

**MERGE OF THE TECHNICAL ANALYSIS TYPES GIVES THE BEST RESULTS IN
CRYPTOCURRENCY MARKET****DR. MUSTAFA ÖZYEŞİL
MOHAMMAD AL-TARIFI****Abstract**

Cryptocurrencies are a modern kind of financial instrument (Hudson & Urquhart, 2019), the first cryptocurrency is Bitcoin, proposed by who called Satoshi Nakamoto (2008), as The open source was created on the proof-of-concept principle that transactions can be securely treated on a decentralized peer to peer network without the need for a central clearinghouse, which appeared 2009 (Heid, 2013). The success of the bitcoin blazes a trail to what called 'Altcoin' this expression means all the cryptocurrencies that set in motion after the victory of the bitcoin, these coins sell themselves as the best alternatives for the bitcoin (FRANKENFIELD, 2020). There are many types for the altcoin. The third type of the cryptocurrency is called Tokens Unlike Bitcoin and Altcoins, tokens are not able to activate independently and are dependent on the grid of another cryptocurrency. That means they do not have their own core DLT or blockchain, but instead, are built on top of an existing cryptocurrency's blockchain (Types of cryptocurrencies: explaining the major types of cryptos, 2019).

The worth of bitcoin doesn't depend on any tangible asset or economies of the countries while it is based upon the security of an algorithm which traces all transactions (Hudson & Urquhart, 2019). The studies determine the number of the bitcoin price development in the long-run (Ciaian, Rajcaniova, & Kancs, 2018):

- Market forces of the Bitcoin supply and demand
- The bitcoin's attractiveness for the investors
- The influence of global macro-financial developments

If you're forming an investment strategy designed to help you trail long-term financial intentions, understanding the relationship between company size, return potential, and risk is vital. (Market cap—or market capitalization—refers to the total value of all a company's shares of stock, 2017). Hence, Manifested importance a cryptocurrency's market capitalization as the total values of all coins currently in circulation. the cryptocurrency's market cap contains what's called Bitcoin Dominance that is the ratio between the market cap of bitcoin to other coins of the cryptocurrency markets (jacobcanfield, 2019).

Cryptocurrency trade is attractive type of investment. this market treated the same of the foreign exchange and stock market (Radityo, Munajat, & Budi, 2017). The investors using the same basic in investment (buy low, sell high) but they need to calculating the risks

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AN INTRODUCTION OF TECHNICAL ANALYSIS

There are many of trading strategies, broadly divided into: technical and fundamental (Fang, et al., 2020) .Market technical analysis consider one of the common methods used from the investors to calculate investment risks (Radityo, Munajat, & Budi, 2017). **The technical analysis is** a practice employed to forecasts' the investments and identify trading chances by analyzing statistical trends gathered from the historical price information's on a particular asset in order to make forecasting to the futures direction of said asset, such as price movement and volume (Technical Analysis, 2020) .

When talking about the technical analysis , the most improtant to know that this consider about merge of the art and science to forecasting the future price movement by examination the Past and historical price movement .The art represented by drawing support and resistance areas , triangles, chart patterns ..etc. While the science using the mathematical equations that become as indicators that give the users signals lead them to buy and sell points.

Firstly, will talking about types of chart , charts are used as the working tools of the technical analysis to plot the price movemnet in pictorial form . It contains of two axis (time and price) . the most popular types of the charts (line chart, bar chart, candlesticks charts). While line chart are formed by connecting of the closing price of the commodities over a specified time period , bar chart is the most popular type to see the price action of a commodities as follow (the top of each one of the bar consider the highest price in the period , the bottom of the bar consider the lowest price traded in the period , the left tick is the open price traded during the period and the right tick consider the closing price traded during the period) usually bar chart used to predict the trends during a longer time frame (long-term), the third type is candlestick chart that provide visual insight to current market pscycology, like a bar chart can use it in multiple time frame (minute , hour , day , week , year) but it gives more information about the market pscycology , If the candlestick opening priceis higher than the closing price, it means a bearish or selling sentiment, if the candlestick opening price is lower than the closing price, it means a bullish market in that time frame and a buying sentiment. usually it's used for the short trading with another tools to determine the enter and exit plots .

Commonly , technical analysis fit into four types as follows : volume , volatility , trend ,momentum. Where each one of those follow one of two categories: lagging and leading indicators .Where lagging indicators are those who follow the price action , while leading indicators are those who lead the price movement (Different Types of Trading Indicators: Trend, Momentum, Volatility and Volume, 2020). Where we can define the four types as follows:

- Volume indicators: Those indicators that calculate the transactions and define which of the bears or bulls controlling on the market, this type of indicators can use for the both (leading and lagging). Where referring to the number of the contract or shares traded in entire market during the given period, where high volume is signal of high liquidity. From which indicators belong to volume (Accumulation/distribution index, money flow index MFI, on balance volume OBV, volume price trend VPT and force index FI). It's worth noting that volume affected by the dark pool where designed to make the exchange order anonymous to avoid the

slipping of prices from speculators, as such the decentralized dark pool in growth where it's available in two of the biggest crypto exchange platforms (Bitfex, Kraken)

- ✓ Volume measures the number of contracts traded in the future options
- ✓ Volume can be an indicator of the market health
- ✓ When the price goes down while the volume high that indicator on gathering strength to downtrend
- ✓ A sudden increase in the volume may indicator to probability increasing in the price
- ✓ Strong moves of the trend hand by hand with trading volume it can be measure of the strength

• Volatility indicators: This type of indicators looking for the changes in the share price in determined period. Where the faster prices change have higher volatility and vice versa. The indicators that belong to the volatility type (average true range ATR, Bollinger bands, Donchian channel, Keltner channels)

- ✓ When the asset has high volatility will drifting away from its average direction
 - ✓ When the asset has low volatility will respect the average direction
- Trend indicators: Trend indicators analyze whether a market is moving up, down, or sideways over time(lagging). The indicators that belong to Trend type (Average Directional Index, Ichimoku Kinkō Hyō , Moving Average Convergence/Divergence MACD ,Mass Index,Moving Average ,Parabolic SAR, TRIX,Vortex Indicator VI,Know Sure Thing Oscillator KST)
- ✓ Consider the key to determine the overall direction of the share
 - ✓ Based on the higher highs, higher lows for uptrend, and lower highs, lower lows for down trend
 - ✓ Multiple time frame analysis help to clearing the picture, where may some of the trends in the smallest time frame be seasonal while others be cyclical .It's important to looking for the Fibonacci retracement with trend indicators, to ride other traders that depend on the retracement levels in their trading.

• Momentum indicators: This type of indicators used to get on better understanding of the rate and speed of the price of the assets changes. The indicators that belong to Momentum type (Relative Strength Index Stochastic Oscillator, Williams %R, moving average convergence divergence MACD, Average Directional Index ADX)

- ✓ Shows the movement of the price and the strength of the movement
- ✓ Shows the points that probably the price will reverse from it(university, 2020)

Don't forget that art consider as important part of the technical analysis, where many of the traders and experts claim the chart patterns is enough to make good trading and get on high profit. Those the popularized by Edward and Magee pattern that the most of the traders use it (head and shoulders, trend lines, Double top and Double bottom, cup and handle, Triple top and Triple bottom, broadening top, Price channels, Triangle, wedge pattern, Flag and pennant patterns and Elite patterns). As such when talking about the mathematical notation will remember Fibonacci numbers and Gann angles to determine the support and resistance levels and future price move.

METHOD**Merge four of the indicator types (volatility , momentum , volume , trend)**

Here will apply the merging using average true range , relative index , money flow index and average directional index

ADX

+DI  -DI  ADX 

ATR (MODIFIED CONSTANT)

LONG 0.3549 SHORT 0.5691

During 31th Dec 2019 to 04th Jan 2020 the simple bullish divergence observed in both RSI and MFI indicators as well -DI starting to moving down with ADX line that giving sentiment to rising probability on the price by calculating the entry price using ATR indicator according our modified calculation where the constant number is equal 0.3549 where the lower price of 04th Jan is equal 0.00002612 while the ATR line is equal 0.00000067 , that giving us the entry price on 0.00002636 on the 5th Jan then when calculating the target price according wielder constant 3.1 the result was 0.00002844 that what happened actually on the chart where the candelistick hitting this price on the chart at 6th Jan . hence , AD observe approved for all our chosen indicators .

In 6th Jan +DI line cross over -DI while ADX line starting to decrease from 41 to 40.3 in the same day if you looking for MFI indicator where symbol A determined (MFI line exceeds 80 that means there is oversold) in the same day looking for RSI where it's still under 60 degree resistance. Hence , by looking for MFI oversold and 60 resistance of RSI and decreasing of the ADX line the move down is predictable . By using modified constant of short ATR 0.5691 and looking for highest of the candlestick that's equal 0.00002968 as well ATR line is equal 0.00000087 to determine entry short price that's equal 0.00002828 after that using wielder constant 3.1 , the target price is equal 0.00002558, the candelistick actually hitting that's price in 8th Jan . Hence , A approved for all our chosen indicators.

During 6th Jan -31st Jan +DI above -DI as well ADX line above 25 , otherside MFI shaping bullish divergence as well RSI shaping the same divergence as it's clarified by symbol BD . Hence , there is probability to rising price . Using our ATR equation to determine entry price where lowest price is equal 0.00002513 and ATR line is equal 0.00000100 the entry price is equal 0.00002548 then calculate the target price by constant 3.1 to have a result 0.00002858 that's actually hitting it on 4th Feb .

4th Feb it's obsreved that RSI line exceeds 60 line that's giving sence to upward direction , as well the ADX indicator approve it and MFI rising in the same time that price rising . Hence we decides to enter long trade . Using the same ATR startegy to determining entry price where lowest price equal 0.00002694 and ATR line equal 0.00000109 the result of entry price is equal to 0.00002733 that's actually the price down to hitting this dot in 10th Feb . It's interesting to know the price rising exactly from this dot . Where RSI line reversing form 50 line support to hitting our target price that's equal 0.00003071 in 13th Feb to getting on the profit more than 12%. To register another victory to this strategy.

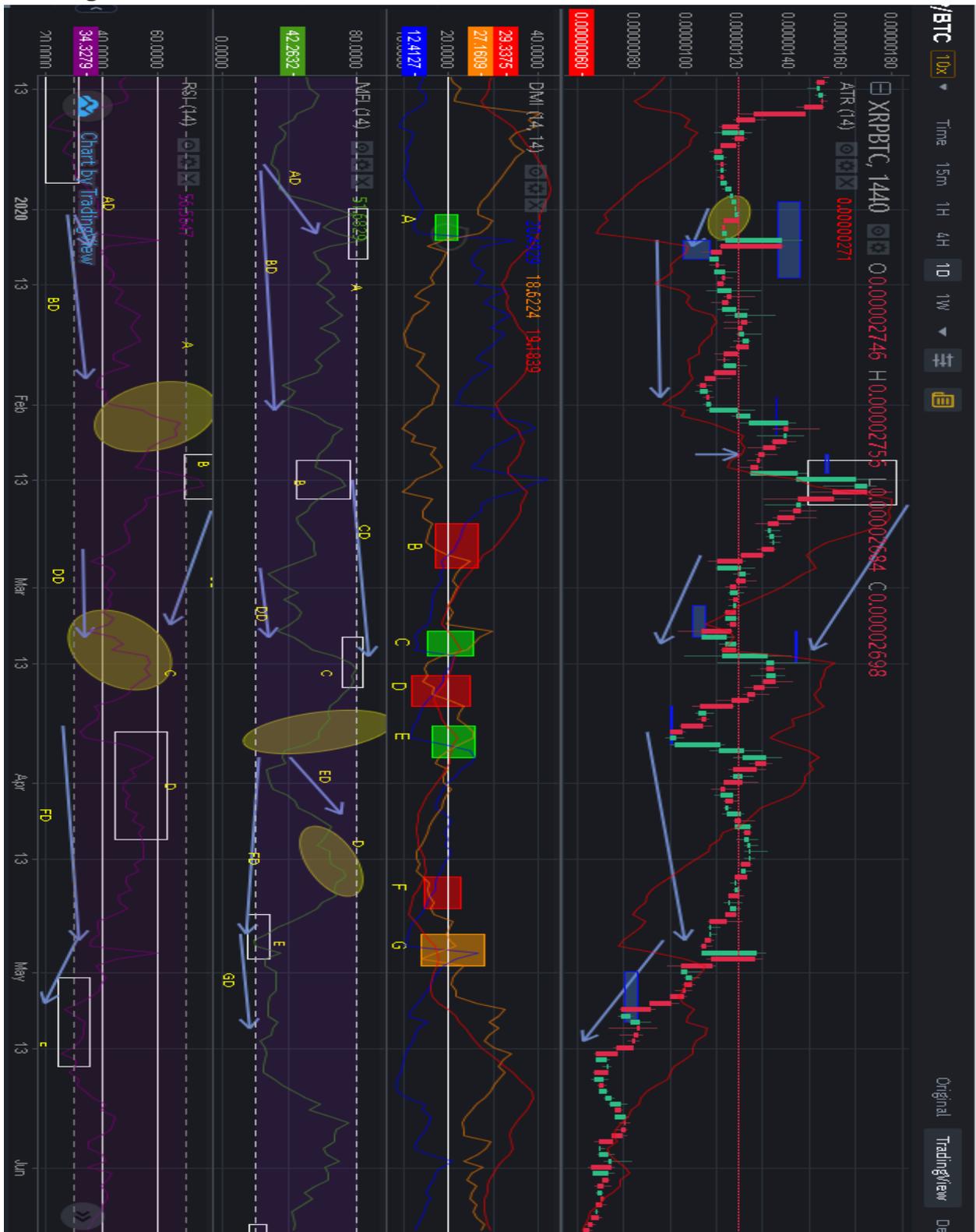
Between 12th Feb and 14th Feb RSI indicator enter to oversold zone above of 70 that's indicate to probability of reversal trend in case of the indicator exit this zone, actually that's what happened during 15th Feb, other signal form ADX line where +DI starting to rapprochement with -DI as well ADX Line decrease in the value, from MFI side during 15th FEB the indicator go down in the same direction of the price to getting on three indicates about short happening. To calculate the entry price using ATR strategy (highest = 0.00003355, ATR = 0.00000164, modified short constant = 0.5691, wielder constant = 3.1) to getting on the entry price that's equal 0.00003010 then getting on target price of short trade 0.00002502 that's what happened actually where the price hit this point in 8th Mar to get on 20% profit , observe that RSI line cross down 60 during 16th Feb and cross down the hot resistance line 50 during 24th Feb as well -DI cross over +DI in 25th Feb to make sure about our destination toward-down during our short trade between 15th Feb and 8th Mar to register another victory for this strategy.

During 27th Feb -8th Mar the simple bullish divergence observed for both RSI and MFI where the indicators giving lower high signal while price chart giving lower low signal as well ADX line give 21.05 that's give impression for a strength of the destination. By using our STR trading strategy where (lowest = 0.00002539, ATR = 0.00000117, modified long constant = 0.3549, constant = 3.1). To calculate the entry price where the result is equal = 0.00002581 in 9th Mar then calculate the target price where it's equal = 0.00002944. actually, that target hitting the top of the swing as it's shown on the price chart during 13th Mar. Where through monitor the trading case, the trader can observe +DI cross over -DI during 11th Mar to sure about the right of destination.

During 13th Mar – 15th Mar where symbol C determined on both MFI AND RSI indicators , the reader can see oversold indicating by MFI where it's exceed 80 and reverse from the maturation zone while RSI indicator can't break 60 line that's represent strong resistance in down ward destination . Using ATR strategy to determine entry price as well target price in short trading where (highest= 0.00003 , ATR= 0.00000158 , modified constant = 0.5691 , constant = 3.1) after calculating entry price it's equal = 0.00002910 ,as well during 17th Mar -DI cross over +DI to ensure about downawrd destintion where the entry trade happened during 16th Mar then by calculating target price that's equal 0.0000242 that's actually where it go during 24th Mar .to getting on 20% profit .

During 26th Mar -28th Mar the reader can see hidden divergence between price chart and MFI indicator where price chart rising while MFI indicator in decrease case that giving sense to reversal to down and weakness in direction . In the same time the reader can observe RSI in 20-60 as well it's can't to brekought the resistance 60 as well ADX line decrease in the value under 20 that's give impression to weakness of the direction . Hence we decided to enter short trade depeding on the RSI level as well the resistance line on price chart using ATR strategy . Where (highest = 0.00002812 , ATR= 0.00000151 , Modified constant = 0.5691 , constant = 3.1) after calculating entry zone price it's equal = 0.00002726 during 30th Mar then by calculating target price that's eequal 0.00002258 that's actually hit that price during 7th May.

Fig A.R.M.A



Source: Trading view, 2020

Conclusion

When we talk about indicators we classified it to four types (trend , momentum, volume , volatility) . the most of the indicators need to merge with other, there are indicators used for determine the entry, other need to determine the exit price. But we modified ATR constant to getting on the right entry price, informally this indicator using for determine exit price using solver to rapprochement the numbers of MAPE error to interval (zero – 5%) look at Fig3.8.1.1. and merged it with other indicators to determine the right direction movement, momentum and volume then using wielder constant 3.1 to determine the exit price on daily time-frame. Where after combined Average True Range with relative strength index, money flow and directional movement (look at Fig A.R.M. A) we observed the accurate of this strategy where after checkup we can see the strongest of those merged indicators on crypto market.

References

- Fang, F., Ventre, C., Basiosb, M., Kong, H., Kanthan, L., Li, L., . . . Wu, F. (2020). Cryptocurrency Trading: A Comprehensive Survey. *researchgate*, 29.
- Heid, A. (2013). Analysis of the Cryptocurrency Marketplace. *HackMiami*, 35.
- Radityo, A., Munajat, Q., & Budi, I. (2017). P red ictio n o f B itc o in E x ch a n g e R ate to A m erica n. *West Java*, 6.
- Argentines wait at banks to withdraw cash as currency controls kick in. (2019, sep 23). Retrieved from reuters: <https://in.reuters.com/article/us-argentina-economy-deposits/argentines-wait-at-banks-to-withdraw-cash-as-currency-controls-kick-in-idUSKCN1VN220>
- Baur, D. G., & Thomas Dimpfl. (2018). Asymmetric volatility in cryptocurrencies. *elsevier*, 148-151.
- Bitcoin Cash (BCH). (2020). Retrieved from COINMARKETCAP: <https://coinmarketcap.com/currencies/bitcoin-cash/>
- Bouri, E., Lau, C., Lucey, B., & Roubaud, D. (2019). Trading volume and the predictability of return and volatility in the cryptocurrency market. *elsevier*, 340-346.
- Cardano. (2020). Retrieved from coinmarketcap: <https://coinmarketcap.com/currencies/cardano/>
- Ciaian, P., d'Artis Kancs, & Miroslava Rajcaniova . (2015). The economics of BitCoin price formation. *Taylor & Francis*, 18.
- Ciaian, P., Rajcaniova, M., & Kancs, d. (2018). Virtual relationships: Short- and long-run evidence from. *elsevier*, 23.
- coinmarketcap.com/currencies/bitcoin/. (2020, dec). Retrieved from coinmarketcap.com: <https://coinmarketcap.com/currencies/bitcoin/>
- Comben, C. (2019, MAY 19). Three huge names that are making Ethereum their platform of choice. Retrieved from [finance.yahoo.com](https://finance.yahoo.com/news/three-huge-names-making-ethereum-140010121.html): <https://finance.yahoo.com/news/three-huge-names-making-ethereum-140010121.html>
- Corbeta, S., Ahmet Sensoye, Brian Luceyc,d,, & Veysel Eraslanb. (2019). The effectiveness of technical trading rules in cryptocurrency. *elsevier*, 32-37.
- DAHAM, A. Z., & Abdullahi Abdu Ibrahim . (2020). EFFECTS OF VOLATILITY AND TREND INDICATOR FOR IMPROVING PRICE PREDICTION OF CRYPTOCURRENCY. *IOP*, 1-10.

Despite CEO Claims, Dash Isn't Really the 'Most Used' Crypto in Venezuela. (2019, aug 15). Retrieved from CoinDesk Bitcoin News: <https://www.coindesk.com/despite-ceo-claims-dash-isnt-really-the-most-used-crypto-in-venezuela>

Different Types of Trading Indicators: Trend, Momentum, Volatility and Volume. (2020). Retrieved from quantshare: <https://www.quantshare.com/sa-446-different-types-of-trading-indicators-trend-momentum-volatility-and-volume>

Ethereum Classic . (2020). Retrieved from coinmarketcap: <https://coinmarketcap.com/currencies/ethereum-classic/>

FRANKENFIELD, J. (2020, 2 2). Altcoin. Retrieved from investopedia: <https://www.investopedia.com/terms/a/altcoin.asp>

Grobys, K., Ahmed, S., & Sapkota, N. (2020). Technical trading rules in the cryptocurrency market. *elsevier*, 1-7.

Huang, J.-Z., Huang, W., & Ni, J. (2019). Predicting bitcoin returns using high-dimensional technical indicators. *ScienceDirect*, 140-155.

Hudson, R., & Urquhart, A. (2019). Technical Trading and Cryptocurrencies. *aHull University Business School*, 33.

Ilomäki, J., Laurila, H., & McAleer, M. (2018). Market Timing with Moving Averages. *sustainability*, 1-25.

MIX. (2017, nov 3). Ethereum's Vitalik Buterin: Biggest Bitcoin investment platform likely is a Ponzi scheme. Retrieved from thenextweb: <https://thenextweb.com/insider/2017/11/03/ethereum-buterin-bitcoin-bitconnect/>

mix. (2020, dec 03). How BitConnect pulled the biggest exit scheme in cryptocurrency. Retrieved from thenextweb: <https://thenextweb.com/hardfork/2018/01/17/bitconnect-bitcoin-scam-cryptocurrency/>

Monero. (2020, 12 3). Retrieved from coinmarketcap: <https://coinmarketcap.com/currencies/monero/>

Neves, R. H. (2020). Bitcoin pricing: impact of attractiveness. *springer open* , 18.

ÖZYEŞİL, M. (2019). The Relationship Between the Popularity of Cryptocurrencies and their Prices, Returns and Trading Volumes: A Structural Break and Comparative Analysis. *Istanbul Journal of Economics*, 133-157.

PayPal allows Bitcoin and crypto spending. (2020, OCT 21). Retrieved from BBC: <https://www.bbc.com/news/technology-54630283#:~:text=PayPal%20has%20entered%20the%20cryptocurrency,which%20accept%20PayPal%2C%20it%20said.>

Resta, M., Maria Elena De Giuli , & Paolo Pagnottoni . (2020). Technical Analysis on the Bitcoin Market: Trading Opportunities or Investors' Pitfall? *creativecommons*, 1-15.

Sapkota, N., & Grobys, K. (2019). Cryptocurrencies and momentum. *elsevier*, 6-10.

Shock in Cyprus as savers face bailout levy. (2013, MAR 16). Retrieved from BBC: <https://www.bbc.com/news/world-europe-21814325#:~:text=People%20in%20Cyprus%20with%20less,6.75%25%2C%20Eurozone%20officials%20said.&text=The%20levy%20itself%20will%20not,money%20transfers%20over%20the%20weekend.>

- Stellar (XLM). (2020). Retrieved from coinmarketcap:
<https://coinmarketcap.com/currencies/stellar/>
- Technical Analysis. (2020, mar 16). Retrieved from <https://www.investopedia.com/>:
<https://www.investopedia.com/terms/t/technicalanalysis.asp>
- The Fuel Of The Binance Ecosystem. (2020, aug 19). Retrieved from binance:
<https://research.binance.com/en/projects/bnb>
- Types of cryptocurrencies: explaining the major types of cryptos. (2019, 11 1). Retrieved from capital: <https://capital.com/types-of-cryptocurrencies>
- university. (2020). Retrieved from trading view:
<https://www.tradingview.com/ideas/university/>
- What Is Ethereum 2.0 And Why Does It Matter? (2020). Retrieved from academy.binance.com: <https://academy.binance.com/en/articles/what-is-ethereum-2-0-and-why-does-it-matter>
- What Is Ripple. Everything You Need To Know. (2020, dec 3). Retrieved from cointelegraph: <https://cointelegraph.com/ripple-101/what-is-ripple>
- Zcash (ZEC). (2020). Retrieved from coinmarketcap:
<https://coinmarketcap.com/currencies/zcash/>