

Cryptocurrency Investment Mechanism With Bitcoin Instruments in Indonesia

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Abstract

Cryptocurrency is a digital trading market that offers a new investment instrument in the midst of the investment polemic in the era of the virtual economy. Bitcoin was one of the first tokens in the cryptocurrency market that became a reference for other tokens in the cryptocurrency market. Bitcoin was created by a group that calls itself Satoshi Nakamoto in 2009. The purpose of bitcoin was created as a currency protection asset from the destruction of inflation and a currency replacement tool when the world economy is weakening. Now bitcoin as one of the world's investment instruments has been in great demand by the public, both individuals, institutions, and countries

Keywords

Bitcoin, Cryptocurrency, and Investment

1. Introduction

Cryptography: Cryptography comes from the Greek. Crypto means 'secret or hidden', while grafi means 'writing' Thus, cryptography is a secret writing or secret signature, digital signature (Beukeboom et al., 2015). Scientifically, cryptography is the meeting point between science, mathematics, computer science, and electrical engineering. The encryption computational algorithm is designed with the assumption that it is break-resistant because the purpose of using cryptography is for security. Applications using cryptography that have been around for a long time include ATMs, computer passwords, and e-commerce. Now cryptography is used as the secret key of Bitcoin virtual money in Blockchain technology. Cryptography works on the basis of specially created encryption algorithms that are used to validate and verify transactions that occur. Cryptography was developed to achieve a high reputation in the field of Bitcoin security.

One of the factors that led to the birth of Bitcoin was the global economic crisis of 2008 which started with the economic crisis in the United States and then spread to other countries around the world. In addition, the 2010-2013 European Sovereign Debt (ESDC) crisis caused some implementers to switch to conventional currencies and use Bitcoin instead. Interestingly, the Commodity Futures Trading Commission (CFTC) is an independent federal agency in the United States that regulates the futures and options market, as of September 2015. It regulates the supply of Bitcoin as a commodity (Bitcoinpro, 2017).

Bitcoin became the first cryptocurrency currency to become the mecca of other cryptocurrencies (altcoins). The number of bitcoins worldwide is only 21 million pieces of bitcoin and only about 18 million pieces are currently in circulation and the rest are still in the mining process which will be completed in around 2140.

Indonesia is the country with the 17th most Bitcoin users worldwide. With 34% of citizens using bitcoins as an investment instrument. This figure is still far below the countries of Ghana and Japan with the respective percentages being 52.1% and 52%. Globally, Indonesia is still below the average level of bitcoin usage, which is 39.1% of crypto digital currency usage worldwide. This can be caused based on the lack of understanding and backwardness of Indonesia in responding to technological developments in the digital currency era.

The value of the crypto market share which tends to increase is not followed by the development of human resources that are in line with technological developments in the virtual currency market. Crimes about theft and fraud about bitcoin began to mushroom in ways ranging from hacking a virtual wallet to store bitcoin, fraudulent transactions on hacker platforms and link scammers (fake sites), to fraud under the guise of "investment deposit" that often occurs around the world. Lack of literacy about bitcoin, cryptocurrencies, to the way new users and investors transact in the crypto world are still the main factors for crime in the virtual currency era. This causes users to look for shortcuts to get rich by following the traps of fraudsters in the crypto world.

1.1 Hypothesis

Based on the description of the background, it can be seen that the formulation of the problem is:

1. What is the mechanism for buying bitcoin currency?
2. What is the mechanism for storing bitcoins?
3. What is the mechanism for selling bitcoins?

1.2 Literature Review

Blockchain technology: Bitcoin ownership and transactions are protected by computer software technology that contains a database and functions as a world accounting ledger with a computer system that is distributed throughout the computer network of Bitcoin users in a peer-to-peer manner following an agreed protocol called technology Blockchain. Peer-to-peer is connecting from one computer to another in a large network of all Bitcoin users. After the transaction data is recorded and sent, the data cannot be changed because data changes must be carried out by all series of blocks. This is very difficult because if you want to change it requires the agreement of all network users. Blockchain records the chronological history of all transactions that have occurred in a series of connected blocks. Thus, the essence of transactions with bitcoin virtual money is a secret chain of signatures. According to Satoshi, cooperation between Bitcoin users using cryptography will defeat the attackers (Steve Nakamoto & J. K., 2008, Bitcoin.org., 2018).

The basic concept of Bitcoin is to create a decentralized authority transaction system without a third party, to be able to verify using the concept of a digital signature on every transaction (Steve Nakamoto & J. K., 2008). The idea sparked by Nakamoto by introducing an alternative currency system that really refers to the strength of supply (demand) and demand (supply): price increases occur because of high demand, and conversely price decreases occur because of the large number of goods offered (Anugrah et al., 2016).

Bitcoin prospect: until now, people see that Bitcoin investment is still attractive because until 2018 the price of Bitcoin is still very expensive. Peeter D. DeVries, optimistic that Bitcoin is still a baby in the future will grow. In fact, Bitcoin has the potential to become the world's largest commodity market holder (Beukeboom et al., 2015).

Mining (minning): Bitcoin mining is like mining gold, both have to dig. When instructions move 1 Bitcoin from siA (subtract) to B (add), the miners will scramble to validate by solving complex algorithmic formulas to ensure the correctness of the instructions. Whoever manages to validate the first time, he gets a small amount of Bitcoin as a reward prepared for the miners. The rewards are not from existing Bitcoins. Mining Bitcoin requires high-speed hardware and the mining activity consumes a lot of electricity. The Bitcoin algorithm has been designed to generate 21 million Bitcoins by the year 2124. So far, 16.7 million Bitcoins have been circulating. Thus, the remaining 4,300,000 Bitcoin Bitcoin Bitcoin circulation can be monitored via Blockchain (Aditya Hadi Pratama, 2016).

A spike in food and fuel prices will further weaken global currencies and encourage the imposition of capital controls, price controls and export controls. And supporting an investment strategy through a limited number of digital currencies with demand that is always fluctuating and tends to increase is the solution to price increases made by world policies.

Bitcoin is one of the cryptographic virtual currencies that is considered the father of cryptocurrency (SOVBETOV & Yhlas, 2018). Bitcoin as the first decentralized peer-to-peer blockchain network (a chronologically arranged series of blocks in which each block has a list of transaction information) is fully controlled by its users without any central authority or intermediary (Bitcoin.org., 2018).

The formation of Bitcoin is a virtual currency resulting from cryptography (cryptocurrency), which is very possible to continue to grow in the future. In line with the concept of cryptocurrency, this is identical to the terms of the legal medium of exchange, namely unique, not easily damaged, and mutually agreed upon (Vilstrup et al., 2014).

The establishment of Bitcoin as the holder of the largest market capitalization uses proof-of-work hashcash for security in transactions. Proof of work is a function or protocol that can prevent denial of service or various abuses of services, such as spam, by requiring users/service providers to perform work before using the service, which often results in processing time when performed by the computer. The key to this feature is asymmetry; hard work (can be done) but easily verified by the vendor. Proof of work is different from CAPTCHA, which is completed by humans. According to (Sukamulya & Cornelia O. Sikora., 2018 in Syamsiah & Oktaviani, 2017), there are two types of proof-of-work protocols:

Challenge-Response, when the client and server connect, the server identifies and provides a challenge, for example one chain has a number of standards. The customer must perform calculations to complete the challenge according to the criteria, so that the customer can use the service. The server will provide the service if the response given by the client meets the provided criteria.

Verification solution, customer challenges can be consulted according to the criteria required by the public. So just give it to the server for further testing and the server will deliver the promised service.

Hashcash is a type of proof of work done in Bitcoin; In addition, this protocol is also implemented to filter incoming email or messages that are addressed by Internet Protocol (IP) addresses. This method involves adding text to the header of an already formed message, so that when running a message summary hash can be generated that matches the criteria; Bitcoin uses SHA 256 as the hash.

Networking or Peertopeer Computing (P2P) is a distributed system architecture application that distributes work at every point. Each node serves as both a service provider and a user. Unlike client-server systems, P2P is decentralized because each point has the same permissions.

Before Bitcoin was proposed in 2008 and finally launched in action, Wei Dai in 1998 proposed a cryptocurrency system as a cryptocurrency management system. Two protocols are required for a cryptocurrency management system to work. The first protocol was difficult to achieve (1998) because it required synchronization for large networks and uninterrupted anonymous broadcast communications, and the second was more practical.

In the first protocol, each participant maintains a database that stores the amount of money each pseudonym has (pseudonym). There are also rules for making money, based on effort, by solving computer problems (similar to P2P) by providing solutions. Foreign exchange regulations prohibit transactions that result in one of the parties having a negative balance. As well as three provisions for the interpretation of the contract (agreement on solving problems of mathematical calculations).

The second protocol explains that not all participants need to keep records of who holds how much currency, a good part of the party (called waiters). The server will continue to be used as a verification assistant. In addition, each host is required to make a security deposit if bad behavior is observed.

2. Methodology

The object of research used in this research is the development and history of digital currencies, namely cryptocurrencies and bitcoins as investment instruments.

Data were analyzed in qualitative descriptive form and not in numerical form as is the case with quantitative studies. According to (Arikunto S., 1998) qualitative research aims to collect information about the status of existing symptoms, namely the status of symptoms according to what they were at the time the research was conducted.

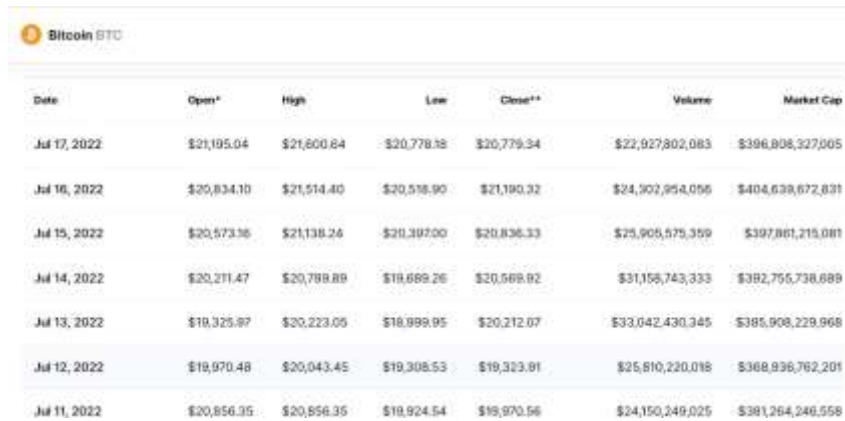
Sources of data used by researchers are secondary data obtained through observation of platform documentation (transaction places/global markets) and interviewing research subjects about potential subjects that are considered to be able to provide the necessary information to researchers.

Based on the source of data collection, in this study the researcher used data collection techniques with documentation techniques, namely data obtained directly from the subjects studied using data collection techniques and procedures, data in the form of observations, interviews, and using other adjusted measuring tools. with the aim of the researcher.

3. Result and Discussion

Since 2009 until now the crypto market has experienced very volatile price increases and decreases without a lag time of closing and opening as in the stock market. Almost the majority of coins or tokens experience price changes that are affected by changes in the price of bitcoin at any time.

Bitcoin has a sizeable market share worldwide. Based on the historical records of coinmarketcap.com transactions within a week starting from July 11, 2022 - July 17, 2022, it was recorded that there were transactions with a value of over 20 billion US dollars.



Date	Open*	High	Low	Close**	Volume	Market Cap
Jul 17, 2022	\$21,195.04	\$21,600.84	\$20,778.38	\$20,779.34	\$22,927,802,083	\$396,808,327,005
Jul 16, 2022	\$20,834.10	\$21,514.40	\$20,518.90	\$21,190.32	\$24,302,954,056	\$404,639,672,831
Jul 15, 2022	\$20,573.36	\$21,138.24	\$20,397.00	\$20,836.33	\$25,905,575,359	\$397,861,215,081
Jul 14, 2022	\$20,211.47	\$20,789.89	\$19,689.26	\$20,569.82	\$31,158,743,333	\$382,755,738,689
Jul 13, 2022	\$18,325.87	\$20,223.05	\$18,999.95	\$20,212.07	\$33,042,430,345	\$385,908,229,968
Jul 12, 2022	\$18,970.48	\$20,043.45	\$19,308.53	\$19,323.81	\$25,810,220,018	\$368,936,762,201
Jul 11, 2022	\$20,856.35	\$20,856.35	\$18,924.54	\$18,970.56	\$24,150,249,025	\$381,264,246,558

Figure 1.

Source :www.coinmarketcap.com

Since 2009 until now, bitcoin price changes tend to increase in an annual period. This is caused by 2 main factors, namely:

a. Total Supply

Bitcoin has a limited number of 21 Million pieces. Until now, the process of mining and forming bitcoins carried out by technological processes with complex mathematical formulas protected by blockchain technology has reached 90.47% of the total supply, which is about 19 million pieces spread throughout the world.

b. The world's level of trust in bitcoin

The graph of bitcoin price changes that tend to be positive in each annual period is able to increase trust from individuals to group scales to countries. The rapid increase in the price of bitcoin was responded to by the State by regulating policies and regulations regarding bitcoin transactions. Several countries that responded positively to the presence of bitcoin made bitcoin's position in the world's perspective one of the promising assets, even some countries have made bitcoin a foreign exchange reserve.

The movement of changes in the price of the crypto market, including bitcoin, which is volatile, has resulted in pros and cons for all sectors of the world economy. Bitcoin price changes are a major topic for users and investors in the crypto market. In the long term, the bitcoin price has always been a benchmark for investors in maintaining their investment assets in the crypto market.

The growing popularity of bitcoin, cryptocurrencies and crypto assets, as well as the motivation for success in investing in digital assets has caught the attention of several new users. The features in the crypto world are divided into 2 types of trading, namely:

c. Spot Trading

Spot trading is an instant trading of crypto tokens. This trade is commonly used by beginners and long-term investors because it is quite simple to do. The basic strategy used in this trade is to buy when the price goes down and sell when the price goes up. Transactions in this trade prioritize research on tokenomics information and news about bitcoin which are generally able to influence the price of other crypto tokens. Tokens that have been purchased from a platform or website can be sent and stored in a virtual wallet via a blockchain address with more security guarantees than the storage provided by the platform itself.

d. Futures Trading

Futures trading is a token trading with derivative features and based on a margin system. The derivatives used in this trade are quite diverse ranging from 10 times to 125 times depending on the platform and token used. These trades have no physical form of tokens which cannot be sent or stored around the clock. After reaching the limit price determined by the amount of margin and derivatives, the asset will be liquidated and lost.

3.1 Result

Bitcoin appeared in 2009 which was discovered by a group known as Satoshi Nakamoto. Bitcoin arose from the idea that there was a basic problem with the value of a currency depreciating due to inflation. Bitcoin was formed with the function of being a valuable asset and has a high exchange rate and cannot be intervened by any party, including by a government, both the State and the world. Bitcoin became the beginning of the formation of the digital currency market, namely cryptocurrency with a certain technology with a system formed by a complex mathematical formula, namely cryptography. Cryptocurrencies have a limited number and have technology that cannot be counterfeited and duplicated by a party. On this basis, cryptocurrency has become one of the investment instruments of choice for the world economy in addition to the stock market and gold. In the cryptocurrency market, or known as the crypto market, there are hundreds to thousands of coins and tokens with separate purposes that are formed and regulated by one institution or community that has various functions. These tokens are not only a means of exchange and investment, but also have various functions, such as the need for

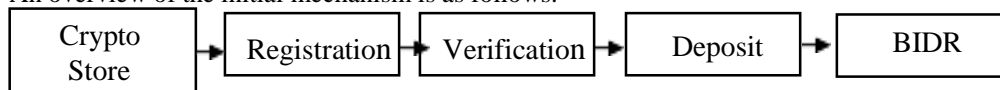
online games, the need for software software, to being a means of payment for digital artworks. In the cryptocurrency market, or known as the crypto market, there are hundreds to thousands of coins and tokens with separate purposes that are formed and regulated by one institution or community that has various functions. These tokens are not only a means of exchange and investment, but also have various functions, such as the need for online games, the need for software software, to being a means of payment for digital artworks. In the cryptocurrency market, or known as the crypto market, there are hundreds to thousands of coins and tokens with separate purposes that are formed and regulated by one institution or community that has various functions. These tokens are not only a means of exchange and investment, but also have various functions, such as the need for online games, the need for software software, to being a means of payment for digital artworks.

Bitcoin is the first token in the crypto market to become the center or center of attention for all coins or tokens in the crypto market. Based on the world crypto market site coinmarket.com, bitcoin currently dominates the market capitalization in the crypto market, with a value of more than 420 billion US dollars with a total supply of 19 million coins in circulation today.

a. Purchase

The initial step that must be taken by the user is to register, such as registering personal data, bank data, and general balance withdrawal data on the TokoCrypto website or application. After filling in your personal data and security password and being verified by TokoCrypto, the next step is to top up your balance or make a cash deposit transaction via bank transfer as a medium of exchange for purchases. After the automatic deposit, the money will enter into fiat currency digital rupiah or BIDR tokens.

An overview of the initial mechanism is as follows:



After the BIDR balance is available, the next step is to go to the “market” feature. This feature displays the name of the token, the price of the token, and information about the token. Investors or users must leave their money through a platform or provider of crypto market trading features and services. The flow can be described simply through the following chart:

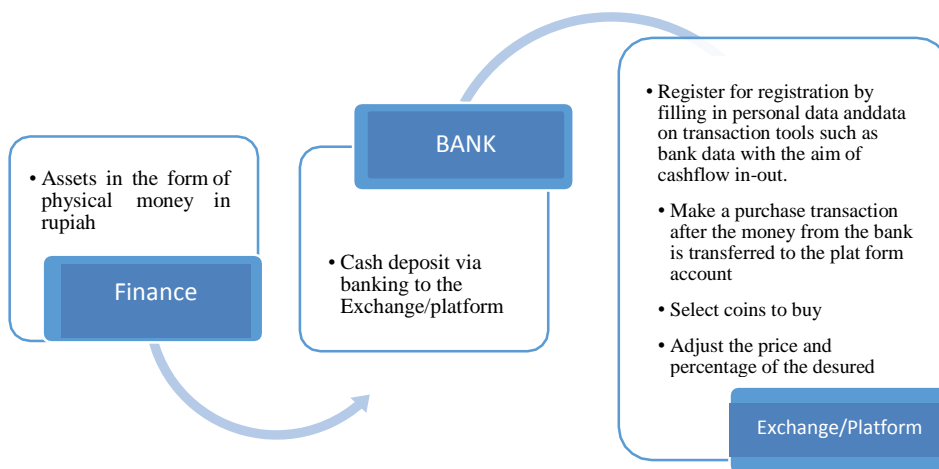


Figure 2.

b. Storage

There are 2 ways to store bitcoins, namely storage on the platform itself which is automatically stored after making a purchase and storage by sending bitcoin/crypto tokens to an E-wallet or Hardwallet. Storage on an additional device such as an E-wallet/virtual wallet or it can also use a Hardwallet/device tends to have the same security with a fairly small risk of bankruptcy experienced by the platform itself and from the actions of the digital world. The main factor for losing assets that have been stored on E-wallet/Hardwallet is the negligence of users and investors themselves.

Storage made by sending crypto must go through a certain network with fees that vary according to the network used. The most widely used networks are:

- a. Tron (TRC20)
- b. BNB Smartchain (BEP20)
- c. Ethereum (ETH)
- d. Polygon (Matic)

Before sending crypto, the first step that needs to be known is the use of network identification available on the platform.

Acceptance of shipments on E-Wallet or Hardwallet crypto storage has almost the same registration method, namely by registering and linking to the smartphone or laptop/pc that will be used. Both have complex password locks and contain 24 words that must be memorized/recorded on a note outside the internet so that they are not easily tracked by a hacker. This system is known as “seed phrase” or “private key”. The difference lies only in the physical form:

1. Storage on E-Wallet

E-Wallet is a virtual wallet available online such as Metamask and TrustWallet. The following is the mechanism for accepting crypto asset token storage to E-Wallet:

- a. Select the E-Wallet to use
- b. Network installation according to delivery plan
- c. Copy network address
- d. Paste the network address on the platform according to the network to be used

c. Storage on HardWallet

Unlike virtual wallets, hardwallet storage has the same physical shape as a USB or hard drive and is easier to use. How to accept crypto to the hardwallet:

- a. Install and link on mobile device using Bluetooth
- b. Install the selected network according to delivery
- c. Copy network address
- d. Paste the network address on the platform

When a user wants to sell coins or tokens that are in the E-Wallet and Hardwallet, what needs to be done before the sale transaction is to make a delivery transaction from the E-Wallet or HardWallet to the Exchange/Platform that will be used.

The shipping method is almost the same as making a delivery when storing assets. The main thing to note is about the network identification of an available exchange. After making a purchase users can move crypto assets or bitcoins to safer storage from threatening technological crimes. Storage is done by sending bitcoin assets to a device known as a virtual wallet, namely E-Wallet/Hardwallet.

Users who want to sell assets that are in a virtual wallet can send assets to the exchange/platform account that will be used. The mechanism can be seen through the following chart:

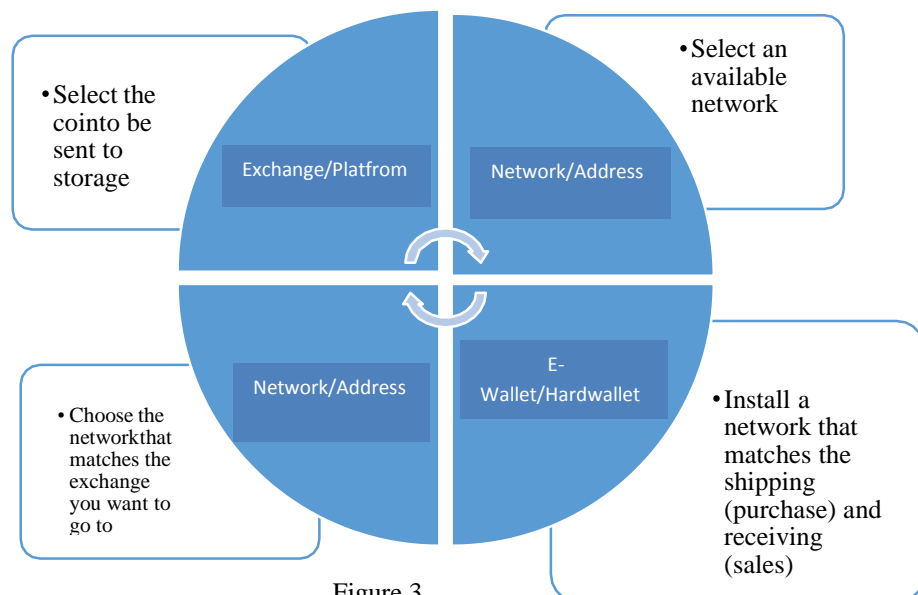


Figure 3.

d. Sales

In sales transactions, the mechanism is almost the same as the mechanism for buying bitcoin or other crypto tokens. The difference lies in the chart in red with the words “Sell BTC”. After confirming the sale, then the sales offer will be responded to according to the existing purchase request in the market. Sales offers that have been accepted by the market and have been successful will automatically exit the tokens that have been sold.

At the time of a sale transaction, what must be considered is the choice of the currency of the sale itself and the platform will automatically recommend according to the order of market capitalization with the highest value. In all exchanges and platforms, both local and international platforms, exchange and transactions using the dollar currency are still the use of exchange with the highest value.



Favorit	FIAT Pasar	ALL	ETF Pasar	BNB Pasar	BTC Pasar	ALTS Pasar
Pasangan	Koin				Harga terakhir	Perubahan 24jam
☆	BTC / USDC	Bitcoin			22,910.36/ Rp 340,982,511.03	+6.83%
☆	BTC / BIDR	Bitcoin			342,040,874/ Rp 340,766,060.97	+6.05%
☆	BTC / USDT	Bitcoin			22,903.56/ Rp 340,949,494.26	+6.84%
☆	BTC / BUSD	Bitcoin			22,908.63/ Rp 340,956,762.86	+6.84%
☆	BTC / DAI	Bitcoin			22,823.7/ Rp 339,658,775.91	+6.46%

Figure 4.

Source : www.tokocrypto.com

Based on the picture above, it can be seen:

- 1) BTC/USDC: Exchange and transactions using the dollar currency obtained by buying USDC digital coins.
- 2) BTC/BIDR: Exchange and transactions using rupiah currency obtained by buying digital coins issued by the platform.
- 3) BTC/USDT: Exchange and transactions using the dollar currency obtained by buying digital coins of the USDT type and issued by a digital company, Tron.
- 4) BTC/BUSD: Exchange and transactions using dollar currency obtained by buying digital coins of the BUSD type and issued by a digital company, namely Binance
- 5) BTC/DAI : Exchange and transactions using dollar currency obtained by buying digital coins produced by an institution called MakerDao.

Transaction errors using foreign currency do not affect the amount of sales and the transaction itself. The solution is to sell foreign currency coins with rupiah currency. This only causes the payment of the transaction fee to be 2x the payment. From BTC to foreign currency (USDC/USDT/BUSD/DAI) and from foreign currency to rupiah currency (BIDR).

Transaction fees on sales are quite low, which is around 0.00001% of the transactions made. The price paid for each transaction is not greater than the fee made during the transaction of transferring or sending a coin to storage outside the exchange (E-wallet and Hardwallet).

Not all purchase transactions are always recommended to transfer storage transactions from platform accounts to virtual wallets. This is usually done by investors with long-term investment objectives. The mechanism can be seen through the following chart:

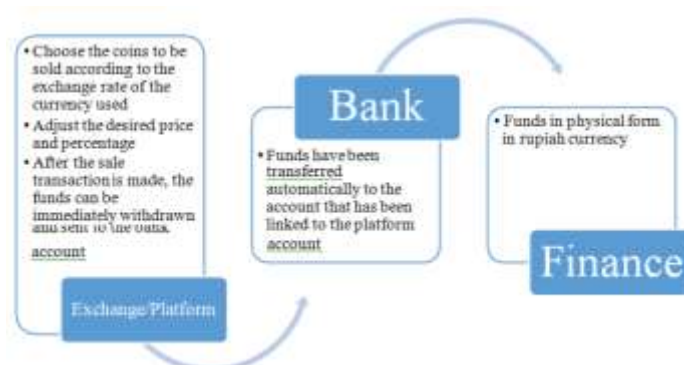


Figure 5.

3.2 Discussion

Some international platforms and exchanges have a “transaction history” feature or “transaction history” feature. This feature can provide information about portfolio recording in every transaction that has been made. Some investors and users use additional applications that aim to record portfolios manually so that they can know in detail how the asset value is after making a transaction.

There are several important points that need to be considered before recording a portfolio of bitcoin assets and other crypto tokens, namely:

1. Price
2. Number of tokens
3. Transaction fee

After identifying these points, the total calculation of the difference obtained from a sales mechanism can be calculated. The calculation mechanism can be seen from the image below:

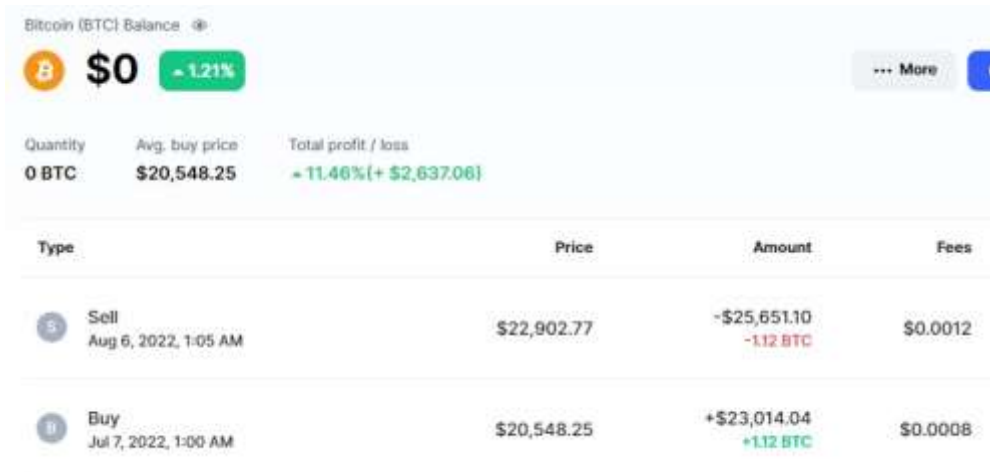


Figure 6.

Source: www.coinmarketcap.com

Information :

Type : Trading transaction type

Prices : The price taken at the time of making a trade transaction Amount : Number of tokens traded

Fees : Transaction fees charged at the time of trading

It can be seen from the picture above that the calculation results from buying and selling transactions get results in the form of profit or profit. With the following calculations:

1. On July 7, 2022 at 01:00 AM, investors bought bitcoin at a price of 20,548.25 US dollars with a total of 1.12 tokens and a total payment of 23,014.04 US dollars with a transaction fee of 0.0008 US dollars.
2. On August 6, 2022 at 01:05 AM, investors made bitcoin sales transactions at a price of 22,902.77 US dollars with a total of 1.12 tokens and a total income of 25,651.10 US dollars with a transaction fee of 0.0012 US dollars.
3. The sales value which is greater than the purchase value results in a profit for investors of 11.46% with a total value of 2,637.06 US dollars.

From the calculation results in the portfolio above, it can be seen that investors have benefited after making sales on assets that have been purchased 1 month earlier.

4. Conclusion

In general, the researcher concludes that the mechanism for investing in cryptocurrencies with bitcoin instruments in Indonesia has a transaction method that is quite easy to understand with the ease of access available on platforms in this digital era. Based on the formulation of the problem written by the researcher as the basis for the discussion of this research, and the discussion of the research results that have been described by the researcher, it can be concluded that the 3 main transaction mechanisms that are the topic of discussion are as follows:

1. Purchase Bitcoin and Crypto Assets

A trade that aims to get a bitcoin or other token in the crypto world market. In the trading process, the purchase transaction requires capital in the form of a digital currency as a medium of exchange for bitcoin tokens and other crypto tokens. Purchase transactions can be made on a platform or an application that provides trading features both locally and internationally using a currency that is legal and used in a country.

2. Bitcoin and Crypto Asset Storage

Bitcoin and Crypto assets need to be moved to a place that is safer from the reach of criminals in the tech world. Storage of Bitcoin and other tokens outside the trading service provider platform is highly recommended for investors. Bitcoin storage and crypto tokens are a form of asset transfer transaction from the platform to a virtual wallet both E-wallet and Hardwallet. Transaction fees paid at the time of delivery vary depending on the network and address used for the transaction.

3. Bitcoin and Crypto Asset Sales

After the purchase and storage transaction, the next transaction mechanism is a sale transaction, which is a trade that aims to release bitcoin token assets and other tokens that are exchanged for legal currencies and can be used as a transaction tool in a country. The process of selling bitcoin and other crypto assets can be done on the same platform as the buying process. The sale mechanism is almost the same as the purchase transaction process by exchanging crypto token assets into the currency chosen and used in a country.

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