



TECHNICAL ANALYSIS OF SHARE PRICE MOVEMENTS TO MAKE INVESTMENT DECISIONS IN TELECOMMUNICATIONS SUB-SECTOR SHARE LISTED ON THE INDONESIA STOCK EXCHANGE

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Abstract

The long-term strategy is generally used by investors who want to buy shares of a company with the aim of holding them for a long time. To determine the right momentum to buy or sell shares in the Telecommunications sub-sector, investors need to pay attention to several factors that influence stock prices, such as market conditions, company performance, government policies, and other factors that may affect the performance of the telecommunications industry as a whole.

This study aims to find out when the momentum is right to buy or sell shares in the telecommunication sub-sector. This type of research is descriptive qualitative research, with a total of 4 samples, this study uses four indicators, namely candlesticks, Moving Average, Stochastic Oscillator, and fuzzy logic. The data used in secondary data research where the data is obtained from IDX. The results of this study produce six recommendations for investment decisions in the Telecommunications sub-sector for the period January 2021 - March 2021. The movement of a company's stock price in the telecommunications industry can be influenced by various factors, including global and domestic market conditions, company performance, government policies, industry competition, and other factors that may affect the performance of the telecommunications industry as a whole.

Keywords: Stock Investment, Investment Decision, Technical Analysis, Stock Price

INTRODUCTION

Investment is an activity that requires self-control and patience in managing finances. In Indonesia, the capital market is one of the investment alternatives that can be chosen by the public. Through the capital market, investors can invest in various types of securities, such as stocks, bonds, mutual funds, and other capital market instruments (Hermuningsih, 2013). The Indonesian capital market is regulated by Law Number 8 of 1995 concerning the Capital Market and its implementing regulations. One of the objectives of this regulation is to protect the interests of investors and maintain the integrity of the capital market so that it remains efficient, transparent and reliable. Through the capital market, the public can benefit from long-term investments, while helping to finance the development of companies in Indonesia. However, before investing in the capital market, it is very important to understand the risks and potential benefits associated with each type of securities to be purchased.

Apart from that, it is also important to pay attention to aspects such as company background, financial performance, company management, and business prospects to avoid high-risk or unprofitable investments. Through the right approach, people can take advantage of the capital market as a profitable investment alternative and help develop their finances in the future.

It is important for investors or investment managers to carry out accurate and reliable analysis before buying or selling stocks. Technical and fundamental analysis are two types of analysis that can

be performed to help make the right investment decisions. Technical analysis involves observing the pattern of stock price movements in the past, while fundamental analysis involves analyzing the company's financial statements and business performance. In conducting the analysis, investors or investment managers need to pay attention to factors that can affect stock prices, such as global and national economic conditions, political situations, and other factors that can affect a company's business performance.

From these phenomena, the development of shares in the Telecommunications sub-sector has indeed attracted the interest of investors or traders, especially because the telecommunications sector has great potential to continue to grow along with the increasingly rapid development of technology. In addition, the level of public dependence on technology and telecommunications is also getting higher, so that companies in this sector have good prospects to continue to grow and develop in the future. However, before investing in Telecommunications sub-sector stocks, investors or traders must conduct thorough fundamental and technical analysis to ensure that the stocks selected have good prospects and the potential to generate profits. In addition, it is also necessary to understand the risks associated with investing in stocks, such as market risk and company risk, and consider an investment strategy that suits the goals and risk profile of each investor or trader.

Then the researchers here analyzed the stock using technical analysis to make stock buying decisions. Which analysis is used by investors for the short term. The indicators or methods used in this study are *Candle Stick*, *Moving Average* and *Stochastic Oscillator* and *fuzzy logic*. With reference to the decomposed phenomena, it can be formulated that the problems that will be examined in this study are 1) What is the price movement pattern of each stock in the Telecommunications sub-sector on the Indonesia Stock Exchange (IDX) using indicators *Candle Stick* period January 2021-March 2021?, 2) How is the trend of each share in the Telecommunications sub-sector on the Indonesia Stock Exchange (IDX) using indicators *Moving Average* period January 2021-March 2021?, 3) How to determine the right moment to buy or sell shares in the Telecommunications sub-sector on the Indonesia Stock Exchange (IDX) using indicators *Stochastic Oscillator* in the period January 2021-March 2021?, 4) How to determine recommendations to buy, hold and sell shares in Telecommunications sub-sector shares on the Indonesia Stock Exchange (IDX) using analysis *fuzzy logic* in the period January 2021-March 2021?

LITERATURE REVIEW

Capital Market

Therefore, investors need to carry out analysis and research before investing in capital market instruments. In the Indonesian context, the capital market has an important role in the economy because it can be a source of funding for companies to expand their business and increase competitiveness. In addition, investment in the capital market can also enhance the development of a

better and more transparent domestic capital market, as well as increase investor confidence in the Indonesian capital market.

Investment

Understanding the basic concepts of investing is very important in helping an investor understand and organize activities in the investment decision process. Some basic investment concepts that need to be understood include the meaning of risk and return, portfolio diversification, fundamental and technical analysis, as well as macroeconomic factors that can affect the capital market. By understanding these basic concepts, an investor can make more informed and accurate investment decisions. (Tandelilin, 2019).

Investments are made with the aim of obtaining financial benefits in the future, such as an increase in asset value, income from dividends or interest, or capital gains from the sale of investment assets at a higher price. 1) Portfolio diversification. Investments can also be made to reduce risk by dividing investment funds into several different types of financial instruments, so that if a loss occurs in one instrument, the profits from other instruments can cover the loss. 2) Increase skills and knowledge. Investing can also increase one's knowledge and experience in finance and investment, so that it can help someone make better financial decisions in the future.

Stock Analysis

Shares are securities in the form of certificates to show proof of ownership of a company. In stock investing, analysis is very important before making investment decisions (Parluhutan, Jauhari, Tri, 2010). Stock analysis is the process of gathering and evaluating information relating to companies whose shares are to be bought or sold, with the aim of determining the fair value of those shares and predicting future share price movements. There are two types of stock analysis, namely fundamental analysis and technical analysis.

Fundamental analysis is a type of analysis based on a company's financial performance, such as net profit, income, assets, debt, and others. This analysis aims to determine the fair value of the company's shares based on the company's actual financial condition (Jogiyanto, 2011). Meanwhile, technical analysis is a type of analysis based on stock price movements and trading volume in the market. This analysis utilizes stock charts and technical indicators to predict future stock price movements.

Fundamental Analysis

According to May (2010) that fundamental analysis is a method of conducting stock analysis which involves the use of company financial and operational information as well as economic and industrial factors that affect company performance. Fundamental analysis aims to evaluate the

intrinsic value of a stock and determine whether the stock is valued fairly or not. Through fundamental analysis, investors can determine whether a stock is worth buying, selling, or maintaining in their investment portfolio. According to Prasetyo, et al (2019) fundamental analysis is an analytical method that uses studies of economic conditions, industry and company conditions with the aim of calculating the fair value of a company's shares. This method is carried out by analyzing the company's financial statements, such as income statements, balance sheets, cash flows, and other financial reports. In addition, fundamental analysis also considers external factors such as market situations, government policies, and global economic conditions.

Technical Analysis

Technical analysis is used to estimate stock price movements at a certain time based on statistical data on price movements in the past. Technical analysis involves looking at stock price charts and patterns of price movements to identify trends, support and resistance. By paying attention to these price movement patterns, investors can make decisions to buy or sell shares. However, as mentioned, technical analysis should be used in conjunction with fundamental analysis to get a more complete picture of the condition of a company and its stock. (Mutmainah, & Sulasmiyati, S, 2017).

Technical analysts argue that everything that happens in the market, be it economic, social, political, cultural, etc., is already reflected in prices which are formed from transactions between requests (*demand*) and offers (*supply*). (David and Kurniawan, 2010). This becomes the basis for technical analysts to identify patterns of stock price movements that can assist in making investment decisions.

Moving Average

Moving Average (MA) is a technical indicator that is often used in stock market analysis. MA smoothes price movements by calculating the average price over a certain period of time, so that it can help show the direction of the current market trend (Ingrid tan, 2008). When the price line crosses the MA line from below, it indicates a bullish signal and a possible upward trend, and conversely, when the price line intersects the MA line from above, it indicates a bearish signal and a possible downward price trend. However, it is also important to combine MA with other indicators and fundamental analysis to make better investment decisions.

the main difference between the three types of moving averages is in the method of calculating the weight of the previous prices used in calculating the average. In the simple moving average (SMA), all prices used have the same weight. In the weighted moving average (WMA), newer prices are given more weight, while older prices are given less weight. In the exponential moving average (EMA), newer prices have greater weight, and the influence of older prices is exponentially reduced (Dian, Topowijono and Sri, 2016). Therefore, EMA is more responsive to recent price changes than

SMA or WMA. Important element in *moving average* is the amount of time it takes to calculate the average.

Stochastic Oscillator

Stochastic Oscillator is an analysis method that uses price velocity analysis techniques. This method is based on the theory that if the price of a stock is rising and has formed its highest price, the closing price will have a strong signal to approach the highest price. The Stochastic Oscillator is a momentum indicator that measures the current price position relative to the price range over a certain period of time. The indicator moves between 0 and 100, with the 80 and 20 being used as the overbought and oversold levels. When the %K and %D lines are above the 80 level, the stock is considered overbought and there is a possibility that the price will fall. Conversely, when the %K and %D lines are below the 20 level, the stock is considered oversold and there is a possibility that the price will rise. The intersection between the %K and %D lines can also give a buy or sell signal. However, as mentioned, it is better to use the Stochastic Oscillator in combination with other indicators, such as the Moving Average, to provide more accurate signals.

Fuzzy Logic

Fuzzy logic allows the use of uncertain or fuzzy values in decision making. The basic concept of fuzzy logic is that a variable can have values that are partially fuzzy, or between predefined categories. In its application, fuzzy logic is used to develop control systems that are more adaptive and able to handle uncertainty or variability in an environment or situation. Some examples of the use of fuzzy logic are in automatic control systems, speech recognition, image recognition, and financial predictions. (Monika, & Dalimunthe, 2017).

Framework of thinking

By using the stochastic oscillator indicator, this research can see the speed of stock price movements and find out whether a stock is oversold or overbought. In combination with moving averages, the stochastic oscillator can provide buy or sell signals on a stock. This study aims to identify the pattern of stock price movements of each company in the telecommunication sub-sector, as well as to provide buy or sell recommendations for these stocks. In this study the object of research is in the telecommunications sub-sector which is listed on the Indonesia Stock Exchange (IDX). In his observations this research was assisted by *software investing.com* whose stock price data is depicted in the form graphics. The graphics used are *candlestick*, which explains the pattern of stock price movements of each issuer. After the graph appears then assisted by *indikator moving average* which aims to find pattern *trend* shares of each company, and the third uses indicator *stochastic oscillator*.

METHOD

Data Types and Sources

In this study the authors used qualitative research, namely data presented in the form of verbal words, not in the form of numbers. The qualitative research approach indeed places more emphasis on explanations related to the phenomenon under study, so it is more suitable for use in research that requires a deep understanding of the subject under study. Secondary data sources can also provide valuable information in research, especially in terms of historical information and publicly available data. However, it is important to pay attention to the validity and reliability of the data used, especially in research that relies on secondary data sources.

Population and Research Sample

The population in research is the entire object, individual, or group that is the focus of the research and wants to be given a generalization of the research results (Sandjaja and Albertus, 2011). Populations can be humans, animals, objects, places, organizations, or others that are relevant to the research topic. The population in this study is all stock price data in the Telecommunications sub-sector which are listed on the Indonesia Stock Exchange (IDX) for the 2021 period.

Purposive sampling is a sampling technique that selects research subjects based on certain criteria or with a specific purpose. (Sugiyono, 2019). The purpose of this technique is to select samples that are representative or in accordance with certain characteristics to be studied, thereby facilitating data analysis and producing more accurate and relevant findings. Therefore, it is necessary to carefully select the criteria and sample selection process in order to produce a representative and reliable sample for data analysis. So the object of this research is a company that meets the company criteria, namely a company that is active in buying and selling shares during the period January 2021-March 2021.

The company under study is a telecommunication sub-sector company Which listed on the Indonesia Stock Exchange in 2021. A list of case studies was carried out in the following table:

Table 1 List of Telecommunication Sub-Sector Shares for the 2021 Period

NO	Stock code	Issuer Name
1.	EXCL	XL Axiata Tbk.
2.	BRAKES	Smartfren Telcom Tbk.
3.	ONE	Indosat Tbk.
4.	TLKM	Telekomunikasi Indonesia Tbk.

Source: www.idx.com

Method of collecting data

The method used to collect data in this research is literature study. Literature study can provide information about theories or concepts related to research, relevant previous research results, statistical data, policies or regulations related to research, and other sources that can support research. Literature study can be carried out by accessing available sources of information such as books, scientific journals, research reports, official websites, and other trusted sources (Sugiyono, 2019). In addition, literature study can be carried out using search engines or databases that contain sources of information. A good and careful literature study can help researchers obtain the necessary information and develop a better understanding of the topic under study.

Data analysis technique

In this study, researchers used a qualitative descriptive research method. Arifin (2014) revealed that qualitative descriptive research aims to provide a complete, detailed, and accurate description of the phenomenon studied. This method can be done through data collection by means of observation, interviews, document studies, and other techniques appropriate to the object of research.

In this study, the data analysis techniques used include the following:

1. Candlestick analysis. At this stage, an analysis of the candlestick patterns formed on the stock price movement chart is carried out. Candlestick patterns are used to identify changes in trend direction and buy or sell moments. Some commonly used candlestick patterns are Doji, Hammer, and Hanging Man.
2. Moving Average analysis. Next, an analysis of the Moving Average (MA) lines formed on the stock price movement chart is performed. This analysis aims to identify trends and potential changes in trends. If the MA 21 line is above the MA 34 and MA 90 lines, then the trend tends to be bullish (up), and vice versa if the MA 21 line is below the MA 34 and MA 90 lines, the trend tends to be bearish (down).
3. Stochastic Oscillator analysis. At this stage, an analysis of the Stochastic Oscillator indicator is carried out. This analysis is used to identify selling and buying moments, as well as whether the stock is oversold or overbought. If the %K and %D lines are below 20, then the stock is oversold and the potential to go up is greater. Meanwhile, if the % K and % D lines are above 80, then the stock is overbought and the potential to fall is greater.
4. Fuzzy Logic Analysis. At this stage, analysis is carried out using the fuzzy logic method to provide investment decision recommendations based on a combination of the results of the previous analysis. In this analysis, the results of the analysis are weighted using the fuzzy membership function. From the results of this analysis, recommendations are given whether the shares are worth buying or selling, or should be held.

DISCUSSION AND RESEARCH RESULTS

1. PT. XL Axiata Tbk

XL is one of the largest telecommunications operators in Indonesia, providing cellular, internet and data services. The company has undergone various ownership changes since it was founded in 1995. In 2005, XL conducted an initial public offering and registered its shares on the Indonesia Stock Exchange (IDX), and in 2009 changed its name to PT XL Axiata Tbk. after joining Axiata Group Berhad. Currently, the majority of XL shares are owned by Axiata through Axiata Investments (Indonesia) Sdn. Bhd (66.5 percent) and the rest held by the public (33.5 percent). In the Indonesian telecommunications industry, XL competes with other telecommunications operators such as Telkomsel, Indosat Ooredoo and Hutchison 3 Indonesia.

With more than 17 years of experience operating in the Indonesian market, PT XL Axiata Tbk. (Hereinafter referred to as “XL” or the “Company”) is one of the leading cellular service providers in Indonesia. Currently, XL is seen as one of the leading cellular service providers for Data and Call in Indonesia. As one of the leading cellular telecommunications companies in Indonesia, through a wide range of networks and services throughout Indonesia, XL provides services for retail customers and offers business solutions for corporate customers. These services include Data, Voice, SMS and other cellular telecommunication value added services. XL operates a network on GSM 900/DCS 1800 and IMT-2000/3G technology. XL also holds a Content Provider Service Provider License, an Internet Access Service Provider (ISP) License, an Internet Inter Connection Service Operations License (NAP), an Internet Telephone Service Operations License. for Public Purposes (VoIP), a Closed Fixed Network/Leased Line Operations License as well as a Money Transfer Service Operations License and an E-Money Issuer License from Bank Indonesia which enable XL to be able to provide money transfer services to its customers.

2. PT. Smartfren Telecom Tbk

PT Mobile-8 Telecom Tbk is a cellular service provider that uses CDMA technology base and was established in December 2002. Mobile-8 acquired two licensed cellular telephone operators in 2003, namely Komselindo and Metrosel, and launched prepaid cellular services under the brand "Fren" in December 2003. In April 2004, Mobile-8 also launched a postpaid cellular service on the same network. Mobile-8 then acquired another licensed cellular telephone operator, namely Telesera, in September 2004.

The company also immediately completed the transition of the telecommunication system operated by the three licensed operators that were acquired from an analog cellular system to a CDMA digital cellular system. In 2006, Mobile-8 introduced 3G services on the CDMA EVDO network, and conducted an initial listing of shares on the Indonesia Stock Exchange (formerly the Jakarta Stock Exchange). The Company's steps in the capital market continued, where in 2007 Mobile-8 succeeded in issuing its first Rupiah bonds which were also listed on the Indonesia Stock

Exchange. Then, the Company also enlivened the regional capital market by issuing its first Eurobond which was listed on the Singapore Stock Exchange.

In April 2008, Mobile-8 PT Smartfren Telecom, Tbk. has taken several significant innovations in the telecommunication industry in Indonesia. The "World Passport" feature that allows customers to use Smartfren services abroad is an example of how Smartfren tries to meet the needs of its customers. Apart from that, Smartfren also claims to be the first CDMA operator in the world to provide BlackBerry services, demonstrating their focus on innovation and offering the latest solutions to customers. With values such as being the best partner for customers and offering smart solutions, Smartfren strives to improve the customer's life experience in communicating.

3. PT. Indosat Tbk

In 1994, Indosat was listed on the Indonesia Stock Exchange and the New York Stock Exchange, 65% owned by the Indonesian government and 35% by the public. Apart from mobile and landline services, Indosat Ooredoo also offers various social media, Internet and data communications such as SMS and MMS, as well as data services such as GPRS, EDGE, 3G and 4G. Indosat Ooredoo also offers mobile broadband services through Bolt! Provides high-speed Internet access on 4G LTE network.

In addition, Indosat Ooredoo also offers various business and enterprise solution services such as cloud services, network connectivity, and IT solutions to assist companies in managing and optimizing their business.

In February 2013, the Qatari telecommunications company, formerly known as Qtel and controlling 65 percent of Indosat shares, changed its name to Ooredoo and plans to replace all companies owned or under its control in the Middle East, Africa and Southeast Asia with the name Ooredoo in 2013 or 2014.

4. PT. Telekomunikasi Indonesia Tbk

PT. TELKOM, Tbk is one of the state-owned enterprises engaged in telecommunications services. Its history indeed began with a private business entity providing postal and telegraph services in 1882 which was founded by the Dutch colonialists in Indonesia. In 1905, the Dutch colonial government established 38 telecommunication companies in Indonesia. Then in 1906, the Dutch East Indies government formed a Post, Telegraph and Telephone Office (PTT) which took over the management of all telecommunication companies in Indonesia. After Indonesian independence, in 1961, PTT changed its name to the National Post and Telecommunications Company (PN Postel). Then in 1965, PN Postel was merged with private telecommunications companies to become the Public Telecommunications Company (Perumtel). In 1991, Perumtel changed its name to PT Telekomunikasi Indonesia (TELKOM). Until now, TELKOM continues to grow and become one of the largest telecommunications companies in Indonesia by providing a

variety of telecommunications and information network services to the general public, all the way to remote areas throughout Indonesia.

PT. TELKOM Indonesia, Tbk underwent many important changes, namely internal restructuring, internal cooperation, and Initial Public Offering (IPO). In running its business, PT. TELKOM Indonesia, Tbk offers various types of telecommunications services such as mobile telephone system (STBS) customer circuit services, telex, satellite transponder leasing, VSAT (Very Small Aperture Terminal), and certain value added services. On July 1, 1995, the organization PT. TELKOM Indonesia, Tbk succeeded in restructuring the types of telecommunications services into seven regional divisions and one network division that manages the main business fields. The regional division is used as a substitute for the WITEL structure which previously had a certain territorial area, but only provided local telephone services and received a share of DLD and IDD services. Meanwhile, the network division provides long-distance telecommunications services. With this restructuring, PT. TELKOM Indonesia, Tbk can be more focused and efficient in providing telecommunications services to the public.

PT. Telekomunikasi Indonesia, Tbk, (Telkom) Currently, the shares are owned by the Government of Indonesia (53.6%), and 46.4% are owned by the Public, Bank of New York, and Domestic Investors. Telkom has 13 subsidiaries. PT Telekomunikasi Indonesia, Tbk. is indeed the largest telecommunications company in Indonesia with a variety of communication services provided, including broadband services which have dominated the market in Indonesia. Having a vision of becoming a leading company in implementing TIMES in the regional area, Telkom continues to strive to meet consumer needs by ensuring the adequacy of internet gateways and developing new, more innovative services.

CONCLUSION

Based on the research findings, there are five to six investment decision recommendations that can be given, which are more specific and proportional to the investor's position, namely buy, the red zone avoids losses, the yellow zone avoids losses, holds, takes profits, and takes alternative profits if possible. Buy recommendations are aimed at investors who do not yet own shares and wish to invest in research subjects, while other recommendations are intended for investors who already own research subject stocks and need investment advice. However, the number of recommendations can be five or six depending on the price data for each research subject. Significant purchase prices are calculated based on Support and Resistance prices which are processed using Fibonacci analysis and Fuzzy Logic. If the calculation results show that the absolute purchase price does not meet the fuzzy system, then only five investment decision recommendations are given, and profit-taking alternative recommendations are not given.

According to research conducted, telecommunications appears to have the potential to provide attractive returns in the short term. Technical analysis can help traders to take advantage of these opportunities and provide signals when it is the right time to make buy or sell transactions. However, keep in mind that technical analysis is only one factor that needs to be considered in making investment decisions. Fundamental factors such as company performance and market conditions must also be considered carefully before deciding to invest in a stock. Always carry out comprehensive research and analysis before making important investment decisions.

Stochastic is a technical indicator used in chart analysis to help identify overbought and oversold conditions on stock prices. In oversold conditions, the stock price is thought to have fallen too much and has the potential to rise, so that it can provide a signal to make a purchase. Meanwhile, in an overbought condition, the stock price is estimated to be too high and has the potential to fall, so that it can provide a signal to sell.

REFERENCES

- Arifin, Zainal. (2014). *Penelitian Pendidikan: Metode Dan Paradigma Baru*. Bandung: Pt. Remaja Rosdakarya
- Kodrat, David Sukardi dan Kurniawan Indonanjaya (2010), *Manajemen Investasi, pendekatan teknikal dan fundamental untuk analisis saham*. Yogyakarta: Graha Ilmu
- David. May 2010. " Analisis Cash Position, Leverage, Growth, Lliquidity terhadap Dividend Payout Ratio". *Jurnal Manajemen* ISSN 1907-4913 No. 1 / Vol.5 /
- Malinda, Maya dan Martalena (2011), *Pengantar Pasar Modal*. Yogyakarta: ANDI
- Tan, Ingrid (2008), *Stock Index Trading*. Yogyakarta: ANDI
- Jogiyanto H. (2011), *Teori Portofolio dan Analisis Investasi*. Yogyakarta : BPFE-Yogyakarta
- Hermuningsih, Sri. 2013. Profitability, Growth Opportunity, Capital Structure and The Firm Value. Bulletin of Monetary, Economics and Banking. *Jurnal Ekonomi* Yogyakarta: University of Sarjanawiyata Taman Siswa Yogyakarta.
- Mutmainah, & Sulasmiyati, S. (2017). *Analisis Teknikal Indikator Stochastic Oscillator dalam Menentukan Sinyal Beli dan Sinyal Jual Saham (Studi Pada Sub Sektor Konstruksi dan Bangunan di Bursa Efek Indonesia Periode 2014-2016)*. 49(1), 1-8.
- Monika, N. E., Yusniar, M. W., & Dalimunthe, R. F. (2017). Analisis teknikal menggunakan indikator macd untuk membeli dan menjual dalam perdagangan saham. *Prosiding Seminar Nasional ASBIS 2017*.
- Prasetyo, P., Laely, N., & Subagyo, H. (2019). Analisis Komparatif Penggunaan Metode Stochastic, Moving Average Dan MACD Dalam Mendapatkan Keuntungan Optimal Dan Syar'i (Study Pada Jakarta Islamic Index 2016-2018). *JIMEK: Jurnal Ilmiah Mahasiswa Ekonomi*. <https://doi.org/10.30737/jimek.v2i1.414>
- Asthri, D. D. P., Topowijono, & Sulasmiyati, S. (2016). *Analisis Teknikal Dengan Indikator Moving Average Convergence Divergence Untuk Menentukan Sinyal Membeli dan Menjual Dalam Perdagangan Saham (Studi Pada Perusahaan Sub Sekto Makanan Dan Minuman Di Bei Tahun 2013-2015)*. *Jurnal Administrasi Bisnis (JAB)*, 33(2), 41-48.
- Sugiyono, (2019). *Metode Penelitian Kuantitatif, Kualitatif, Dan r&d*. Bandung: Afabeta
- Tandelilin Eduardus. (2019). *Pasar Modal: Manajemen Portofolio & Investasi*, Yogyakarta: Kanisius
- Sandjaja, dan Heriyanto Albertus. (2011). *Panduan Penelitian*. Jakarta: Prestasi Pustaka Karya
- Situmorang, Parluhutan, Jauhari Mahardhika, dan Tri Listiyarini. 2010. *Jurus-Jurus Berinvestasi Saham Untuk Pemula*. Jakarta: Transmedia.