

## **Ichimoku Prediction Approached: The Case Study of Malaysia Stock Market**

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**Abstract:** This paper presents a research on development of combination analysis of technical forecasting model based on price movement to determine buy and sell signal for trading or investment. It is crucial for the traders and investors to decide an entry point and exit point to buy and sell stock in a short time period. However, relying on a single model can be tough when deciding for entry and exit point. In this research, we opt to study the effectiveness of Ichimoku Kinko Hyo and Japanese Candlestick indicators to provide strong bullish and bearish signals. This model using actual data selected from Bursa Malaysia, three counters which are NOTION, ADVENTA and RANHILL were selected with strong fundamental background through fundamental analysis and technical analysis in a short-term trading. A comparative study was conducted on the performance of this combination analysis for 8 months daily data market price movement. It is found that the experimental results reveal the combination algorithm successfully forecast for short term period. Thus, this study provides a promising alternative for traders and investors dealing with the forecasting of the stock price to generate profit.

**Keywords:** Technical Indicator, Bursa Malaysia, Ichimoku, Japanese Candlestick

### **1. Introduction**

Nowadays, performance of stock market may reflect on a country's economic growth. Stock market is a specified market where stocks sellers and buyers are assemblage worldwide for trading and investing purposes. These stocks are listed in stock exchange which enables fair pricing practices and transparency in transactions. Bursa Malaysia has been recognised as the stock exchange of Malaysia. In Bursa Malaysia, there are three categories of market boards, namely MAIN, ACE and LEAP market where the stocks are listed based on company's prospect. FBM-KLCI which is comprises of blue-chip companies from Main Market is representing the overall stock market's performance in Malaysia.

Market participants will be using online trading platform such as KenTrade Kenanga and M Plus saham to trade online. These trading platforms are providing indicators to analyse the buy and sell signal of stock in preference based on fundamental and technical analysis. However, there is no single technical indicator that can predict accurately for all types of stocks as each technical indicator have

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their own strength and weakness. Hence, in this case study a combination of two types of technical indicators namely Ichimoku Kinko Hyo and Japanese Candlestick (JCS) are focused to provide a stronger signal for buying or selling.

The primary intention of this work is to evaluate the accuracy of trading buying and selling signal of combination JCS and Ichimoku model and to determine the best buy and sell signal using chart by combination of JCS and Ichimoku model through reproduce and development of main element of JCS and Ichimoku model data pattern. All data that used in this work are the secondary data by Bursa Malaysia using KenTrade as the platform. The data obtained from three different counters which are NOTION, ADVENTA and RANHILL that covered the period from 2 March 2020 until 30 October 2020. This is a work that based on fundamental and technical analysis which is using historical data.

The rest of the paper is organized as follows. Section 2 literature that reviewed, current knowledge and theories related to technical indicator including JCS and Ichimoku model. Section 3 explanation of analysis of Ichimoku Cloud and JCS model. Section 4 results and discussions of effectiveness of combination model and Section 5 shows conclusion of this work.

## 2. Literature Review

This section will discuss about the types of trading analysis, previous studies, advantages and disadvantages regarding JCS and Ichimoku indicators.

### 2.1 Fundamental and Technical Analysis

In trading market, there are two types of trading analysis used, namely fundamental and technical analysis. Fundamental analysis is the prediction of price movements based on speculation [1-2]. It involved using of information gathered from news, profitability, corporate's financial conditions and macroeconomic factors [3]. Examples are factors such as P/E ratio, return on equity and dividend payout ratio.

In contrast, technical analysis is a graphical analysis involving application of mathematical rules and formulas to calculate stock price over a certain time period [1-2]. It relies on historical data from analysis of stock price and volume to define trends and future movements of stock price since investors belief that the prices are moving based on a particular trend [4]. Through application of technical analysis, many technical indicators have been produced which each having different strength and weakness. These technical indicators can generate strong bearish and bullish signals when combined according to trader's preferences [5]. Examples of technical indicators are Ichimoku and JCS which will be discussed on next section.

### 2.2 Ichimoku Cloud Analysis

Ichimoku Kinko Hyo is a technical system used to define support and resistance by referring to price equilibrium at one glance [2]. Ichimoku charting analysis is used in decision making of entry and exit points [6]. Hence, there are some of the influential official sources from all around the world including Bloomberg, New York and REUTERS that implementing Ichimoku analysis [7] to generate trading signals.

Several attempts have been made to study the reliability of Ichimoku signals to generate profit. Ichimoku was applied in predicting the USD/JPY and EUR/USD foreign exchange trade and is found efficient in indicating consolidation of currency pair for daily charting compared to hourly charting [4]. Conversely,[8] had done similar study as [4] later and concluded that the signal of entry and exit points generated are only accurate when both fundamental and technical analysis show the same trend signal. Lim et al. studied the profitability of Ichimoku signals generated on Japan and US's single stocks and demonstrated that it was fairly persistent through long-only and short-only trading from 2005-2014 [9].

Study of Gurrib showed that Ichimoku analysis was beneficial and unsusceptible to changes in energy prices when applied on prediction of leading US energy companies stock prices [10]. However, a small scale study by Deng et al. reaches different conclusions, finding that there were some profitable

return through Ichimoku trading strategies on stock index but failed to produce consistent values for currency trading [11].

### 2.3 Japanese Candlestick Analysis

Meanwhile for JSC analysis, much of the current literature pays particular attention to the effectiveness of JCS signaling patterns to predict stock market movement. When 16 types of JSC signaling pattern were tested on 10 representative stocks from Brazilian stock market in 5 years period, it showed that there was frequency of higher than 1% in the effectiveness of JSC towards the prediction of trend in stock market [1].

One study regarding the efficiency of JSC to assist investors to find the strongest trade-off in relation with market timing and impact costs had used two specifically patterns, namely Doji and Hammer. The result found that there was no improvement in market timing, but a lower impact cost was obtained when trading was made by observing Doji pattern occurrence, compared to other strategies [12]. Heinz et al. evaluated the precision of Shooting Star and Hammer patterns over S&P 500 index and demonstrated that both patterns could show high forecasting reliability when using High price for Shooting Star and Low price for Hammer [13].

In the same vein, Jamalooden et al. used the same index as [13] to review the effectiveness of Bullish and Bearish engulfing patterns. They concluded that Bearish engulfing produced strong short-term forecasting power using Open and High criterion meanwhile Bearish engulfing was highly effective when using Open and Low criterion [14].

### 2.4 Strength and Weakness of Technical Indicator

Together, these studies outline that there are pros and cons in applying Ichimoku and JSC indicators on prediction of stock movement. By using JSC analysis, it could be more attractive to the traders compared to bar charts since it is more graphically stimulating. Hence, the traders can point out the difference between open and close more effectively. Though, the JSC analysis might also produce inaccurate and fluctuated patterns since it is based on perception technique that easily affected by emotion and demand of investors [1],[15].

On the other hand, Ichimoku analysis enables traders to observe market timing, support and resistance value, false breakout and even the exact entry and exit points in a glance. It can also perform as a stand-alone system, or combine with any trading indicator to produce more accurate buy and sell signal [7]. Nevertheless, Ichimoku analysis might not be suitable as sideways market indicator if the price oscillates in a horizontal range within a tight range over period [6]. Thus, traders are always advised to refer more than one indicator to insight more precise trading decision in trading analysis.

## 3. Methodology

This section explains the indicators for technical analysis which are Ichimoku Kinko Hyo and JCS. We used these 2 indicators as a combination model that helps investor forecasting stock market activity. From the study of Cahyadi, using technical indicator can produce strong bullish and bearish signal when combined together [4].

### 3.1 Technical Analysis: Ichimoku Kinko Hyo

Ichimoku Kinko Hyo is a technical indicator that is used to identify the overall trend. Ichimoku Cloud gives signal of the past, present and the future prediction of the price movement. It is comprised of 5 lines: Tenkan Sen, Kijun Sen, Chikou Span, Senkou Span A and Senkou Span B.

Tenkan Sen shows short-term price movement represented by 9 periods of targeted stock. It is the midpoint of the highest and lowest prices of an asset over the last nine periods.

$$\text{Tenkan Sen: } \frac{9 \text{ periods (Highest High + Lowest Low)}}{2} \quad \text{Eq. 1}$$

Kijun Sen is the midpoint price of the last 26 periods that indicates one month. It is usually used along with Tenkan Sen to identify trading opportunity. When the price is above the Kijun Sen, the price momentum is up and when the price is below Kijun Sen the price momentum is down.

$$\text{Kijun Sen: } \frac{26 \text{ periods (Highest High + Lowest Low)}}{2} \tag{Eq. 2}$$

Chikou Span is the current price shifted back 26 periods. A trend tends to be upward when Chikou Span is above price and downward when the Chikou Span is below the price.

$$\text{Chikou Span: Current price shifted back 26 periods} \tag{Eq. 3}$$

Lastly, Senkou Span A and Senkou Span B are two spans that form Kumo Cloud. When Senkou Span A is above Senkou B it is Bullish signal and when Senkou Span B is above Senkou Span A it shows bearish signal. The formulation for Senkou Span A and Senkou Span B is shown in equation 4 and 5 respectively.

$$\text{Senkou Span A: } \frac{\text{Tenkan Sen} + \text{Kijun Sen}}{2} \text{ shifted forward in 26 periods} \tag{Eq. 4}$$

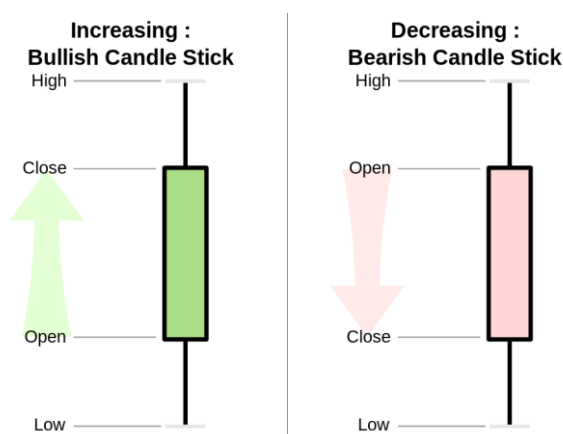
$$\text{Senkou Span B: } \frac{52 \text{ periods (Highest High + Lowest Low)}}{2} \text{ shifted forward by 26 periods} \tag{Eq. 5}$$

### 3.2 Technical analysis: Japanese Candlestick

JCS is simpler than Ichimoku cloud. It is made of 4 set of data which are daily open, high, low, and close (OHLC) price. Traders will use these data to predict sharp turning points of price especially in short-term trading. According to [7], the JSC chart is indicating interactions between buyers and sellers.

The aspects of a JSC patterns appear in **Figure 1**. When the closing price is above the opening price, it is showing bullish signal where the colour is normally green or hollow. Conversely, a bearish signal is shown when the opening price is above the closing price and the colour is usually red or black.

Next, the length of the body part may be varying depends on its proportion to the lines above or below it. These lines above and below the real body is called shadows or wicks. The shadows are representing the high and low ranges in price over a period of time. If the upper shadow on a down candle is short it means that the opening price of that day was near the highest price of the day.



**Figure 1: The aspects of a JSC patterns**

## 4. Results and Discussion

In this section, we will discuss about the result from forecasting of the stock market price by using the combination of JCS and Ichimoku model.

Three counters (NOTION, ADVENTA AND RANHILL) were selected based on strong fundamental background. Then, daily OHLC data from 2 March 2020 to 30 October 2020 for the selected counters was obtained through KenTrade Kenanga. The OHLC data was used to plot JCS and Ichimoku graph using Origin Pro and Microsoft Excel. Next, entry and exit points for three counters were selected based on interpretation of trading buying and selling signals obtained from combination JCS and Ichimoku model. **Figure 2** showed the entry and exit points for three selected counters.



**Figure 2: Combination Model of counter (a) NOTION (b) ADVENTA (c) RANHILL from KenTrade Kenanga**

Throughout the trading, bullish and bearish trend was determined by trading signals as circled in **Figure 2**. It was showed generated from combination JCS and Ichimoku model. Trading point where Three white soldiers and above cloud appeared for Notion, Adventa and Ranhill counters were determined as the entry point on 22<sup>nd</sup> July 2020, 22<sup>nd</sup> April 2020 and 13<sup>th</sup> May 2020 respectively. Notion stocks were bought at RM 0.750/ unit for medium-term investment of 12 days. Meanwhile, 6 days of short-term trading was done for both Adventa and Ranhill counters, where Adventa stocks were bought at RM 0.645/ unit and Ranhill stocks were bought at RM 0.990/unit.

When Three black crows, Bearish engulfing and Three outside down patterns were gained from Notion, Adventa and Ranhill counters on 7<sup>th</sup> August 2020, 28<sup>th</sup> April 2020 and 20<sup>th</sup> May 2020 respectively, exit points were determined to gain optimal profit from the short-term and medium-term trading. Notion stocks were sold at RM 1.920/ unit, Adventa stocks at RM 0.905/ unit and Ranhill stocks at RM 1.020/ unit. Even though the closing price for all three counters were still above the kumo cloud, exit trading decision was made since we found that Ichimoku was unsuitable to analyse accurate exit point and thus traders will suffer from a devastating lost before the price went below cloud.

Results from Percentage Profit/ Loss revealed that the trading for all three counters were able to generate an average profit of 63.90% from RM 30k allocated budget. Besides, the precision of buy and sell signals produced from JCS and Ichimoku indicators were evaluated to ensure only true signal was given from the combination model. **Table 1** and **2** show table of buy signal and sell signal respectively.

**Table 1: Buy Signal Table**

COUNTER	CLOSED PRICE	JCS	ICHIMOKU
NOTION	0.750	Buy	Buy
ADVENTA	0.645	Buy	Buy
RANHILL	0.990	Buy	Buy

**Table 2: Sell Signal Table**

COUNTER	CLOSED PRICE	JSC	ICHIMOKU
NOTION	1.920	Sell	Buy
ADVENTA	0.905	Sell	Buy
RANHILL	1.020	Sell	Buy

Results from Table 1 and 2 proved that there was a significant similar correlation between JCS and Ichimoku indicators when showing buying signal but not in selling signal. Ichimoku indicator may show false signals for exit point that cause big loss in the short-term and medium-term trading. Therefore, the combination model of JCS and Ichimoku shows highly accurate signal for determination of entry point but only fairly accurate for exit point of trading.

## 5. Future Recommendation and Conclusion

In this research, the model of JSC and Ichimoku has been reproduced and used to identify the trading signals for buying and selling. Furthermore, the evaluation of trading signals produced by the combination of JSC and Ichimoku model shown that it is highly accurate for buy signal and fairly accurate for sell signal. Therefore, traders are always advised to refer more indicators to get a more convincing trading signal. They can use the combination of fundamental and technical analysis to analyze the price movement of any counter in Bursa stock market for trading as it will produce a higher and more accurate forecast model.

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