

## Tehnička analiza investicija u Ripple XRP digitalnu valutu

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**Rezime:** Predmet istraživanja u ovom radu jeste mogućnost primene tehničke analize investiranja u hartije od vrednosti kompanije Ripple XRP. Ripple XRP predstavlja digitalnu valutu koja se koristi u mreži plaćanja za sve transakcije, smanjujući potrebno vreme, kao i štedeći novac, za prekogranična plaćanja. Cilj ovog istraživanja jeste pronalaženje optimalne metode koja će poboljšati efikasnost trgovanja na osnovu testiranih konkretnih primera uz mogućnost unapređenja upravljanja portfolijom sačinjenim od digitalne valute Ripple XRP, sa posebnim osvrtom na optimalan izbor metoda tehničke analize. Period analize je trajao jednu godinu opservacija, od aprila 2017. do marta 2018. godine sa posebnim fokusom na poslednjih šest meseci, od oktobra 2017. do marta 2018. godine. Rezultati istraživanja biće korisni kako za akademsku zajednicu za dalje istraživanje u oblasti tehničke analize digitalnih valuta, tako i za institucionalne i individualne investiture u funkciji stvaranja određenih instrumenata koji su usredsređeni na efikasno trgovanje ovom ili sličnim digitalnim valutama.

**Ključne reči:** Finansijska tržišta, Tehnička analiza, Trgovina, Ripple XRP, Digitalne valute

## Technical Analysis Investment in Ripple XRP Digital Currency

**Abstract:** The subject of the research in this paper is empirical testing of the possibility of applying the technical analysis of investments in securities on the example of Ripple company. Ripple XRP is the currency used in the payment network for all transactions, reducing the time needed, as well as the money for cross-border payments. The aim of this research is to find an optimal method that will improve the trading efficiency through tested specific examples with possibilities of improving the portfolio management made of Ripple XRP digital currency, with a special focus on the optimal choice of methods of technical analysis. The analysis period was one year of observations, from April 2017 to March 2018, with a special focus on the last six months, from October 2017 to March 2018. The results of the research will be useful to the academic community for further research in the field of technical analysis of digital currencies, as well as institutional and individual investors in the function of creating certain instruments that are focused on effective trading with this or similar digital currency.

**Keywords:** Financial Market, Technical Analysis, Trading, Ripple XRP, Digital Currencies

### 1. Introduction

When monitoring price movement of financial instruments, the identification of factors is very important in explaining the current prices. The technical analysts agree with the general nature of the importance of the factors in explaining the movement of the value of financial instruments, and the identification of the specific values of the relevant variables is the central point of the discussion (Beatman et al., 2009). The ability and role of a technical analysis is to anticipate price movements, using historical data, as well as tracking the historical movement of the prices of the observed instruments. One of the biggest differences between academic finance and financial practice is the separation between technical analysts and their academic critics. Unlike the fundamental analysis, which was quickly adopted by scientists of contemporary quantitative finance, the technical analysis was unacceptable and scientifically unfounded from the very beginning. However, a number of studies

such as (Lo et al., 2000) tell us that technical analysis can be quite effective. Regarding this, the subject of research in the paper is to analyze the optimal methods of technical analysis in the function of efficient management and trading digital currency Ripple XRP. Due to the large number of data, we will focus on the main price drivers as the basis of the Ripple XRP value, as well as the combination of the technical analysis methods. Stock exchanges and trading platforms traded in financial instruments, depending on the focus of dealing with specific issues, can be analyzed from different aspects. Changes in the conditions of the market environment pose a challenge for the creators of increasing demands in analyzing, examining and testing modern aspects of stock exchange trading in order to effectively respond to changing environmental conditions (Anđelić et al., 2016). Most trading systems can be divided into two categories, the first by trend. That is, technical indicators are trying to discover an important trend and inform investors that they can profit from the trend. Other category is an analysis of technical indicators using oscillators through which the trend change can be quantified. In accordance with the above, the main objective of this research is to provide to readers the information on one of the market's best-quality digital currencies - Ripple XRP, as well as providing up-to-date information on the possibilities and directions for improving efficient management and trading it. The basic hypothesis of this research is that the optimal choice of technical analysis methods is in the function of efficient portfolio management and trading this digital currency.

## 2. Technical Analysis Indicators

The very basis of the technical analysis lies in the Dow Theory<sup>4</sup>. The Theory is actually a form of technical analysis that relies on detecting trends in the stock market to determine an investment strategy (Schannep, 2013). In practice, technical analysts do not dispute the validity of fundamental analysis, but on the other hand believe that prices have already been incorporated into the value of the financial instruments. For instance, one of the best documented behavioral tendencies is the effect of dispositions, which relates to the tendency of investors to keep the instrument to a loss of investment. As Grinblatt and Bing concluded (Grinblatt and Bing, 2005), according to the effect of the dispositions, investors are willing to understand the losses. This effect can lead to shifts in the prices of financial instruments, even if the fundamental values follow a random walk. Technical analysis uses a large number of data, including historical price, which allows direct trading strategies. Bigger or smaller price changes will follow the main trend of movement, creating opportunities for their exploitation (Bodie et al., 2013).

There were defined three aspects that include psychology, methods and risk management (Elder, 2002). The influence of psychology refers to the study of the emotional characteristics of investors such as greed, fear, courage, or some other emotion. Risk management defines investment decisions based on signals and factors by defining the choice between risk and return. Also, various types of charts are used in assessing the trend in technical analysis. In financial theory and practice, there are three types of charts. The candlestick charts<sup>5</sup> are most often used and provide the most information, then the line charts that are the most basic ones, and finally column charts which shows more detail than line charts but are not as precise as candlesticks.

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<sup>4</sup>Dow Theory is the name given to the ideas that derive from Charles Dow, the first editor of the Wall Street Journal and inventor of the stock market average, known today as the Dow Jones Average. The Dow Theory is made up of six tenets, and all traders who decide to use technical analysis should know these 6 principles, as they will help them to better understand how the markets work. More about the Dow Theory and the Technical Analysis see:

[https://www.ifcmarkets.com/pdf\\_files/tradingbooks/en/the-dow-theory-in-technicalanalysis.pdf](https://www.ifcmarkets.com/pdf_files/tradingbooks/en/the-dow-theory-in-technicalanalysis.pdf)

<sup>5</sup> Each candle represents a single trading period. The candle consists of a body and two shadows/wicks, one of which is on the upper and the other at the lower end of the body of the candle. The wick of the candle at the upper end of the body represents the highest level, while the shadow on the lower part represents the lowest level of the price of a particular instrument in a certain period. The body of the candle represents the prices at the opening and closing. In practice, if the body was painted, there was a price increase compared to the previous period. If it is "empty", prices have fallen in relation to the previous period. In the continuation of the work, and for the purpose of explaining the practical example of trading, IQ trade platform was used in which the candles are painted green and red

## 2.1 Technical analysis main tools

Further in this paper, the basic tools used in the technical analysis will be explained, and then will be shown how these tools will be applied during the trade. The first tool is the moving average (MA) that represents the arithmetic mean. The difference is that the arithmetic mean is the average value of all available data, and the moving average - only one part of this data. If the price information is available for a period of 260 days (52 weeks x 5 business days), then, for example, a moving average of 30 days is equal to the average price for the first twenty days. The next average value is the average value of the price from 2 to 31 days, then from 3 to 32 days, and so on. Basically, for the analysis of short-term trends, movable averages are used with fewer periods (usually 5, 8 or 14), while in long-term trends the averages with longer periods (20, 50 or 100) are used. Within the moving average, there are several subspecies of moving averages, which will be explained below. The first in the series is an ordinary moving average-SMA and all of the above refers to a regular moving average. The formula for calculating the moving average is:

$$PP = \frac{\sum_{i=1}^n Ci}{n} \quad (1)$$

Where  $(\sum Ci)$  represents the prices sum set for n period; n = number of periods for which the moving average is calculated. The simplicity of calculating this average (1) contributed to its popularity and wide application. However, precisely because of the method of calculation, all types of moving averages are "late" for the current price and therefore belong to the group so-called. Indicators that follow the trend (trend following indicators). The next moving average is a weighted moving average-WMA, which differs from SMA in that it gives a certain weight to each price in the observed interval, which is the greater the data is closer to the present moment. In this way, newer data is given more importance than those from previous periods. The formula for calculating the weighted moving average is:

$$PPP = \frac{\sum Ci Wi}{\sum Wi} \quad (2)$$

Where  $Wi$  = is the weight of the i-th price. In the case of linear weighting  $W = i$ . In addition to the weighted, it is necessary to mention the exponential movements of the average-EMA. This is a weighted moving average in which, as in the previous case, a greater significance is given to newer data. The difference from the previous one consists in calculating the exponential moving average taking into account all the available data, and not only those for which the average is calculated (in the previous case, 30 days). The formula for calculating this average is:

$$EMAt = EMAt-1 + (k * (Ct - EMAt - 1)) \quad (3)$$

Where t represents today's date; t-1 represents the previous day;  $k = 2 / (n + 1)$ .

It follows the MACD, ie the convergence / divergence index of moving averages. This index is a two-component indicator based on two exponentially weighted moving and medium-term moving average. The first component of this indicator is the line that represents the difference between the two moving averages, calculated for a different period of time. This component is called the Price Phase Line. The second component, called the Signal Line, is the exponentially weighted moving average of the first component. These two lines are graphically represented on the same X-axis timeline. The price phase line is above the Signal line, in a period of rising trend, that is, in the event of a downward trend, this line is below. Signals for buying or selling are generated at the moment when these lines are crossed. The purchase signal is when the price line in its movement from below upwards exceeds the Signal line, while the sales signal appears at the moment when the price line line, in its movement from above, crosses the Signal line from below. Due to its weighted nature, this indicator is useful in highly volatile markets, such as the digital currency market but it also gives very precise forecasts when it comes to the digital currency that is analyzed in its work. The time period used to calculate the short-term moving average is usually 12 periods, and for the long-term 26, and for the signal line 9 periods. In addition to moving averages as an indicator of technical analysis, in practice can be found Oscillators. The use of an oscillator is one of the easiest and most reliable methods of forecasting the future movement of the prices of financial instruments. In contrast to moving averages, oscillators give the best results in the analysis of the period without apparent trends, or with the so-called side trend. At the

core of the oscillator application lies the concept of overbought and oversold in the financial market. It is considered that the market is in the stage of over-purchasing, when the price is around its upper limit for a certain period and when there is a serious resistance to its further growth. In the stage of over-sales, the market is when the price is at such a low level that its further decline is not expected due to strong support. When the price is so low, that its further decline is not expected due to strong support the market is in the phase of over-sale. To recognize these situations, the upper and lower limits are defined for each oscillator. When the value of the oscillator reaches these limits, it is a signal of a trend change - buying or selling signal. Another important type of oscillator is divergence between the direction of the price movement and the oscillator line. The dissolution is the announcement of a potent trend change. Below it can be found the two most famous and commonly used oscillators. Relative Strength Index (RSI) which shows the relative relationship between positive and negative price changes over a specific period. RSI is a range-bound oscillator, meaning that it fluctuates between 0 and 100 depending on the underlying security performance, and is calculated based on prior sessions' average gains versus losses. As the number of sessions used in the calculation increases, the measurement becomes more accurate (Boyte-White, 2018). The recommended number of the period is 14. The formula for calculating the relative strength index is:  $RSI = 100 - 100 / (1 + RS)$ ;  $RS = AG/AL$ ; AG represents the average positive change in the price from period to period (for example 16 periods); AL represents negative price change from period to period (for example 16 periods). The purchase signal is generated when the value of the RSI drops below 30 (oversold), while the ability to sell when it is above 70 (overbought). In addition to the RSI, there is also a Stochastic oscillator, which puts the difference between the maximum price in the previous period and the prices of the current day, and the maximum price and minimum prices in the previous period. George Lane<sup>6</sup>, the author of this indicator, proposes 21 periods for calculating the price range. The significance of indicators is based on the observed rule that the current price is almost always closer to the upper limit in growth periods, that is, closer to its lower value - in periods of decline. The formula for calculating a stochastic indicator, often marked with % K, is:

$$\%K = 1 + \frac{C_{max}-C_t}{C_{max}-C_{min}} \quad (4)$$

where  $C_{max}$  = maximum price reached during the previous period;  $C_t$  = current price of the instrument  
 $C_{min}$  = minimum price during the previous period. The indicator is expressed in values on the scale from 0 to 100. The control lines are at 80 and 20. The value of the indicator above 80 indicates the reached maximum price (overbought), and generates a signal for sale, before the expected drop occurs. Analogously, when the indicator has the value below 20 has reached the bottom (minimum), and no further decline is expected, but the price increase, which gives a buying signal.

### 3. Ripple XRP – Technology for improving the function of Financial Institutions

Ripple is a network created by the company with the same name in order to facilitate transactions between financial institutions. On this network, the XRP Token, which is traded on the financial market, appeared in response to the ever more frequent trading in digital currencies. At the beginning of its work, the goal of this company was to allow the transfer of money from any currency into any currency within a few seconds, where Ripple would serve as a universal currency that reduces transaction costs, a similar role nowadays to SWIFT code or even PayPal. This network and token have not been created with the intention to be a method of paying for goods and services, but the essence is that Ripple offered financial institutions a way to bypass the currently complicated, unnecessary expensive and slow cross-border payment procedure, and to this day, many banks accepted Ripple as a network that provides far less transaction fees.<sup>7</sup> Also, this network is safer, since it allows sending, receiving and retaining currencies in the decentralized system. To make this clearer, the purpose of

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<sup>6</sup> According to an interview with Lane, the Stochastic Oscillator doesn't follow price, nor volume or anything like that. It follows the speed or the momentum of price. As a rule, the momentum changes direction before price. For more information about George Lane's Stochastic visit <http://forexstarmoon.com/files/ebook/Part0/Lane-Stochastics.pdf>

<sup>7</sup> The license to use Ripple blockchain technology currently has more than 100 banks such as UniCredit, Sanntander, UBS, American Express, BBVA and others.

Ripple is to create a streamlined, decentralized payments system using technology inspired by the blockchain<sup>8</sup>.

For instance, the token may be used as a bridge currency - Serbian Dinar in Belgrade could become XRP, which could then be turned into Brazilian Real in Rio de Janeiro. Having a lingua franca of payment could help banks avoid the hassle and expense of tying up money in different currencies at other bank accounts. It can be noted that the most valuable feature of Ripple is liquidity. In other words, unlike some other digital currencies such as Bitcoin, which is the pioneer in the world of financial instrument trading of this type, and who need four hours to execute the transaction, the XRP, a token within the Ripple network, requires 3.6 seconds. The less time consumed means lower transaction costs, which is fully enough for the banks to fully start switching to a new cross-border payment system. On the other hand, there is also a fear of losing privacy, as well as a lack of transparency in what is the essence of the blockchain technology. The present fear is in a way justified by the fact that in the case of Ripple there is an instance that oversees all transactions. The centralized currency in the world in which the talk of decentralization has led to the fact that, on the one hand, Web sites like CoinMarketCap<sup>9</sup> classified it as a digital currency, and on the other, certain users do not regard it as one at all. However, Ripple XRP is very popular, and one of the strongest factors in increasing popularity is that Ripple is perceived as a safer option by investors because it is used by banks. Many investors have the view that the most popular digital currencies has experienced its peak, so they are looking for an alternative that will pay off in the long run to the XRP. In matter of fact, today Ripple is perhaps most likely the most attractive among the digital currencies, with the best performance in the end of 2017, recording a profit of 36.018% during the last year. As Ripple's price was more affordable at the beginning of December 2017 (it will be shown below) than it was with other digital currencies, a "bubble" was formed around the XRP, and in a short time it climbed to a scale of values. In pictures bellow it will be shown movement of the Ripple XRP value in both the December 2017 and the period from June 2017 to March 2018.

Picture1. Ripple XRP value in December 2017



Source: (Daily price information taken on December 2017 from IQ Option trading platform)

Picture 1 shows that the last signal for buying the XRP token was around 10<sup>th</sup> December. Also, it can be seen how was the volatility of this currency was moving (showing just the month of December). The impression is that the value of this token has rapidly burst since in December 2017 more than 60 banks

<sup>8</sup> Decentralization is a way of taking power away from big institutions and distributing it to everyone else. It's one of the most exciting things about crypto currencies and a big breakthrough in thinking about how the world can be organized.

<sup>9</sup> Blockchain technology made it possible for digital information to be distributed rather than copied, creating the basis for, as it is increasingly commented on - a new version of the Internet. This technology was created for the needs of the digital currency Bitcoin, but in the meantime its enormous potential has become important in the financial sector. For more information on Coin Market Cap: [www.coinmarketcap.com](http://www.coinmarketcap.com).

from Japan and South Korea formed a coalition to transfer money across the border using Ripple. Also, MoneyGram and Western Union are in terms of XRP adoption in March 2018. While both of these partnerships represent pilot programs, it should be seen within the next several months whether the companies are benefiting from implementing XRP. Assuming XRP increases the efficiency of money transfers and transactions, it only makes sense that more businesses within the financial industry (both banks and financial institutions) have given XRP a try (LeVere, 2018). Below in the picture 2 the movement of the XRP token value is shown in the period from June 2017 to March 2018. The price volatility for this period can be clearly seen as well.

Picture 2. XRP price movement from June 2017 to March 2018



Source: Price movement information taken on March 2018 from IQ Option trading platform

Picture 2 shows the price movement from October 2017 to March 2018 where it can be clearly seen first the bullish trend in December and the bearish one in the beginning of January 2018. For instance, the investor who bought an amount of these tokens in the beginning of October, when the price was around \$0.20, and sold the same amount at the end of the same year when the value was around \$2.71, could have a 1350% return.

### 3.1 Ripple XRP management: daily trading Case Study

Ripple XRP has been gathering a great deal of interest in the world of crypto world. Just like number of other digital currencies, Ripple's XRP likewise makes purpose of the blockchain technology. As it was mentioned above, unlike other digital currencies, Ripple XRP is regulated and it helps with fund transactions for banking institutions.

XRP Ripple's native currency soared from under \$0.01 to over \$0.30 a unit in 2017 and from \$3.31 in the beginning of January 2018 to less than \$0.54 in March 2018. This spike can be attributed to its adoption by numerous banks and the global growing interest. These price fluctuations provide precisely the environment needed to bolster profits. The first trade was in December 2017, precisely December 27<sup>th</sup> to December 30<sup>th</sup> 2017. Observing the previous trading day and noting that both lines of moving average (SMA) and (WMA) crossed, as well as by interpreting the MACD indicator, it could be clearly conclude that a trend change will occur, ie the trend will be rising. At the first day of trade the price was \$1.12, and just during that day Ripple XRP jumped to \$1.26. On December 28<sup>th</sup> the highest price was around \$1.25 and it kept rising until December 30<sup>th</sup>, when the selling decision was planned. Price at selling moment was \$2.16, just at the moment when moving averages crossed themselves downside, which indicated the decreasing trend. At the selling moment the 72.80% return was made. In the picture below it can be seen the trading period from December 27<sup>th</sup> to December 30<sup>th</sup> including the SMA, WMA and MACD indicators.

Picture 3. SMA WMA MACD trading December 27<sup>th</sup>-30<sup>th</sup>



Source: (Price movement information taken on December 2018 from IQ Option trading platform)

Next trade was in a range from February 15<sup>th</sup> to 19<sup>th</sup> Ripple XRP broke down of this range on February 20<sup>th</sup>. It has also fallen below EMA (red line on the Graph) and this indicates weakness, which will be shown in Picture 3 below. The stop loss of \$0.95 that was suggested has not yet been breached.

Picture 4. EMA trading February 15<sup>th</sup> -19<sup>th</sup>



Source: (Price movement information taken on February 2018 from IQ Option trading platform)

The investment in this financial instrument will gain strength only if it breaks out and sustains above \$1.24. It was expected the digital currency to remain range bound between \$0.86 and \$1.2 over the next few days, and fortunately that scenario happened, right before the next plummet.

Last trade, but for sure not the least one was in March 2017, precisely March 4<sup>th</sup> to March 8<sup>th</sup> 2017. Observing the previous trading day and noting that price on March 4th was \$0.91 when the purchase was done, the next day the price jumped and then everything indicated that the trend would come to an end, however, the short-term estimate was wrong, and with the help of the oscillators that pointed to the

future decline in the trend came to the sale of the instrument the day before, or March 7. The picture below shows the RSI oscillator set to 14 periods, Stochastic oscillator, as well as moving averages EMA and SMA. In the figure of the graph, on the trading simulation below, it is clear that the oscillators were given the prognosis, on the basis of which the original plan for the sale of this currency has been changed and moved for the day before. The conducted research and simulation of the above organized trading confirmed the basic hypothesis of this research, which is that the optimal choice of technical analysis methods including the basic Oscillators prediction is in the function of efficient portfolio management and trading Ripple XRP digital currency.

Picture 5. RSI Stochastic and EMA SMA trading March 4<sup>th</sup>-8<sup>th</sup>



Source: (Price movement information taken on March 2018 from IQ Option trading platform)

## 4. Conclusion

Technical analysis enables the minimum necessary information for decision making in a quick and easy way, and the long-term use gets a very significant experience for a quick reaction to the newly emerging market changes. Despite all the disputes due to the lack of a scientific basis, technical analysis has kept and will keep its popularity and purposefulness among investors. In the world where money exists in the digital ledger of banks, digital currencies like Ripple is, have a special place as they are not anti-bank in way like many other ones are. Instead, they are developed to let the banks utilize the evolving blockchain technology. It's not easy to say how quickly Ripple will have the ability to take SWIFT down or not. At least, there is no doubt that it can certainly break the monopoly of it over international bank transfers. By analyzing Ripple XRP for last 11 months, with the special focus on the period from October 2017 to march 2018, and implementing Technical analysis tools for trading with Ripple XRP digital currency, quite few conclusions can be made. Ripple, much like the other big players in the digital currencies world is hugely volatile. With that unpredictability comes the potential for significant profit, especially for short-term traders. Only one news announcement can create a bubble and send prices soaring, or plummeting. Also, investing in Ripple XRP as a long-term investment that would like to hold for years to come, Ripple indeed seems to be a promising investment. Investment in XRP for quick gains within a few months up to a year seems quite promising. In 2018, after three months of plummet, it is expected to be seen the same situation for not more than one month, and after a sharp upsurge in prices is expected. It is projected to cross the \$1 value at the very least. In the other hand, if you are a day trader, XRP's trading volume should grow as well. With increased trading activity, fluctuation in prices will also be seen. Investing in XRP as an extended investment with intention to keep it for many years to come appears to be a promising investment. A paradigm transformation is taking place indeed, and we are witnesses of moving to the digitization of all money. With more investors becoming aware of XRP and a growing awareness towards its technology, XRP's prices are expected to rise in 2018. In the first half of 2017, XRP's price surged up to 4000%, and in the observed period in this paper up to 1350%. A general conclusion can be made that whilst other digital currencies elude banks, Ripple is embracing them, and this is



doubtless good for traders. It means Ripple's value will continue to increase, along with many trading opportunities.

## 5. Literature

- [1] Bettman, J. L., Sault, S. J., & Schultz, E. L. (2009). Fundamental and technical analysis: substitutes or complements? *Accounting & Finance*, 49(1), 21–36.
- [2] Lo, A, Mamaysky, H, Wang, J. (2000). *Foundations of Technical Analysis: Computational Algorithms, Statistical Inference and Empirical Implementation*, NBER Working Paper No. 7613, p.p 12.
- [3] Anđelić, G., Đaković, V., Tot, V. (2016). New development trends of commodity exchanges through the prism of modern standards. *Poslovna ekonomija*, 10(2), 1–27.
- [4]. Schannep, J. (2013) *The Dow Theory Newsletter*. Home of the Schannep timing indicators, June 2013.
- [5] Grinblatt, M., Bing H, (2005), *Prospect Theory, Mental Accounting, and Momentum*, *Journal of Financial Economics* 78, pp. 31–39.
- [6] Bodie, Z, Kane, A, Marcus, A. (2013). *Essentials of Investments – Ninth Edition*, McGraw-Hill Irwin, New York.
- [7] Elder, A. (2002). *Come into my trading room*, John Wiley and Sons Inc, New York.
- [8] Boyte-White, C., (2018) What are the best indicators to identify overbought and oversold stocks, Investopedia, LLC Retrived on 3March2018, from <https://www.investopedia.com/ask/answers/121214/what-are-best-indicators-identify-overbought-and-oversold-stocks.asp>
- [9] LeVere, M., (2018) Three ways Ripple will grow in 2018. Retrived 11March2018, from <https://www.oracletimes.com/ripple-xrp-grow-2018/>
- [10] Leising, M., Robinson E., (2018) Ripple wants XRP to be Bitcoin for Banks. If only the banks wanted, *Bloomberg business week*, New York. Retrived 11March 2018, from <https://www.bloomberg.com/news/articles/2018-01-25/ripple-wants-xrp-to-be-bitcoin-for-banks-if-only-the-banks-wanted-it>
- [11] Matasyan, S. (2013) *The Dow Theory in Technical Analysis*, online PDF publishing, IFC Markets Retrived on 10March 2018, from [https://www.ifcmarkets.com/pdf\\_files/tradingbooks/en/the-dow-theory-in-technical-analysis.pdf](https://www.ifcmarkets.com/pdf_files/tradingbooks/en/the-dow-theory-in-technical-analysis.pdf)
- [12] Martinović, A. (2006) *Predviđanje cene akcija pomoću tehničke analize*, *Ekonomski Anali*, br. 170, Ekonomski Fakultet Beograd
- [13] Lane, G. *Lane's Stochastic Stocks & Commodities V. 2:3 (87-90): lane's Stochastics*. Retrived 05March 2018, from <http://forexstarmoon.com/files/ebook/Part0/Lane-Stochastics.pdf>
- [14] Schwartz, D., Youngs, N., Britto, A. (2014) *The Ripple Protocol Consensus Algorithm*, Ripple Labs Inc, San Francisco. Retrived 21February 2018, from [https://ripple.com/files/ripple\\_consensus\\_whitepaper.pdf](https://ripple.com/files/ripple_consensus_whitepaper.pdf)
- [15] Elder, A. (2015) *Step by step Trading*, elder.com, Retrived on 07March2018, from <https://stockcharts.com/step-by-step-trading.pdf>