

ACCURACY COMBINATION TEST OF CLASSICAL AND MODERN TECHNICAL ANALYSIS: A CASE STUDY IN STOCK OF PT WIJAYA KARYA TBK

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ABSTRACT

The research aimed to measure the accuracy and combination of Classic and Modern Technical Analysis. PT Wijaya Karya Tbk (WIKA)'s stock in two periods was the sample of research. Technical analysis was used to predict stock prices by observing changes in historical share price. Practically, technical analysis is divided into Classic Technical and Modern. Research was conducted by library study and using a computer software. Microsoft Excel for the simulation and Chart Nexus for analyzing Modern Technical Analysis. The research period started in January 1, 2013 until December 31, 2013 and January 1, 2014 until December 31, 2014. The Classic Technical Analysis used Support, Resistance, Trendline, and Flag Pattern. Meanwhile for Modern Technical Analysis used Moving Average, Stochastic, Moving Average Convergence Divergence (MACD) indicator. The Classical Technical Analysis gave less result than Modern Technical Analysis. The classical give 14 investment decisions in two periods. The average return of Classical Technical is 15,50%. Meanwhile the Modern Technical Analysis gave 18 investment decisions in two periods. The average return of Modern Technical is 18,14%. Combining Classic Technical Analysis and Modern Technical Analysis gave 20 investment decisions with the average rate of return 20,41%.

Keywords: test accuracy, classical technical analysis, modern technical analysis

INTRODUCTION

Generally, there are two methods used in analyzing stocks: fundamental analysis and technical analysis. The fundamental analysis uses the information from the company's financial data to calculate the valuation of stock's fair value. Based on Darmadji and Fachrudin (2011), the technical analysis uses the historical stock's price data that released daily or annually. Technical Analysis uses chart to analyse the stocks. Based on Ong (2008), the technical analysis uses specific indicators. This research tries to apply the technical analysis. Based on Syamsir (2004), technical analysis refers to the trend known as up trend or down trend. Basically, the technical analysis is divided into two; classical technical analysis and modern technical analysis. In classical, we need to learn about the chart patterns. The charts analyze the price movement

(Bulkowski, 2005). Based on Fischer and Fischer (2003), the pattern of charts is usually divided into two, reversal pattern and continuation pattern. While in modern technical analysis, the indicators where the implementations use the computer systems should be analyzed.

Based on Elder (2002), the indicators are the time series of data point generated from the implementation of a formula towards the price stocks data. The data is the combination of opening, high, low or closing price on a range of period. Some indicators use only the closing price while others use the volume or opening price in the formula (Coky, 2010). The technical analysis decision in selling or buying is based on historical price and the volume trading activity. The historical information is based on the prediction towards the pattern of stock price in the future.

Table 1 The Market Capitalization of Construction Sector Stocks Until December 31, 2014

No	Ticker	Company Name	Total Outstanding Shares	Price (31 December 2014)	Market Capitalization
1	WIKA	PT Wijaya Karya Tbk	6.139.968.000,00	3.680,00	22.595.082.240.000,00
2	PTPP	PT Pembangunan Perumahan Tbk	4.842.436.500,00	3.575,00	17.311.710.487.500,00
3	WSKT	PT Waskita Karya Tbk	9.632.236.000,00	1.470,00	14.159.386.920.000,00
4	ADHI	PT Adhi Karya Tbk	1.801.320.000,00	3.480,00	6.268.593.600.000,00

Source: *idx.co.id*

According to the analysis, the author proposes research about the application of technical analysis to build investment decision. The research applies technical analysis by using classical and modern technical analysis in making decision for selling and buying, if both of them are combined simultaneously in one stock analysis for two years. From this research, the investors will gain benefit in determining the investment decision in buying or selling stocks by technical analysis.

The research will apply the accuracy of classical and modern technical analysis combination on construction sector. The sample of the research is PT Wijaya Karya, Tbk (WIKA). WIKA is one of the biggest State Owned Enterprise (SOE) construction stocks. The market capitalization of WIKA is the leading SOE construction stock (See Table 1). The issues in the research discuss on whether the combinations of classical and modern provide higher return result compared to uncombined classical and modern technical analysis.

METHODS

The research methodology was performed using literature review and technical software application. The research period was divided in two periods; starting from January 1, 2013 – December 31, 2013 and January 1, 2014 – December 31, 2014. The source of data was obtained from Software Chart Nexus (2012). The variables used were provided from the calculation of historical price stocks using the combination of classical technical and modern technical analysis. The research materials were also obtained from supporting books and other sources.

The research was a descriptive analysis using combination of classical and modern technical analysis to determine in buying and selling. At first, the analysis process was separated, then it was combined to test the accuracy of classical and modern technical analysis. The sample of research used purposive judgmental sampling. The sample of research was intentional and determined. The research was carried out by testing the technical analysis and combining the classical and modern technical analysis application on WIKA's stocks.

In classical technical analysis, the data was analyzed by using the pattern of classical technical

analysis as variables to determine in buying or selling. In modern technical analysis, the data was used the modern indicators that applied on software chartnexus (Chart Nexus, 2012). The application was adjusted by calculation to provide buy or sell investment decision. After the analysis was done, the data are analyzed by combining the classical and modern technical analysis to produce buy or sell investment decision.

RESULTS AND DISCUSSIONS

The limitation of research was used to verify the classical and modern technical analysis of the variable used. In classical analysis, the author used classical indicators i.e. support, resistance, uptrend, downtrend, sideways, and flag. The investment decisions were resolved if there are two signal "buy" or "sell" from the variables used for analysis using classical technical analysis patterns was not always found simultaneously on the historical stock prices. The variables were occupied on modern technical analysis ie Moving average (MA), Stochastic, and Moving Average Convergence Divergence (MACD). The investment decision occurred if there are two signal "buy" or "sell" from the whole modern technical indicator.

The accuracy of the test was done by combining classical and modern technique which is formed of at least one signals to buy or sell in the classical technical analysis and one signal buy or sell in the modern technical analysis. The whole investment decisions to buy or sell are simulated to be measured for accuracy. Simulation transaction was not included the cutting costs and administrative fees related to the investor's account. WIKA's historical stock price in the form of candlestick chart was analyzed during the second period. The period was on January 1, 2013 – December 31, 2013 and January 1, 2014 – December 31, 2014, as seen in table 1.

In the first period starting on January 1, 2013 untill December 31, 2013. The following chart on 2013 of WIKA stock was used classical technical analysis (See on Figure 1).

The uptrend pattern occurred on WIKA since 2012 and then continued in 2013. When viewed from a historical chart, WIKA share price in the period January 2013 - December 2013 increased and moved uptrend until the end of May 2013. The research choosed WIKA as a sample, because the stock was a

leading company in sector construction by exploiting market timing of the investment in these stock.

The results of the classical analysis technique at WIKA in January 1, 2013 to December 31, 2013, showed that there were three kinds of patterns that were used to analyze historical stock that made the decision to buy or sell. First, support and resistance which consist of eight lines of support and resistance coded to support S and R for resistance. Secondly, trendline which consists of five trendline patterns, i.e. three uptrend patterns and two downtrend patterns. Third, flag which consists of three flag patterns.

The classical technical analysis used patterns of measurement, then there would be six investment decisions to buy and sell with the minimum of two measurements of variables applied as buy or sell signals. Investment decisions were applied using a simulated transaction as follows.

On Table 2, the initial account balance was invested on WIKA Rp. 20 million from January 1, 2013 until December 31, 2013 was simulated using classical technical analysis. On Table 2, there were

occurred six investment decisions during this period with the composition of three decisions to buy and three decisions to sell.

The explanation of investment decisions on WIKA occurred and influenced by some of the classical technical patterns as follows. First, on March 12 there were decision to buy because it was supported by a second buy signal and the uptrend pattern formation and the price have already reach the support level and the uptrend support line 1 (S1) at the price of Rp1.710,00 per share. The Confirmation signal was also supported by bullish Flag pattern that occurred on May 6.

Second, on June 5 there were sell signal on WIKA at Rp2.450,00. It was occurred due to a sell signal from both the classical technical analysis pattern that WIKA has reached the upper line of the uptrend pattern and the resistance line two (R2), which indicate the share price has already expensive or overvalued and then investment decisions was occurred through the sale of WIKA at that price.

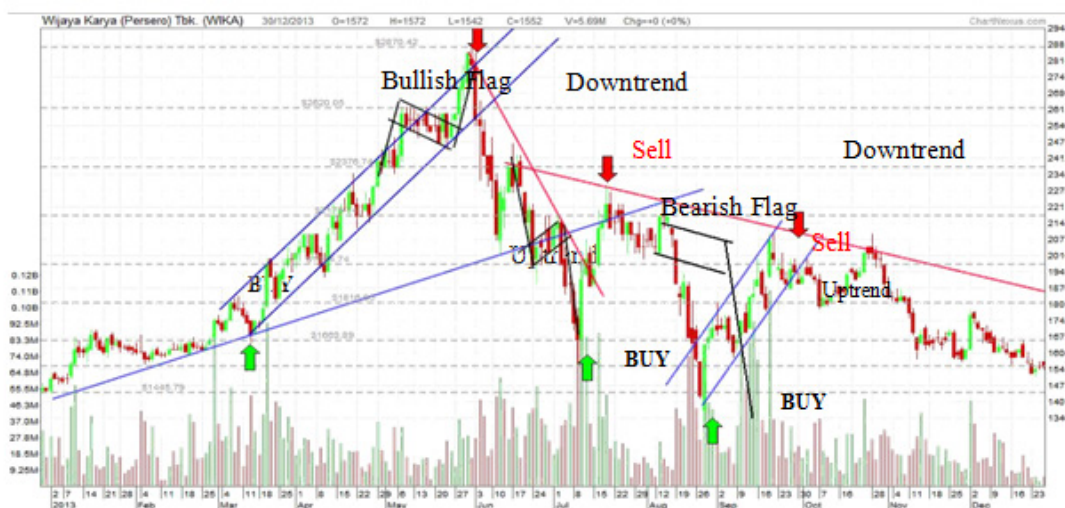


Figure 1 The Classical Technical Analysis of WIKA from January 1 – 31, 2013

Table 2 The Simulation of Investment Decision using Classical Technical Analysis WIKA Stocks from January 1, 2013 – December 31, 2013

Date	Buy Signal	Sell Signal	Number of Shares	Total Transaction	Account Balance
1-Jan-13					20.000.000,00
12-Mar-13	1.820,00		1000	1.820.000,00	18.180.000,00
5-Jun-13		2.450,00	1000	2.450.000,00	20.630.000,00
11-Jul-13	2.025,00		2000	4.050.000,00	16.580.000,00
18-Jul-11		2.250,00	2000	4.500.000,00	21.080.000,00
27-Aug-13	1.460,00		2000	2.920.000,00	18.160.000,00
19-Sep-13		2.100,00	2000	4.200.000,00	22.360.000,00
				Beginning Balance	20.000.000,00
				Ending Balance	22.360.000,00
				Profit	2.360.000,00
				Percentage	11,80%

Third, on July 11, there was a buy signal that was supported by two classical technical analysis patterns that is the uptrend pattern. It has already reached the bottom pattern and supported by supporting line (S2). Therefore it was occurred the investment decision of WIKA at the price of Rp2.025,00 per share.

Fourth, on July 18, a sell signal was occurred, that the price has reached the uptrend resistance (R5) at Rp2.250,00 per share that indicated WIKA stock price has already overvalued. Sell decision was also supported by the bearish flag pattern on the previous day that would indicate a decline in WIKA's price. WIKA sold at Rp2.250,00 per share.

Fifth, on August 27 there were occurred buy signal formed by bearish Flag pattern. This was caused by the stock price was dropped on supporting line (S1). WIKA has undervalued on Rp1.460,00 per share.

Sixth, on September 19, a sell signal was occurred because WIKA has reached the uptrend line resistance (R4). It was indicated that the stock price has already overvalued at Rp2.100,00 price per share.

The results of modern technical analysis on WIKA the period January 1, 2013 until December, 31, 2013 generate seven investment decisions. It was

consisted of three buy signal and 4 sell signal (See on Figure 2). The whole investment decisions were determined by classical technical analysis indicator as measurement variable.

On Table 3, it was simulated that the initial account balance was invested in WIKA IDR 20 million from January 1, 2013 until December 31, 2013 by using modern technical analysis. In Table 3, it was occurred seven investment decisions during the period.

The following explanations and investment decisions by using modern technical analysis: First, on February 18, there was a buy signal from whole measurement indicator. There were the intersection of the lines Moving Average (MA) 5 and MA 10 that indicates changes the direction of WIKA's price. The Buy signal was confirmed by the stochastic indicator-like MA. The Buy signal also confirmed the decision of the MACD indicator is above 0 and the MACD line has been cut and move up. The decision of buy on WIKA was occurred at Rp1.660,00 per share.

Secondly, on May 1, there was a sell signal from the stochastic indicator has been in overbought area. It was also confirmed sell signal from the MACD indicator which intersect and pointing downwards.



Figure 2 The Modern Technical Analysis of WIKA from January 1 – 31, 2013

Table 3 The Investment Simulation of WIKA Using Modern Technical Analysis from January 1, 2013 – December 31, 2013

Date	Buy Signal	Sell Signal	Number of Shares	Total Transaction	Account Balance
1-Jan-13					20.000.000,00
18-Feb-11	1.660,00		2000	3.320.000,00	16.680.000,00
1-May-13		2.475,00	1000	2.475.000,00	19.155.000,00
28-May-13		2.825,00	1000	2.825.000,00	21.980.000,00
19-Aug-13	1.920,00		1000	1.920.000,00	20.060.000,00
19-Sep-11		2.100,00	1000	2.100.000,00	22.160.000,00
8-Oct-13	1.830,00		1000	1.830.000,00	20.330.000,00
28-Nov-11		2.050,00	1000	2.050.000,00	22.380.000,00
				Beginning Balance	20.000.000,00
				Ending Balance	22.380.000,00
				Profit	2.380.000,00
				Percentage	11,90%

Third, on May 28, WIKA's share price has reached up quite high and sell a signal was occurred because of the stochastic indicator in the overbought area. The MA 5 and MA 10 indicate the change in WIKA share price. Sell signal was confirmed by the MACD indicator that has been intersected and pointing downwards. The sell decision of WIKA was at Rp2.400,00.

Fourth, on August 19, there was a buy signal from MA 5 and MA 10 indicator by the intersection. Buy signal was confirmed by the stochastic indicator that was below 20% indicating that an oversold area. It was also confirmed that the buy signal from the MACD indicator has been intersected and pointing upwards. The buy decision of WIKA was at Rp1.920,00 per share.

Fifth, on September 19, a sell signal was formed by the intersection between MA 5 and MA 10 indicates changes in the direction of WIKA's price. Sell signal occurred because of the stochastic indicator was in the overbought area. Sell signals were confirmed by the MACD indicator that has intersected and pointing downwards. The sell decision of WIKA were at Rp2.100,00 price per share.

Sixth, on October 8, a buy signal occurred. Buy signal was confirmed by the stochastic indicator that was below 20% indicates that the area is in the oversold area. It was confirmed that the buy signal from the MACD indicator has intersected and pointing upwards. The buy decision of WIKA was at Rp1.830,00 per share.

Seventh, on November 28, there was a sell signal. Decision to sell occurred because of the intersection of MA 5 and MA 10 that indicates changes in the direction of WIKA's price. The stochastic indicator was in the overbought area. The sell signals were confirmed by the MACD indicator which has intersected and pointing downwards. The decision sell of WIKA was Rp2.050,00 per share.

The result of a combination between classical and modern technical analysis on WIKA from January

1, 2013 until December 31, 2013 has resulted thirteen investment decisions with the composition of seven buy signals and six sell signals. All investment decisions were determined by the combination of classical and modern technical analysis as a measurement variable.

In Table 4, it was simulated that the initial account balance was \$ 20 million invested on WIKA during the period of January 1, 2013 until December 31, 2013 using a combination of classic and modern technical analysis. In Table 4, thirteen investment decisions were determined during the period.

The following explanations and investment decisions used a combination of classical and modern technical analysis. First, on January 2, the buy signal was occurred because the price rebounded on the uptrend line. Modern technical indicators were confirmed from the golden-cross with MA7, stochastic move on bullish trend after the golden-cross was within the oversold area. The second green histogram has moved on the positive area with stronger MACD. The buy decision of WIKA was at Rp1.530,00 per share.

Second, on January 23, it was confirmed that the sell signal was confirmed from dead-cross formation with MA7. The Stochastic indicator dead-cross was in the overbought area. In the second red histogram was move on negative area with the MACD line potentially dead-cross the signal line. The prices were in the overbought area and move towards support. The buy decision of WIKA was at Rp1.670,00 per share.

Thirdly, on February 13, the buy signal was formed. Classic technical indicators showed that the price rebounded on the uptrend line. Buy signal was also confirmed from modern technical indicators that was shown from the golden-cross with MA7 and MA25. The stochastic indicators were bullish after the golden-cross was within the oversold area. In third green histogram, it was moved towards the positive area with stronger MACD. The decision to buy shares on WIKA was at Rp1.650,00 per share.



Figure 3 The Chart of Combination Classical and Modern Technical Analysis on WIKA from January 1, 2013 – December 31, 2013

Table 4 The Simulation of Investment Decision on WIKA using the Combination of Classical and Modern Technical Analysis from January 1, 2013 – December 31, 2013

Date	Buy Signal	Sell Signal	Number of Shares	Total Transaction	Account Balance
1-Jan-13					20.000.000,00
2-Jan-13	1.530,00		1000	1.530.000,00	18.470.000,00
23-Jan-13		1.670,00	1000	1.670.000,00	20.140.000,00
13-Feb-13	1.650,00		1000	1.650.000,00	18.490.000,00
27-May-13	1.690,00		1000	1.690.000,00	16.800.000,00
3-Jun-13		2.600,00	2000	5.200.000,00	22.000.000,00
12-Jun-13	1.910,00		1000	1.910.000,00	20.090.000,00
18-Jun-13		2.175,00	1000	2.175.000,00	22.265.000,00
11-Jul-13	2.025,00		1000	2.025.000,00	20.240.000,00
23-Jul-13		2.200,00	1000	2.200.000,00	22.440.000,00
29-Aug-13	1.700,00		1000	1.700.000,00	20.740.000,00
23-Sep-13		1.990,00	1000	1.990.000,00	22.730.000,00
10-Oct-13	1.870,00		1000	1.870.000,00	20.860.000,00
28-Oct-13		2.050,00	1000	2.050.000,00	22.910.000,00
				Beginning Balance	20.000.000,00
				Ending Balance	22.910.000,00
				Profit	2.910.000,00
				Percentage	14,55%



Figure 4 The Chart of classical technical analysis of WIKA from January 1 – 31, 2014

Fourth, on May 27, the buy signal was occurred on accumulation period, which stated that the price rebounded on the uptrend line and MA25. The classical indicator also indicated the form of flag pattern. The modern indicator was seen on the golden-cross with MA7. Bullish stochastic indicator was limited in the area close to overbought area. In the third green histogram, WIKA has moved to positive area with stronger MACD. The buy decision of WIKA was at Rp1.690,00 per share.

Fifth, on June 3, sell signal occurred from classic indicators pulled back to the resistance level. The classic indicators was also confirmed the target strengthening of Flag pattern. Stochastic indicator has moved lower after the dead-cross in the overbought area. In the histogram of the MACD indicator was in the negative area on the first day. The sell decision of WIKA was at Rp2.600,00 per share.

Sixth, on June 12, the buy signal was formed because there were false break at the point of support. Stochastic golden-cross was in the oversold area. In

the second green histogram, MACD line has moved higher. The classic histogram, MACD line has moved higher. The classic indicator was also visible from the rebound of the uptrend line. The buy decision of WIKA was at Rp1.910,00 per share.

Seventh, on June 18, a sell signal was occurred from pulled back classic indicators on resistance line and MA25. The Sell signal was also confirmed from modern indicators occurred dead-cross MA7. Stochastic indicators have moved lower consolidatedly. In the histogram, the MACD line was on the negative area. WIKA's decision to sell shares was at Rp2.175,00 per share.

Eighth, on July 11, a buy signal was formed from classic indicators pulled back support level and breaks out the resistance level. Modern confirmed indicator of stochastic golden-cross in the oversold area. MACD line and the signal line golden-cross with histogram has moved higher. A WIKA share buy decision was at Rp2.025,00 per share.

Ninth, on July 23, a sell signal was occurred due to classic indicators. It was shown that the prices

were not able to return the uptrend. Modern indicator indicated a dead-cross MA7. Stochastic indicator dead-cross was in the overbought area. In the histogram began red colour and moving down. WIKA's decision to sell shares was occurred at Rp2.200,00 per share.

Tenth, on August 29 there was a buy signal confirmed from the classic indicator. The price was rebounded on the support line level. Stochastic golden-cross was in the oversold area. The second green histogram was the MACD line with golden-cross indications. Decision to buy WIKA shares occurred at Rp1.700,00 per share.

Eleventh, on September 23, sell signal was occurred. Classic indicator showed break out uptrend during short-term. Stochastic dead-cross indicator was in the overbought area. Modern indicator was also confirmed at the point of break out of MA7. The sell decisions of WIKA stocks occurred at Rp1.990,00 per share.

Twelfth, on October 10, buy signal was occurred. The classic indicators were visible from rebound on the support level. Modern indicator was marked by stochastic golden-cross indicator in the oversold area. Golden-cross indicators were shown at MA25 and MA7. Decision to buy WIKA shares occurred at Rp1.870,00 per share.

Thirteenth, on October 28, a sell signal was occurred. The classic indicators were shown in pulled back at the point of resistance. The dead-cross stochastic indicator was in the overbought area. It moved bearish towards the negative area. It was the indicators of false break downtrend potential. The sell decisions of WIKA stocks were at Rp2.050,00 per share.

There are three kinds of pattern that were used to analyze historical stock prices of WIKA which made the decision to buy or sell, on the results of the classical technical analysis of WIKA on the January 1, 2014 to December 31, 2014. On Support and Resistance, there were twelve lines of support and resistance; each

was given a code: S for support and R for resistance. On the trendline, there was five trendline pattern; three uptrend lines and 1 downtrend. On Flag pattern, there were two Flag patterns (See Figure 4). After the analysis from classical technical analysis by using the measurement patterns, eight investment decisions to buy and sell were formed; at least two of the variable measurement states a buy or sell signal that contains the composition of four buy signal and four sell signal decision.

In Table 5, it was simulated that the initial account balance was invested in WIKA at Rp20 million during January 1, 2014 until December 31, 2014 using classical technical analysis. In table 8, investment decision occurred during that period with five buy signals and three sell signals. Investment decisions were applied using a simulated transaction below:

The reasonable explanation of WIKA was influenced by some classical technical patterns as follows. First, on January 7, the first buy signal was occurred because it was supported by a second buy signal. In addition, the uptrend pattern formation and the price has reached the support line and the uptrend 1 support line (S1) at the price of Rp1.580,00 per share. WIKA share buy decisions was at level of support at Rp1.580,00 per share.

Second, on January 22, the buy signal was occurred since the uptrend pattern was continuous. WIKA share price has reached the upper line of the uptrend pattern and touched the fourth resistance line (R4) so that the reinforcement was still continued. The buy decision of WIKA share was at the level of Rp1.845,00 per share.

Third, on April 7, there was a sell signal that supported by two classical technical analysis patterns, namely the bearish flag pattern and the price has touched the resistance 6 (R6). Both these patterns indicate a reversal of the uptrend into a downtrend. The decisions sell of WIKA was at Rp2.515,00 per share.

Table 5 The Simulation of Investment Decision of WIKA Using the Combination of Classical Technical Analysis from January 1, 2014 – December 31, 2014

Date	Buy Signal	Sell Signal	Number of Shares	Total Transaction	Account Balance
1-Jan-14					20.000.000,00
7-Jan-14	1.580,00		1000	1.580.000,00	18.420.000,00
22-Jan-14	1.845,00		1000	1.845.000,00	16.575.000,00
7-Apr-14		2.515,00	2000	5.030.000,00	21.605.000,00
1-Jul-14	2.215,00		1000	2.215.000,00	19.390.000,00
28-Sep-14		2.870,00	1000	2.870.000,00	22.260.000,00
31-Oct-12	2.860,00		1000	2.860.000,00	19.400.000,00
27-Nov-12	3.000,00		1000	3.000.000,00	16.400.000,00
29-Dec-12		3.720,00	2000	7.440.000,00	23.840.000,00
				Beginning Balance	20.000.000,00
				Ending Balance	23.840.000,00
				Profit	3.840.000,00
				Percentage	19,20%

Fourth, on July 1, a buy signal was occurred. The prices have passed through the six support line at Rp2.142,00 and fall of stock prices indicated R6 WIKA has been undervalued. The decision buy of WIKA was occurred at Rp2.215,00 per share.

Fifth, on September 28, a sell signal was occurred because the price falls below eight resistances (R8) ever achieved previously indicated WIKA stock price has already overvalued. The sell signal was also confirmed from sideways pattern. The sell decision of WIKA was sold at Rp2.870,00 per share.

Sixth, on October 31, buy signal was occurred because it was supported by the two buy signal and the uptrend pattern formation as well as the price has reached at the support uptrend line and the support 9 line (S9) at Rp2.958,00 per share. The buy decision of WIKA was at Rp2.860,00 per share.

Seventh, on November 27, the buy signal was occurred due to the uptrend pattern was still occurred. WIKA share price was already reached the upper line and touched the resistance 9line (R9) at Rp2.958,00

thus strengthening simultaneously. The buy decision of WIKA was at Rp3.000,00 per share.

Eighth, on December 29, a sell signal was occurred due to the reversal of the uptrend into a downtrend and has broken through the resistance eleven level (R11) at Rp3.570,00, so the price will be consolidated first. The decision of WIKA was sold at Rp3.720,00 per share.

The results of modern technical analysis on WIKA during the period of January 2014 - December 2014 provided eleven investment decisions: 6 buy signals and 5 sell signals. All investment decisions were determined by the indicators of technical analysis as measurable variables.

In Table 6, it was simulated that the initial account balance was invested in Rp20 million on WIKA shares during January 1, 2014 - 31 December 2014, by using modern technical analysis. In Table 6, eleven investment decisions were occurred during the period. Investment decisions were applied using simulated transactions such as below.

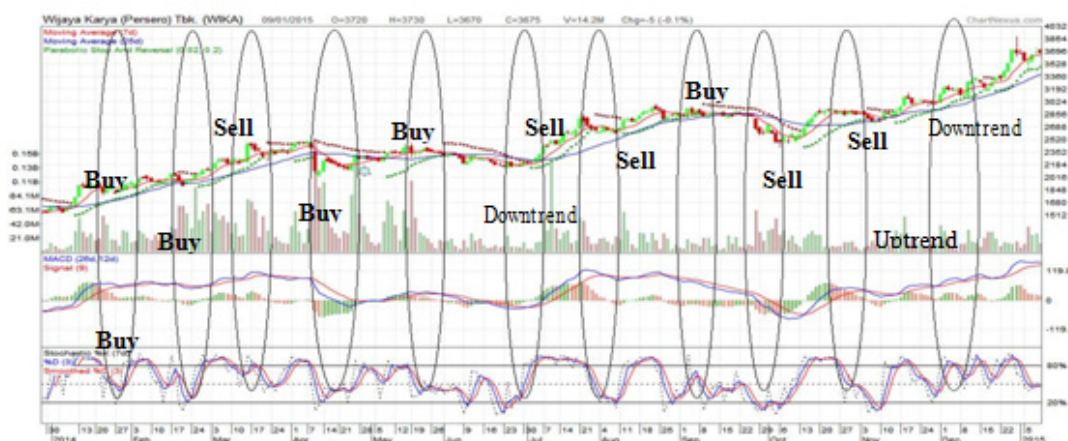


Figure 5 The Chart of Modern Technical Analysis on WIKA Share During January 1 – 31, 2014

Table 6 The Simulation of Investment Decision on WIKA Musing Combinantion of Classical and Modern Technical Analysis from January 1, 2014 – December 31, 2014

Date	Buy Signal	Sell Signal	Number of Shares	Total Transaction	Account Balance
1-Jan-14					20.000.000,00
7-Jan-14	1.580,00		1000	1.580.000,00	18.420.000,00
3-Feb-14	1.975,00		1000	1.975.000,00	16.445.000,00
20-Feb-14	1.940,00		1000	1.940.000,00	14.505.000,00
17-Mar-14		2.465,00	3000	7.395.000,00	21.900.000,00
11-Apr-14	2.120,00		1000	2.120.000,00	19.780.000,00
8-May-14	2.340,00		1000	2.340.000,00	17.440.000,00
21-Jul-14		2.800,00	1000	2.800.000,00	20.240.000,00
21-Aug-14		2.940,00	1000	2.940.000,00	23.180.000,00
3-Oct-14	2.490,00		2000	4.980.000,00	18.200.000,00
17-Nov-14		2.955,00	1000	2.955.000,00	21.155.000,00
29-Dec-14		3.720,00	1000	3.720.000,00	24.875.000,00
				Beginning Balance	20.000.000,00
				Ending Balance	24.875.000,00
				Profit	4.875.000,00
				Percentage	24,38%

The following explanations and investment decisions used modern technical analysis. First, on January 7 there was a buy signal from the whole measuring indicator is the intersection of the lines MA 5 and MA 10 that indicates changes in the direction of WIKA's price. Buy signal was confirmed by the stochastic indicator-like MA. Buy signal was also confirmed the decision of the MACD indicator is above 0 and the MACD line has been cut and moved up. The buy decision of WIKA was occurred at Rp1.580,00 per share.

Secondly, on February 3, a buy signal was still occurred. It was confirmed by the stochastic indicator which was still moved upward and in a neutral condition. Buy signal was also confirmed from MACD indicator which was above 0 and the MACD line has been intersected and moved upward. The buy decision of WIKA was occurred at Rp1.975,00 per share.

Thirdly, on February 20 the buy signal was occurred on WIKA which experienced a slight consolidation but still had an increase in medium term. It was indicated by the stochastic indicator in the neutral area. Between the Indicator MA 5 and MA 10 occurred an intersection. Buy signal was confirmed by the MACD indicator that has been intersected and moved upward. The buy decision of WIKA was at Rp1.940,00 per share.

Fourth, on March 17, a sell signal was occurred. Sell decisions was occurred because of the stochastic indicator that has been in overbought area. Sell signal was confirmed by the MACD indicator that has intersected and pointed downwards. The decision to sell of WIKA was at Rp2.465,00 per share.

Fifth, on April 11, a buy signal was occurred. Buy signal was confirmed by the stochastic indicator that is below 20% indicated that the area has been in oversold area. It was also confirmed that the buy signal from the MACD indicator has intersected and pointed upwards. The decision to buy of WIKA was at Rp2.120,00 per share.

Sixth, on 8 May, the buy signal was still emerged on WIKA. Buy signal was confirmed by the stochastic indicator in the Neutral area. It was indicated that the price was still increase. It was also confirmed by

the buy signal from the MACD indicator which has intersected and pointed upwards. The buy decision of WIKA was at Rp2.340,00 per share.

Seventh, on July 21, there was a sell signal. Sell decisions was occurred because of the stochastic indicator which has been in the overbought area. Sell signal was confirmed by the MACD indicator that has intersected and pointed downwards. The sell decision of WIKA was at Rp2.800,00 per share.

Eighth, on August 21, there was sell signal. The decision of sell was occurred because the stochastic indicator has been above the 80% overbought area. Sell a signal was confirmed by the MACD indicator has intersected and pointed downwards. The decision to sell WIKA was at Rp2.940,00 per share.

Ninth, on October 3, a buy signal was occurred. The indicator of MA 5 and MA 10 has been intersected. Buy signal was confirmed by the stochastic indicator which was in the oversold area. It was indicated by the reversal of the downtrend to an uptrend. It was also confirmed that the buy signal from the MACD indicator has intersected and pointed upwards. The buy decision of WIKA was at Rp2.490,00 per share.

Tenth, on November 17, sell signal was occurred. The sell decision was occurred because of the stochastic indicator that has been above the 80% overbought area. Sell signal was confirmed by the MACD indicator that has intersected and pointed downwards. The sell decision of WIKA was at Rp2.955,00 per share.

Eleventh, on December 29, there was sell signal. Sell decisions was occurred because of the stochastic indicator that had been above the 80% overbought area. Sell signals was onfirmed by the MACD indicator that has intersected and moved downward indicating the price to consolidate first. The sell decision of WIKA was at Rp3.720,00 per share.

The combination of classic and modern technical analysis on WIKA January 2014 until December 2014 has resulted seven investment decisions. There were four buy signals and three sell signals (See on Figure 6). The whole investment decisions were determined by the combination of classical and modern indicators of technical analysis as a measurement variable.



Figure 6 The WIKA Chart of Combination Classical and Modern Technical Analysis from January 1 – 31, 2014

In Table 7, the initial account balance was invested at Rp20 million on WIKA during January 1, 2014 until December 31, 2014, using modern technical analysis. In Table 7, seven investment decisions during the period were occurred. Investment decisions were applied using simulated transactions below:

The following explanations and investment decisions were used a combination of classic and modern technical analysis. First, on January 3, a buy signal was occurred because the rebound was supported on the support line. Stochastic indicator has moved higher after the golden-cross in the oversold area. Buy decision was confirmed by the MACD line to move higher with the histogram moving in the positive area. Buy signal was also confirmed from the breakout MA7 and MA25. The decision to buy WIKA was occurred at Rp1.660,00 per share.

Second, on April 7, a sell signal was occurred because of the false break of resistance level stochastic indicators move bearish after the dead-cross in the overbought area. MACD sell signal was confirmed on the line with Signal line dead-cross and histogram moving reached negative area. The sell decision on WIKA was occurred at Rp2.515,00 per share.

Third, on June 25 there was a buy signal. It was confirmed from the rebound at support level. Stochastic indicator moved bullish after the golden-cross was in the oversold area. Buy signal was reinforced from MACD and signal line golden cross as well as green histogram provide reversal signal. Classical indicator has rebounded in bullish trend support level. The buy decision of WIKA was occurred at Rp2.160,00 per share.

Fourth, on July 2, buy signal was occurred, confirmed from the stochastic indicator which was still bullish after golden-cross in the oversold area. Buy signal was reinforced from MACD and Signal line golden cross as well as green histogram have given reversal signal. Classical indicators have rebounded in

bullish trend support level. The buy decision of WIKA was occurred at Rp2.215,00 per share.

Fifth, on September 26, a sell signal was occurred since supported by pulled back resistance levels. Dead-cross indicators of MA25 and MA7. Stochastic indicator has moved downward. Sell signal was reinforced from MACD indicator which continued weaken in the negative area. The sell decision of WIKA was occurred at Rp2.665,00 per share.

Sixth, on October 10, buy signal was occurred that was supported from the uptrend line. The signal was shown from golden-cross indicator of MA7. Stochastic indicator moved higher from oversold area after the golden-cross. The histogram of the MACD indicator moved positively with the indicated golden-cross and the Signal line. The buy decision of WIKA was at Rp2.490,00 per share.

Seventh, on December 28, sell signal was occurred from pulled back resistance levels. Stochastic indicator was intersected (dead-cross) in the overbought area. Sell signal was confirmed by the weakening of histogram by MACD indicator on the second day. The sell decision of WIKA was at Rp3.720,00 per share.

Classical and modern technical analysis generated buys and sell decisions. It has been proved from the classical and modern technical analysis in this study. The details of the research were shown on Table 8. It was described about the result details of classical, modern, and combined technical analysis. The classical technical analysis provides investment decisions and the average profit (return) was 15,50% smaller than the average signal profit of modern technical analysis in the amount of 18,14%. When the two analyses were combined, it can be clearly seen that the highest profit was obtained by combining classical and modern technical analysis. The combinations have produced 20,41% from 2013 until 2014.

Table 7 The Simulation of Investment Decision Using Classical and Modern Technical Analysis WIKA Stock Period January 1, 2014 – December 31, 2014

Date	Buy Signal	Sell Signal	Number of Shares	Total Transaction	Account Balance
1-Jan-14					20.000.000,00
3-Jan-14	1.660,00		1000	1.660.000,00	18.340.000,00
7-Apr-14		2.515,00	1000	2.515.000,00	20.855.000,00
25-Jun-14	2.160,00		1000	2.160.000,00	18.695.000,00
2-Jul-14	2.215,00		1000	2.215.000,00	16.480.000,00
26-Sep-14		2.665,00	2000	5.330.000,00	24.025.000,00
10-Oct-12	2.490,00		1000	2.490.000,00	21.535.000,00
28-Dec-12		3.720,00	1000	3.720.000,00	25.255.000,00
				Beginning Balance	20.000.000,00
				Ending Balance	25.255.000,00
				Profit	5.255.000,00
				Percentage	26,28%

Table 8 The Result of Classical and Modern Technical Analysis of Wijaya Karya from 2013 and 2014

Period	Classical Technical Analysis			Modern Technical Analysis			Classical and Modern Technical Analysis		
	Buy	Sell	Profit	Buy	Sell	Profit	Buy	Sell	Profit
1 Jan 2013-31 Des 2013	3	3	11,80%	3	4	11,90%	7	6	14,55%
1 Jan 2014-31 Des 2014	5	3	19,20%	6	5	24,38%	4	3	26,28%
Total	8	6	15,50%	9	9	18,14%	11	9	20,41%

CONCLUSIONS

Based on the discussion, it can be concluded that WIKA share analysis using classical technical analysis and modern in generating different buy and sell decisions in the period of 1 January 2013 until December 31, 2013 and January 1, 2014 until December 31, 2014. The classical technical analysis provides investment decisions and the average profit (return) is less than the average signal of profit from modern technical analysis. Meanwhile, when technical analyses were combined simultaneously, the investor will get the profit higher than they didn't combine it. Based on this, the combination of classical and modern technical analysis are proper because it will provide opportunity to get the higher return.

The research was intended to measure the accuracy of combining classical and modern technical analysis using WIKA as a sample in two periods. Future studies can be developed by using other stocks or other trading instruments with different indicators. However, the research should use other classic patterns as well as other modern indicators that are suitable and can strengthen the research.

REFERENCES

- Bulkowski, T. (2005). *Trading Classic Chart Patterns* (1st ed.). Canada: Wiley Trading.
- Chart Nexus (2012). *Software Historical Analisis*. Retrieved Desember 26, 2012 from www.chartnexus.com/historical-Price.
- Darmadji, T. & Fakhruddin H. (2011). *Pasar Modal di Indonesia* (3rd ed.). Jakarta: Salemba Empat.
- Elder, A. (2002). *Come into My Trading Room*. New York: John Wiley & Sons.
- Fischer, R. & Fischer, J. (2003). *Candlesticks, Fibonacci and Chart Pattern Trading Tools*. Switzerland: Wiley Trading.
- Mochsen, G., & Abdolmajid A. (2014). Profitability of technical analysis indicators to earn abnormal returns in international exchange markets. *International Scientific Journal*, 19(11), 20–26.
- Ong, E. (2008). *Technical Analysis for Mega Profit*. Jakarta: Mega Options.
- Purnomo, B. (2010). *Fungsi Indikator MACD (Moving Average Convergence Divergence), Parabolic SAR (Stop and Reserve), dan Stochastic Oscillator untuk menentukan keputusan Jual dan Beli Saham Telekomunikasi di Bursa Efek Indonesia, Jakarta, (Thesis)*. Universitas Trisakti Jakarta.
- Syamsir, H. (2004). *Solusi Investasi di Bursa Saham Indonesia* (1st ed.). Jakarta: Elex Media Komputindo.