on the signals being false or too early.

Formula:

- The second line (upper Bollinger band) = Moving Average of the Close + the Standard Deviations
- The third line (lower Bollinger band) = Moving Average of the Close – the Standard Deviations

2.8.3 Moving Average Convergence Divergence (MACD)

Figure 2.3 MACD Indicator

Source: Investopedia (2020)

The Moving Average Convergence Divergence (MACD) is an indicator that uses the trading style momentum and shows the relationship between two moving averages of a security's price (Investopedia, 2020). It consists of two exponential moving averages, the signal line (red) and MACD line (blue). In addition, the MACD indicator also consists of a histogram located behind the lines. The histogram presents the difference between the signal line and the MACD line. As the difference becomes larger, the length of the histogram or bar chart will become longer. The technical signals will be triggered when it crosses above (to buy) or below (to sell) its signal line. The value of MACD will be positive if the 12-period EMA (blue MACD line) is above the 26-period WMA (red signal line), and vice versa.

The equation for Moving Average Convergence Divergence:

$$MACD = 12\ Period\ EMA - 26\ Period\ EMA$$

2.8.4 Moving Average (MA)

Figure 2.4 Three Moving Averages (25, 50 and 100 MA)

Source: Meta Trader 5 (2021)

The Moving Average (MA) is an indicator for stocks but is often used in technical analysis for trading in the foreign exchange market. Normally in statistics, the function of the moving average is in calculating the averages of data. In technical analysis, the function of the moving average is similar in which the moving average of the prices are calculated to create an updated average price where traders are able to pin down the direction of the trend to find out the resistance level and support. The moving averages are customizable depending on the trader's trading objectives, however the most common time periods used are 15, 20, 30, 50, 100, and 200 days. There is no right and wrong time frame which the traders can choose from, but it is essential to test out many different time frames to find out which period works best for you. Traders can decide the time periods based on their trading objectives, whether they are conducting short-term trading or long-term trading.

If the moving average rises, an uptrend signal is presented with an uptrend and a downtrend signal is presented if the moving average declines. Likewise, if the moving average with the shorter period crosses above the moving average with the longer period (bullish crossover), an upward momentum is established. Contrarily, if the moving average with the shorter period crosses below the moving average with the longer period (bearish crossover), a downward momentum is established.

There are 2 types of moving averages:

1. Simple Moving Average (SMA)

The simple moving average (SMA) is one of the simplest indicators used in technical analysis as it easier to set. In statistics, it is calculated using the arithmetic mean of a given set of values. In the foreign exchange (FOREX) market, the simple moving average (SMA) is defined as a currency pair's average closing price over a specific period of time. Since the prices changes continuously, the moving average will change accordingly. This explains the reason why the average is named "moving".

The equation for calculating the simple moving average (SMA):

$$SMA = \frac{(P_1 + P_2 + P_3 \ldots + P_n)}{n}$$

2. Exponential Moving Average (EMA)

The exponential moving average (EMA) is similar to the simple moving average (SMA) in a way that it observes price trends over time; however the difference is that the EMA is a type of weighted moving average (WMA). This necessarily means that the EMA is a much more improved version of the SMA that gives more weight to the most up to date data of the prices, thus reacting more quickly to the price changes (Maverick, 2020).

2.8.5 Moving Average of Oscillator (OsMA)

Figure 2.5 OSMA and MACD Trading Signals

Source: ForexTester.com (2021)

The moving average of oscillator (OsMA) is type of technical indicator that displays the difference between an oscillator and the moving average of that specific oscillator (Mitchell, 2021). One of the examples of an oscillator used in this indicator is the moving average convergence divergence (MACD) which is presented in a histogram. The histogram is formed based on the difference between the signal line (oscillator) and the MACD line (moving average). Traders would often use OsMA to find viable trend signals to open up a position in the market. It is known that the moving average (MA) tend to move slower than its oscillator, hence an increasing OsMA is bullish as the prices are rising, and vice versa. In addition, if the OsMA moves from negative (below 0) to positive (above 0), it may signify an uptrend will begin and that the price will rise. On the other hand, if the OsMA moves from positive to negative, it may signify that a downtrend will begin and the price will fall.

The formula for OsMA:

$$OsMA = Value\ of\ Oscillator - Value\ of\ Moving\ Average\ (MA)$$

2.8.6 Parabolic SAR

Figure 2.6 Parabolic SAR Indicators

Source: Trading View (2021)

The parabolic SAR (Stop and Reverse) was developed by J. Welles Wilder Jr., used as a trading strategy to help traders identify the direction of the trend and find out possible reversals (Murphy, 2019). The indicator can be seen on the trading chart as a series of dots, where a buy signal would take place when the dots move from above the price towards the below the price and a sell signal would take place when the dots move from below the price towards the above price (Mitchell, 2021). However, in order for the parabolic SAR to work more effectively and produce better results, traders might use the indicator along with the other technical indicators such as the moving average (MA), or trend line as a support.

2.8.7 Stochastic Oscillator

Figure 2.7 Stochastic Oscillator Indicator

Source: Trading View (2021)

The stochastic oscillator is another well-known technical indicator developed by George Lane used to locate oversold and overbought signals over a period of time (Hayes, 2020). The stochastic oscillator follows the speed of the price changes and momentum with the range being always between 0 until 100. An overbought signal is considered to be those above 80 and oversold signal is considered being below 20. The period of the stochastic oscillator can be adjusted by traders according to their specific needs; however the most common time period used is 14 days.

One of the disadvantages of using the stochastic oscillator is during volatile market situations, which often happens in the foreign exchange (FOREX) market. As a result, false signals are given which would cause traders to lose their money.

2.8.8 Money Flow Index (MFI)

Figure 2.8 Money Flow Index (MFI) Indicator

Source: Trading View (2021)

Similar to the stochastic oscillator, the Money Flow Index (MFI) is another type of a momentum technical indicator that have the capability to determine overbought and oversold signals for an asset which fluctuates in a range between 0 and 100, which makes it an oscillator (Mitchell, 2021). However, instead of using just the prices like the relative strength index (RSI), the money flow index combines price and the volume data. Due to this reason, the money flow index is often called as the volume-weighted relative strength index (RSI). In addition, the indicator is able to locate positive and negative divergences as well (Mitchell, 2020). There are two types of divergences in the Money Flow Index (MFI); a bullish divergence, which takes place when the price changes to a new low while the MFI, shows a higher low. This indicates that there is a decrease in the selling pressure and this would be a good chance for traders to make a buy position as other buyers are expected to also be taking over the market.

On the other hand, the bullish divergence of the MFI takes place when the price changes to a new high while the MFI shows a lower high. This simply indicates that the buying pressure is decreasing and that traders should open a sell position. In addition, there is also a term of failure swings, which traders completely relies on the

MFI and ignores the price changes. There are several steps that indicate a bullish MFI failure swing and a bearish MFI failure swing;

- **Bullish Money Flow Index (MFI) failure swing:**

1. MFI is oversold (< 20)
2. MFI recovers and increases above 20
3. MFI goes down but stays above 20
4. MFI rises above the previous high.

- **Bearish Money Flow Index (MFI) failure swing:**

1. MFI is overbought (> 20)
2. MFI falls below 80
3. MFI somewhat goes up but stays below 80
4. MFI drops below the previous low

The equation for calculating the MFI:

$$Money\ Flow\ Index = 100 - \frac{100}{1 + Money\ Flow\ Ratio}$$

Where:

$$Money\ Flow\ Ratio = \frac{14\ Period\ Positive\ Money\ Flow}{14\ Period\ Negative\ Money\ Flow}$$

$$Raw\ Money\ Flow = Typical\ Price * Volume$$

$$Typical\ Price = \frac{High + Low + Close}{3}$$

2.9 Terminology

It is important to recognize and understand some of the most common terminologies in the Foreign Exchange (FOREX) market before conducting the trading activity. Some of these relevant terminologies are defined as follow:

- ***Currency Pair*** – The Foreign Exchange (FOREX) market is traded in currency pairs where each currency is simultaneously purchased and sold. For example, if a trader purchases XAU/USD, the trader will purchase XAU or Gold ounce as the base currency and sell the other currency, USD as the quote currency (Chen, 2021).

- ***Base Currency*** – The base currency is a currency that comes first in the currency pair. For example, EUR is the base currency in EUR/USD.

- ***Quote Currency*** – The quote currency is a currency that comes second in the currency pair. For example, USD is the quote currency in EUR/USD.

- ***Major Currency*** – USD is considered a major currency if it is involved in every currency pair whether as the base currency or quote currency. Some examples include: EUR/USD, GBP/USD, USD/JPY, and USD/CAD.

- ***Cross Pair*** – The cross currency pair is a currency pair that does not consist of the US dollar. These will be currency pairs like EUR/GBP, EUR/CHF, and CAD/JPY, and many others.

- ***Broker*** – In the Foreign Exchange (FOREX) market, a broker may also be known as a currency trading broker or a retail FOREX broker who has a role in providing access to the trading platform in order for traders to conduct the buying and selling of currency pairs. In return, the broker usually charges commission or a fix spread. For instance, a small margin would be added by the broker where a currency pair initially quoted at $5 to buy would be quoted at $7 by the broker and a currency pair initially quoted at $5 to sell would be quoted at $3 by the broker.

- ***Spread*** – It is known that every market has a spread, including the Foreign Exchange (FOREX) market. The spread is the difference between the selling (bid) price and the buying (ask) price of a specific currency pair (Investopedia, 2020).

- ***Pips*** – A pip is the smallest unit of measurement in the price of the currency pair (Lee, 2021). For trading XAU/USD on the Meta Trader 4 or the Meta Trader 5 platform, 1 micro lot equals to $1 for a target of 100 pips. For instance, if a trader purchases 1 micro lot (0.01 lots) of XAU/USD at a price from 1855.00 to 1856.00, it is equal to $1 or 100 pips. If the trader purchases 1 mini lot from 1855.00 to 1856.00, it is equal to $10 for 100 pips. In addition, if the trader purchases 1 lot from 1855.00 to 1856.00, it is equal to $100 for 100 pips.

- ***Lot*** – In the Foreign Exchange (FOREX) market, the currency pairs are traded in lots, which is the number of trading unit size that a trader will purchase or sell. The sizes of lots ranges, however the standard size for a lot is comparable to as much as 100,000 units of the base currency in the FOREX market. Other common lot sizes are known as the mini lot and micro lot.

- ***Leverage*** – Leverage is a very common concept in the FOREX trading activity where brokers offers traders the ability to borrow money so that the trader can receive more capital to invest in the currency pair (Snow, 2019). The leverage is often shown in a ratio, for example a leverage of 1:100 would mean that a $1,000 worth of deposit would give ability for the trader to trade until as much as $100,000. Traders are able to use this opportunity to increase their profit from the FOREX trading activity. However, it should be taken into notice that leverage could also increase losses as well. Since leverage is a type of loan and is provided by the broker, the amount of leverage that can be used for new traders might have a certain limit depending on the broker's requirement.

- ***Margin*** – In the Foreign Exchange (FOREX) market, the margin is the amount of money that a broker keep or hold in the account during a trader's open option until the trader would close their position.

- **Take Profit** – The Take Profit (T/P) is the exact price set by the trader for profit. When the price reaches the take profit limit, the position will be closed automatically and the trader will receive profit exactly that amount. Automatic trading systems like Meta Trader 4 and Meta Trader 5 provides traders with the take profit order limit and it is often used by short-term traders interested for obtaining a quick profit. Long-term traders are usually uninterested in setting a take profit as it would prevent the possibility to obtain much higher profit.

- **Take Loss** – The Stop Loss (S/L) is the exact price set by the trader for loss. When the price reaches the stop loss limit, the position will be closed automatically and the trader will result in a loss exactly that amount. The stop loss limit is often provided by trading systems to limit losses in volatile market conditions. This makes the stop loss function a very useful tool for all traders as their FOREX trading strategy.

- **Risk Management** – Risk management in the Foreign Exchange (FOREX) market involves an individual's actions in reducing the drawbacks of a trade. It should be clearly known that although higher risks would lead to higher chance of obtaining more profit, but it can also cause significant losses. For this reason, a trader must have the skill to manage their risks. Risk management can be implemented by first understanding the FOREX market and start with a demo account. Individuals can also manage their risks by setting stop losses, creating a good trading strategy, and also by managing their emotions and conduct the trading activity with a positive mindset.

3.0 Previous Research

Kermanshahi, S. (2014) conducted a research on “Testing the Power of Technical Analysis for Forecasting the Market Trend and Future Price in the FOREX Market”. The result confirmed that technical analysis is an effective technique in the Foreign Exchange (FOREX) market. It is known that one of the most important qualities of the FOREX market is that it is high in volatility, thus meaning that it tends to fluctuate dramatically and that traders are able to make money as well as lose money very quickly. It is essential to observe the past prices of the currency pair using technical analysis in order to predict the future movement of the prices. These signals will become a determinant to enter a position in the FOREX market. The study observes the strength of technical analysis in the period of one month, starting November 2013. Four of the most traded currency pairs are selected from the FOREX market, which include EUR/USD, AUD/USD, GBP/USD, and USD/JPY. Each profit or loss results will be categorized based on its floating time, which are the difference between the opening time and the closing time. It is concluded in the study that the most profitable positions are in the hourly category. This is a result to the less chances of volatility and dramatic movements of the positions. The researchers also concluded that implementing the technical analysis would alleviate the risk of losses in the FOREX market.

Majercakova and Gregus (2019) performed a research with the title "The Creation of the Convenient Investment Strategy in FOREX". The purpose of the study was to create the most suitable investment strategy with the analysis of the Foreign Exchange (FOREX) market. The researcher uses both technical and fundamental analysis to be implemented in the real trading activity. 10 positions were entered and 7 out of 10 of the positions resulted in a profit and 3 out of 10 resulted in losses. The researchers found that technical analysis is a reliable technique for trading as it is based on facts and not based on assumptions.

Alwiyah and Liyanto (2012) conducted a research on "Analisis Teknikal untuk Mendapatkan Profit Dalam FOREX Trading Online" with the purpose of finding profitable stability in predicting the movement of GBP/USD and EUR/USD currency pair prices. The study is based on technical analysis through the utilization of three technical indicators, which are the candle stick chart, Moving Average Convergence Divergence (MACD), and Stochastic Oscillator for within the day (intraday) trading and an hourly timeframe. These technical indicators will be the key determinants to take action whether to make a buy position or a sell position in the Foreign Exchange (FOREX) market. The trading process was conducted using virtual money and the result showed a 60% profit using the technical analysis. However, the experiment indicated inconsistency in the profit and the researchers suggested that more technical indicators should such as the Bollinger bands (BB) can be used. Thus, further research can be conducted by modifying and adding more indicators that suit the trading style.

Table 2.1

Previous Studies

No.	Researcher	Title	Publication	Variable	Result
1.	Kermanshahi, S. (2014)	Testing the Power of Technical Analysis for Forecasting the Market Trend and Future Price in the FOREX Market	LAP LAMBERT Academic Publishing, 2016	Candle Stick chart, Simple Moving Average (SMA), Moving Average Convergence Divergence (MACD), Relative Strength Index (RSI), Fibonacci Retracement	1) More than half of the positions entered resulted in a profit. This concludes that technical analysis is an effective technique in the Foreign Exchange (FOREX) market. 2) The most successful profitability obtained using the technical analysis were the hourly positions

2.	Majercakova, Gregus (2019)	The Creation of the Convenient Investment Strategy in FOREX	European Journal of Economics and Business Studies, Vol. 5(1), No. 80, April 2019	Candle Stick chart (Trend reversals and continuation patterns)	1) Technical analysis is considered to be a more reliable method as it is based on facts and not assumptions 2) The more positions entered and the more currency pairs are traded will result in more and faster losses
3.	Alwiyah, Liyanto (2012)	Analisis Teknikal untuk Mendapatkan Profit dalam FOREX Trading Online	SINERGI, Kajian Bisnis dan Ekonomi, Vol. 13, No.2 June 2012	Moving Average Convergence Divergence (MACD), Stochastic Oscillator	1) Trading in the FOREX market online is convenient, which allows all individuals to achieve financial and time freedom. 2) Technical and fundamental analysis is required in order to obtain profitability

					in the FOREX market. Using the MACD and stochastic oscillator indicator solely will not assure that the trading will 100% result in a profit. 3) The researchers suggested using other technical indicators, such as the Bollinger Bands (BB) to conduct further research on the technical analysis for obtaining profitability of the FOREX market.
4.	Roudgar, E (2012)	Forecasting Foreign Exchange Market Trends: Is Technical Analysis Perspective	Eastern Mediterranean University (EMU)	Candlestick Charts, Simple Moving Average (SMA), Relative Strength	1) The study confirmed the technical analysis to be a reliable instrument in

		Successful?		Index (RSI), Commodity Channel Index (CCI), Stochastic Oscillator, and Fibonacci Retracement	predicting the market trend 2) 63.34% of the transactions resulted in a profit 3) Technical analysis is not reliable for monthly trading

3.1 Theoretical Framework

The ***dependent variable*** or known as the criterion variable in this research is the profitability obtained from trading XAU/USD (Gold vs. US Dollar) in the Foreign Exchange (FOREX) market, whether it will result in a profit or loss. The ***independent variable***, or also known as the predictor variables in this study are the movement of prices of XAU/USD in the Foreign Exchange (FOREX) market. Thus, the independent variable will influence the dependent variable. In this case, it can be mentioned that the movement of prices of XAU/USD will influence the profitability, whether it will result in profit or loss. In this study, the movement of XAU/USD price will be observed using the candlestick chart, along with 3 other technical indicators which are the Bollinger Bands (BB), Moving Average Convergence Divergence

(MACD), and the Relative Strength Index (RSI). These technical indicators are supported using the Trading View Application, which is a software consisting of many of the well-known charts and technical analysis that can be used to locate trend and opportunity in the global markets. Furthermore, the Meta Trader 4 and Meta Trader 5 platform will be used to enter a position in the market, whether it is to make a buying position or a selling position. The figure below shows the theoretical framework of the study:

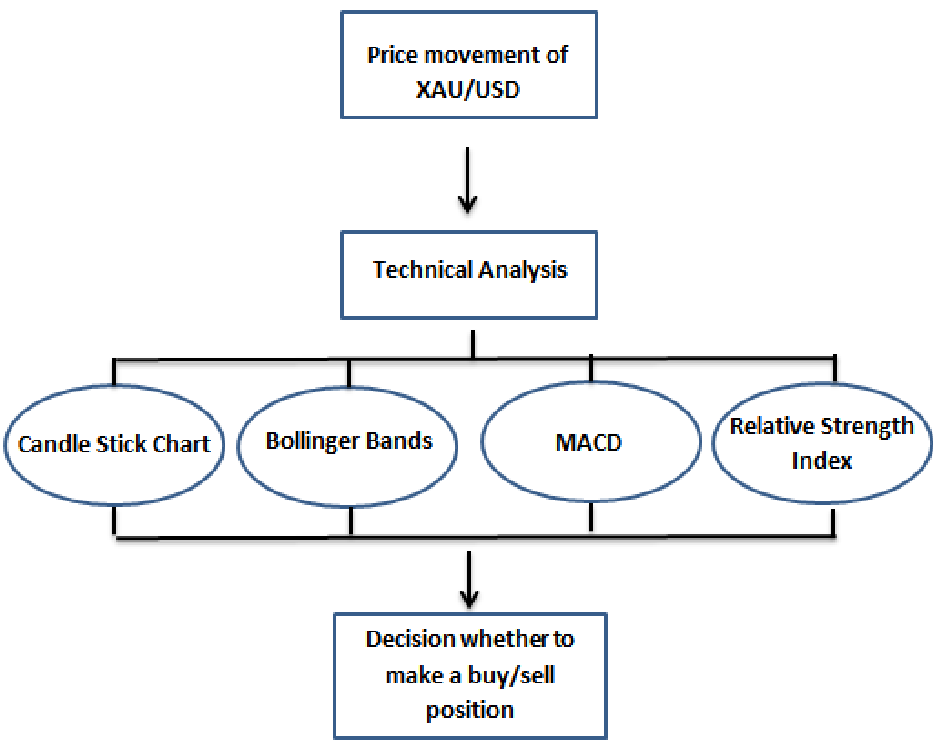

Figure 3.1 Theoretical Framework of the Study