The views of younger generations towards investing in cryptocurrencies

Study on rationales and biases

Teemu Jääskeläinen

Bachelor's thesis
February 2023
Degree programme in international business

jamk | Jyväskylän ammattikorkeakoulu
University of Applied Sciences

jamk

Description

Jääskeläinen, Teemu

The views of younger generations towards investing in cryptocurrencies, Study on rationales and bias

Jyväskylä: Jamk University of Applied Sciences, February 2023, 62 pages.

School of business, Degree Programme in International Business, Bachelor's thesis

Permission for open-access publication: Yes

Language of publication: English

Abstract

The world of investments has evolved and changed a lot in the past 100 years. There have been new phenomena and ways of investing. An invention in the investment space is cryptocurrencies and they intend to not only be a new investment, but also revolutionize payment systems by making payments truly peer-to-peer without the need of a third party. Cryptocurrencies as an entity are controversial in nature, as they have positives and negatives about them that influence a lot of peoples view about them. In recent years they've gained a lot of media attention as notable public figures such as Elon Musk and Warren Buffet, discuss them and why they support or hate the idea of cryptocurrencies.

The goal of this study was to investigate the minds of younger generations of students to have a look how they view cryptocurrencies and if they were interested in investing in them. This helps set up a picture of what the attitudes of the younger generations are towards cryptocurrencies and if any biases show up when it comes to discussing cryptocurrencies among them. The research was conducted in an exploratory approach utilizing a Google forms survey to gather respondents for the sample. The survey reached 70 respondent who were mainly from Finland, Germany, and the United Kingdom.

The results generally indicated that cryptocurrencies among the younger generations have a lot of differing opinions. Knowledge about cryptocurrencies also seemed to correlate with investment motivation, interest in courses about them, belief in longevity, and willingness to use a payment system with cryptocurrencies. Pain points of cryptocurrencies also come up as things that should be improved in order to improve the willingness of people to utilize them in a payment system or to invest.

Keywords/tags (subjects)

Investing, Cryptocurrencies, Bias, Attitudes, Investment motivation

Miscellaneous (Confidential information)

-

jamk

Description

Jääskeläinen, Teemu

Nuorten sukupolvien näkemykset kryptovaluuttoihin sijoittamisesta, Tutkimus ajatusmaailmoihin ja ennakkoluuloihin

Jyväskylä: Jamk University of Applied Sciences, Helmikuu 2023, 62 Sivua.

School of business, Degree Programme in International Business, Bachelor's thesis

Verkkojulkaisulupa myönnetty: Kyllä

Julkaisun kieli: Englanti

Tiivistelmä

Sijoitusten maailma on muuttunut ja kehittynyt paljon viimeisen sadan vuoden aikana. On tullut esille uusia ilmiöitä ja uusia sijoituskohteita. Uusi keksintö sijoitusmaailmassa on kryptovaluutat ja ne eivät ole pelkästään sijoituskohde, vaan pyrkivät myös mullistamaan maksujärjestelmät tuomalla esille tavan maksaa asioita oikeasti kahden henkilön keskinäisesti tarvitsematta kolmatta osapuolta. Kryptovaluutat ovat hyvin kiistelty aihe, sillä niissä on paljon hyviä ja huonoja puolia, jotka vaikuttavat vahvasti ihmisten näkemyksiin niistä. Viime vuosina isot julkisuuden henkilöt kuten: Elon Musk ja Warren Buffet ovat keskustelleet niistä paljon ja sanoneet miksi tukevat tai eivät kryptovaluuttoja ideana.

Tutkimuksen tavoitteena oli tutustua nuoren sukupolven opiskelijoiden näkemyksiin kryptovaluutoista ja selvittää millaista kiinnostusta heidän joukossa on kryptovaaluttoihin sijoittamiseen. Tämä auttaa tuomaan esille heidän asenteet kryptovaluuttoja kohtaan, sekä selvittää nouseeko esille ennakoluuloja, kun kryptovaluutoista puhutaan. Tutkimus toteutettiin hyödyntämällä kartoittavaa tutkimusmenetelmää hyödyntämällä Google forms kyselyä otoksen keräämiseksi.

Tulokset pääosin osoittivat, että nuorilla sukupolvella oli hyvin eriäviä näkemyksiä kryptovaluutoista. Kryptovaluutoiden ymmärtäminen vaikutti korreloituvan sijoitusmotivaation, mahdollisten kurssien, pitkäaikaisuuden uskomisen sekä haluun käyttää maksujärjestelmää. Kryptovaluuttojen haittapuolet myös tuotiin esille asioina, jotka tulisi korjata, jotta sijoitusmotivaatio ja maksujärjestelmän käyttöhalu nousisivat.

Avainsanat (asiasanat)

Sijoitus, Kryptovaluutat, Ennakkoluulot, Asenteet, Sijoitusmotivaatio

Muut tiedot (salassa pidettävät liitteet)

-

Contents

Figures

Tables

1 Introduction

1.1 Background

The world of investments and payment methods has undergone a lot of changes in the past 100 years. Before 1966 people would exclusively use cash or cash equivalents as a payment method whenever they underwent a transaction. In 1966 the bank of Delaware was the first bank to pilot a debit card, which allowed a person to undergo a transaction by just putting the card in a payment machine and typing their pin, without using cash or a cheque to pay. In the 1970's other banks started hopping in on this trend and trying out debit cards with their customers. Then in 1980's more and more debit cards started being used across the US. In 1990 debit cards were used for 300 million transactions, and in 2009 that number was already up to 37.6 billion. (Collins, 2011.) So, the invention of the debit card was a huge development in paying methods, as it allowed for people to pay remotely easier and meant that you didn't have to carry as much cash with you wherever you went. Another huge development in the world of cashless payments was the introduction of contactless payments. Contactless payment works off NFC technology allowing two nearby devices to communicate and share data. This meant that if you wanted to pay quickly and had a card with contactless feature, just by showing it to the machine you were able to pay and be on your way. The first time contactless was used in the US was 2004, and worldwide 2008. (History of contactless payments, 2020.)

The "problem" with these new payment methods, is that there is always a medium of exchange thus meaning that none of these transactions are ever truly peer-to-peer. This is where cryptocurrencies come in. Cryptocurrency refers to a digital asset that uses cryptography. The point of this asset is to be used for financial transactions, like payments or as a store of value in investing. (Mazambani & Mutambara, 2019.) Cryptocurrency payments unlike others are truly peer-to-peer as they have no medium of exchange in them. Cryptocurrency is not the newest invention on the financial market, seeing as the first cryptocurrency Bitcoin was created in 2008 by Satoshi Nakamoto.

Cryptocurrencies are an interesting subject to research, as they are very controversial worldwide. There are stern believers in what they bring and a lot of criticism behind them and why they should or shouldn't even exist. From Elon Musk to Warren Buffet, even billionaires are discussing

cryptocurrencies and their place in the world frequently, which is an interesting phenomenon considering how different they view them. The author, however, was mainly interested to see how younger generations view cryptocurrencies, seeing as they are the professionals and investors of the future who could use them as an everyday payment method. While there is a lot of research already regarding the young generations' views on cryptocurrencies, they author was especially interested to see how students in various universities view them.

For the context of this thesis, the younger generation refers to ages 19-33, as these people are already, or soon in working life and will be the investors and customers of the future, so the author wanted to know how they see cryptocurrencies.

1.2 Motivation

The author's idea to produce thesis research based on this topic came from the author's interest in cryptocurrencies, motivation to find out what other people around his age think of cryptocurrencies, and the possible adaption to a peer-to-peer payment system. The author's interest rose during the COVID-19 pandemic since many big public personalities started to talk about cryptocurrencies, after the drama that occurred, with GameStop’s stock spiking heavily higher in price. The key word in this research is the word bias and how younger people may or may not have it towards crypto due to lack of information provided or because of a lot of negative things happening towards crypto in recent years for example India proposing to ban cryptocurrencies completely in their country.

While cryptocurrencies are not that new, considering Bitcoin was invented in 2008, which is almost 15 years old by now, the interest in cryptocurrencies has increased by a lot in the past 5 years. This becomes apparent when we compare the values of the three most common cryptocurrencies, Bitcoin, Ethereum, and XRP.

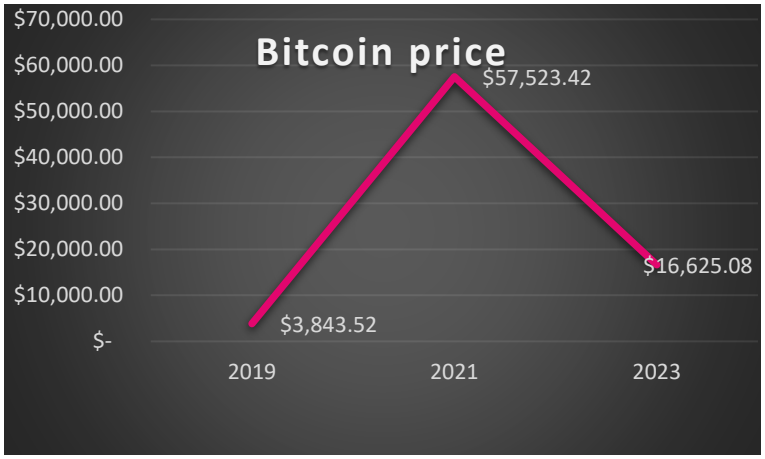

Figure 1. Bitcoin price between 2019-2023

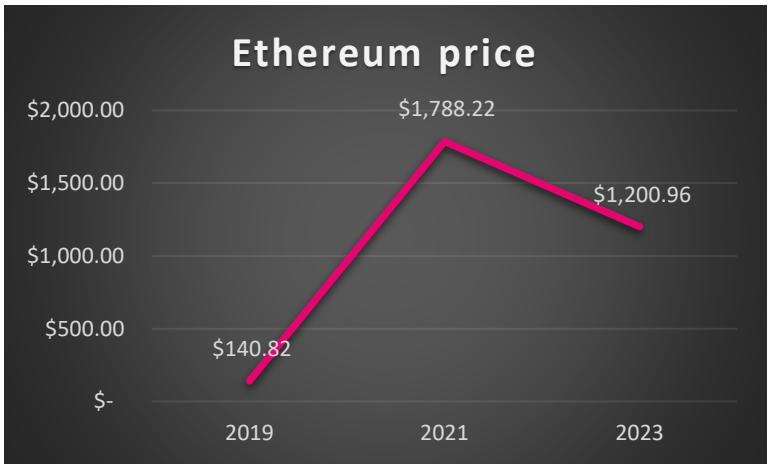

Figure 2. Ethereum price between 2019-2023

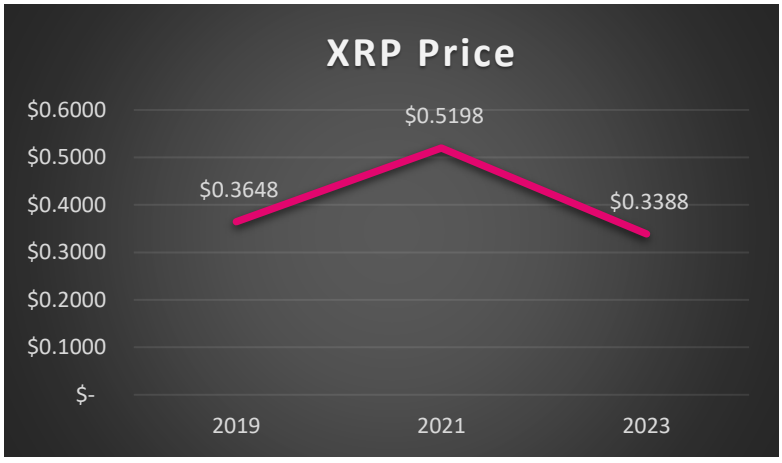

Figure 3. XRP price between 2019-2023

As seen from figures 1-3 cryptocurrency prices are extremely volatile and fluctuate a lot and the space is very volatile to drastic price changes. While cryptocurrencies' value crashed between 2021 and 2023, the overall value from 2019 is still drastically up, as if we compare bitcoin from 2019 to 2023, we see the value has risen from 3 843 USD to 16 625 USD, which is roughly 430% increase in value over 4 years. This same goes for Ethereum seeing as it rose from 140 USD to 1 200 USD, which is an 857% increase. The third example of XRP is the least volatile cryptocurrency in the top 10. Its value went from 36 cents to 52, and then down to 33. This is an initial increase of 30% and then a decrease of 36%. This makes XRP the least volatile cryptocurrency, in the top 10 seeing as if you compare it to Bitcoin and Ethereum the changes seem marginal, but when compared to the traditional stock market are still big fluctuations. This volatility is one of the key factors behind the authors' interest, as it means the cryptocurrency space is harder to predict.

1.3 Research objectives and questions

The focus of this research is to dive into the minds of the younger generation and explore their views and possible bias they have related to cryptocurrencies. This may also have the benefit of helping industries understand what younger generations expect from cryptocurrencies in the future, and what kinds of situations they believe will rise. This means that the research objectives for this thesis are as follows:

- To give an overview of what cryptocurrencies are and what possible uses they can have for the future
- To investigate the minds of the younger generation and see what kinds of thoughts they have regarding cryptocurrencies
- To provide ideas and alternating viewpoints about cryptocurrencies to this younger generation

To reach these research objectives, the author defined the following research questions:

- RQ1: What kind of views does the younger generation of students have towards cryptocurrencies?
- RQ2: Which factors have contributed to these views and behaviors regarding cryptocurrencies?
- RQ3: What kind of future scenarios on cryptocurrencies does the younger generation of students see as probable, possible, and likely

1.4 Structure of the thesis

This thesis' design is quantitative. It starts with an introduction chapter where the basic understanding of what cryptocurrencies are, how they can apply to people's lives, and why younger generations are the focus. This is meant to give the tone for the rest of the thesis. After this, the author's motivation towards the topic is introduced, and afterward, the research objectives and questions defined to assist the process are shown. After this comes the literature review. This section shows relevant secondary literature on, bias, what causes bias, investing, bias in investing, cryptocurrencies, and bias in cryptocurrencies, and finally sums it all together in the synthesis. After gaining knowledge and the information needed, from the literature review, then the next chapter describes the methodology and the reasons why the author chose a quantitative approach. In the methodology chapter data collection and the process used to analyze the data are also discussed. In the chapter after methodology results for the survey are provided and analyzed. Finally, after this, conclusions are presented, and the research question answers are shown. Then the research process and results are assessed. And then the thesis ends with the limitations of this research and suggestions for future research are discussed.

2 Literature review

This chapter aims to present literature that is needed to understand the concept of bias, especially in an investing, research, and finance space and what causes it in people. It's also meant to look at what cryptocurrencies are and if there exists prior research relating to biases in the cryptocurrency space. The literature also aims to provide background information on the topics so that research conducted by the author can be better understood. Information in this chapter comes from prior literature provided by different sources such as academical research, journals, books, and articles.

2.1 What is bias

In the dictionary, the word bias gets the following description. The action of supporting or opposing a particular person or thing unfairly, because of allowing personal opinions to influence your judgment. (Cambridge dictionary, 2023.) Blanco (2017) explains bias in layman's terms as: *"Systematic deviation from rationality, in judgment or decision making."* (pp, 1.)

According to Simundic (2013, 12) when discussing bias in the focus of data it can be defined as deviation from the truth in collecting, analyzing, interpreting, or publishing data, which in turn can lead to false conclusions. They also state that bias in data can be intentional or unintentional and that publishing data which is biased intentionally is immoral.

Smith (2014) states that there are five main types of bias when discussing bias in data analysis and research contexts. Design bias shows up when the study is designed poorly. This means that when the researcher's personal beliefs influence the choice of questions and methodology used. An example of this would be a drug company choosing a research question that supports the drug's usefulness (pp, 101.) Selection bias is related to the process of including participants and inclusion criteria. For the research to be unbiased all the participants should fully meet the criteria and aims of the study. (pp, 101.) Data collection bias can occur when the researchers' values or beliefs influence the way data has been collected. In quantitative research, the tool used to gather data must match the participants so not using a tool meant for adults when researching children for example (pp, 101.) Analysis data is when the researcher looks for data that aligns with their belief while overlooking data that is inconsistent with the beliefs (pp,101.) Finally, publication bias comes from the research getting published. If the findings of the research are not aligned with the hypothesis it might not get released at all which is then publication bias (pp,101.)

2.2 Known causes for bias

While there are many kinds of biases, one of the key factors behind causing bias, as explained by Wall et al, (2018) is an unconsciously made deviation from rational behavior (pp, 39.) This happens because human cognition is thought of as a two-process concept. The first is intuition which is responsible for fast and automated decisions. The other one is thought of as reason, and this is the part that's responsible for deliberate decisions and is well thought out, so the part of human cognition that is thought to cause biases, is intuition (pp, 40.) Wall et al (2018) also state that bias works as a filter for information (pp, 41.) An example of this would be negative, or positive stereotypes, regarding other people. If a person only hears bad things a group of people has done, then there is a chance, that if they were to instead hear positive remarks, about the same group of people, they will actively dismiss it, because it does not feed the picture that they had from beforehand (pp, 13.)

Chinchu (2021) explains the reasoning for cognitive biases in a different way, however, the core concept remains the same. According to him, mental shortcuts are what people use to make decisions, and without using much of the resources available in the brain, are probably the most important contributing factor towards cognitive biases. (pp, 7.) Research also suggests that different groups of people are more likely to develop biases. One of the biggest defining factors according to Chinchu (2021) is age, children and old adults are more likely to develop biases, than teenagers or young adults. (pp, 8.)

2.3 Investing

Inderst et al (2012, 12) define investing as. *"A lot of actions are referred to as an investment. In the broadest terms, an investment involves committing money or capital to an endeavor with the expectation of profit or more income. This investment can be in technology, projects, ventures, but also financial products that invest in those."*

Gitman et al (2015) explains that when you invest, the organization, whether it's a company or a private entity, offers you an expected benefit in the future for your funds in exchange. The one that ends up getting your investment is the one that, from your point of view, offers the greatest benefit. These benefits are judged differently depending on what kind of investor you are. As a result, investments of every type are available to the investor (pp, 4&5) and Gitman et al (2015) go into great detail to explain the different investments. According to their book (pp, 5.), There are 13 different types of investments. These 13 types are Securities, Property, Direct, Indirect, Debt, Equity, Derivative securities, Low and high risk, short and long term, domestic and foreign.

The investment process is described by Gitman et al (2015, pp,6.) with a figure

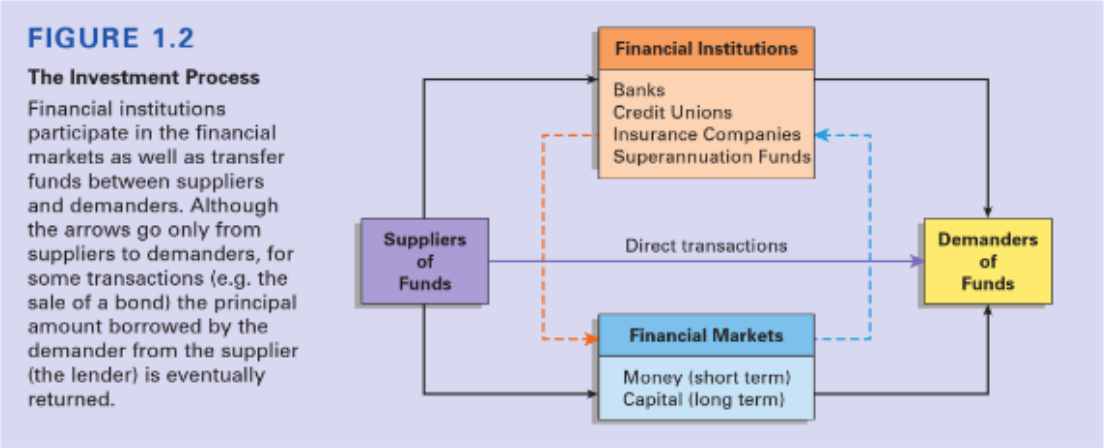

Figure 4 The investment process (Adapted from Gitman et al, 2015)

As they visualize in the figure, the investment process starts with bringing together suppliers who have extra funds and demanders who need more funding. They then come together through the means of a financial- institution or market. These institutions are organizations such as banks and insurance companies, while the markets are forums where suppliers and demanders of funds trade their assets through the help of intermediaries like brokers or dealers. However, the use of intermediaries is not always necessary, as also seen in the figure above (Gitman et al, pp, 8.)

2.4 Bias in investing

According to Nofsinger (2017, pp, 24) historically, formal education in finance has dismissed the idea that one's personal views and beliefs can detriment on their ability to make good investments. The field of finance for the past four decades has evolved based on assuming that people make rational decisions and people are unbiased in their predictions for the future. So, by assuming that people act in their own best interest the finance field has been able to create tools to help investors get the highest possible expected return given the risk they can bear. Acting in your own best interest and making only rational choices is called traditional finance (pp, 24.)

Nofsinger (2017, pp, 24.) also states that psychologists have known for a long time that these are bad assumptions. People often act irrationally and make predictable errors in their forecasts. This is where behavioral finance differs from traditional finance. Traditional finance assumes that people are risk averse and only take risks if the payoff from taking the risk is possibly sufficient enough. Behavioral finance assumes that people's biases, cognitive errors, and emotions affect the

investing decisions they make, which in turn can have ramifications on their finances (pp, 34.) Nofsinger (2017) states that a good example of this is Gambler's fallacy. If we consider the outcome of flipping a coin three times and its head three times, we know that in the long run, it should be expected to be an equal number of heads and tails. Because the outcome so far has been three heads, it leads us to believe that the fourth one is tails, because the mind thinks that there needs to be a correction to match the odds. This is what Gambler's fallacy is and it is a part of a misunderstanding known as the law of small numbers (pp, 35.)

Mladina & Grant (2016) state that there are dozens of behavioral biases that produce suboptimal financial outcomes, but they have observed a handful of them that cause unwanted investment outcomes. Recency bias is the first one and according to them, it is the tendency to overweight recent events in comparison to a full set of observations and information. It shows up as chasing recent returns, hot investment funds or the latest trends over long-term data (pp, 1.) Illusion of control is when the investors tend to overestimate their ability to control the events that happen. This is also fortified by other biases in the investing space such as recency or hindsight bias (pp, 2.) Loss aversion is when the investors are overtly focused on avoiding losses rather than making gains. So, according to Mladina & Grant (2016) while a rational investor would consider the risk & reward ratio and possibly make calculated risk-taking decisions, someone that has loss aversion bias would skip risks in entirety (pp, 2.) The final bias that's brought up is familiarity bias, which is when investors prefer to dictate towards investments that have something familiar from beforehand. Instead of wanting to diversify and look at the investment market objectively, they go for familiarity (pp, 3.)

So, when considering bias in investing, Hirsleifer (2015) argues, that while there is a clear show of bias in an investor's decision-making and rationality, it is also very hard to pinpoint how much they in practice affect the investment outcomes and profitability of one's portfolio. This makes it important to conduct more research and data analysis on particular psychologic biases, that affect investment decisions, such as loss aversion, so that in the long run, it is easier to understand why they happen, and the damage they do can be minimized (pp, 44-46.)

2.5 Cryptocurrencies

To understand key concepts in this chapter it is important to understand what Fiat currencies are, and what the gold standard is. Chen (2021) explains Fiat currency as a government-issued currency that has no backing from a physical commodity, such as gold, but rather by the government that issued it. Most modern paper currencies such as the United States dollar, or the Euro, are Fiat currencies. In the dictionary gold standard is defined as "*a monetary standard under which the basic unit of currency is defined by a stated quantity of gold, and which is usually characterized by the coinage and circulation of gold, unrestricted convertibility of other money into gold, and the free export and import of gold for settling of international obligations." (Merriam Webster, 2023)*

Cryptocurrencies can be defined as digital assets, which main purpose is to be the medium of exchange while using cryptography to secure every transaction and make sure everything is controlled in its system. (Milutinovic, 2018, 106.) The first cryptocurrency to appear was Satoshi Nakamoto's invention of Bitcoin in 2008 and afterward, this spurred the creation of many new cryptocurrencies, which are called altcoins. (Chuen et al. 2017.) The altcoins made were based on similar cryptography as Bitcoin, however, they implemented different algorithmic designs, and the purpose of these altcoins was to address the many pain points of Bitcoin. Chuen et al. (2017) describe these paint points as High consumption of energy required for its proof of work and because there is a limited quantity of them (21 million units).

To understand cryptocurrencies, it's important to understand how they get created. Konoth, Wegberg, Moonsamy & Bos (2019) explain it in detail. The blockchains in which cryptocurrencies exist are comprised of blocks. To add a block to a blockchain, the miner must solve a cryptographic puzzle based on the block. This mechanism is there to prevent adding malicious blocks, to claim the cryptocurrency being mined. A valid solution to a block involves the hash of the previous block, the hash of the transaction in the current block, and a wallet address to credit with the reward. So, for a miner to mine cryptocurrencies, the miner needs to have computational power, which then finds a solution to a block in the blockchain, adding it and creating new cryptocurrencies. To add to this the puzzles' difficulty increases, with the length of the blockchain so, for example, something that has been around long like Bitcoin is extremely hard to mine. (pp, 4.)

When comparing cryptocurrencies to actual currencies or other digital currencies, the focal selling point as described by Milutinovic (2018, 108.) is the peer-to-peer network that cannot be controlled by any single entity or server. This provides privacy and protection for both parties engaging in a transaction and allows only the consenting parties to see that the transaction ever happened. However, Chuen et al (2017.) point out that no cryptocurrency is tied to a fiat currency or gold standard, so the price of cryptocurrencies is very volatile and fluctuates a lot depending on supply & demand at the current moment. Cryptocurrencies are also stored in a different way than fiat currencies. Eyal (2022) explains that cryptocurrency wallets are maintained in the blockchain. In the blockchain itself, the wallet is formed from a smart contract, and it's accessible via private keys, that are made by the user. These smart contracts are cryptographic codes, that live on the blockchain but can only be accessed via the private key that the owner has. Seeing as cryptocurrencies in the wallet is just a piece of code, it is important to remember private keys, as without them the cryptocurrencies owned are not accessible. So, if you lose your private keys, you also lose access to your cryptocurrencies. (pp, 2-3.)

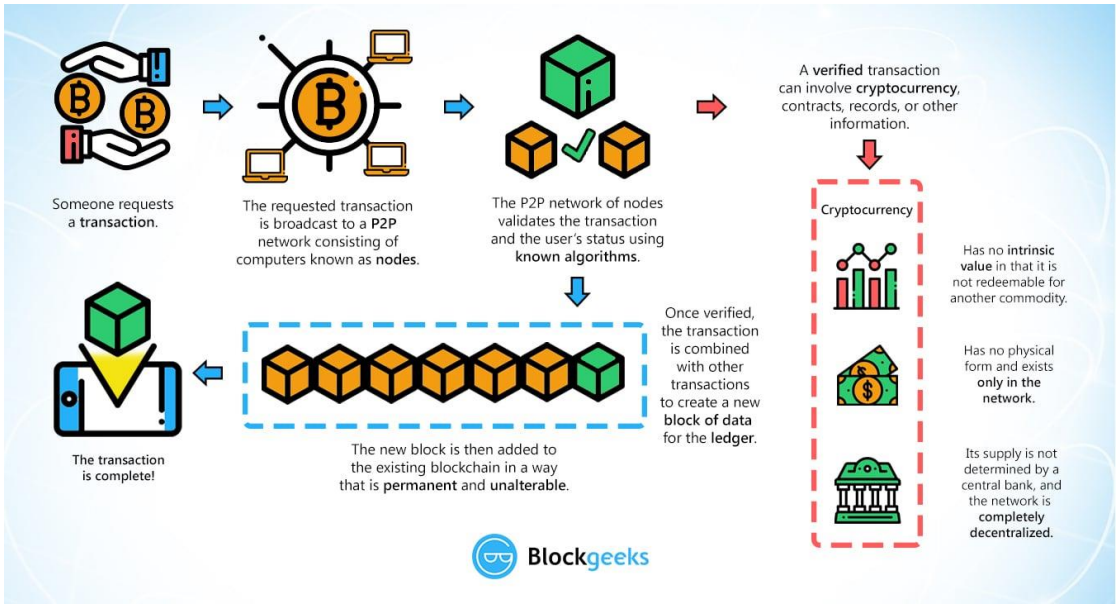

Figure 5 What is a cryptocurrency (Adapted from Rosic, 2017)

The figure above as explained by Milutinovic (2018, 109.) "*The mechanism works on a simple principle that can be called peer-to-peer technology. Every peer has a record that consists of the whole history of every transaction that was ever made. When someone gives some bitcoins to another*

person, that file gets signed by a private key, and after the key is signed, the transaction broadcasts in the network, and it is sent from one peer to all other peers." It is also noted that the most vital part of this is the confirmation at the end. Without the confirmation the transaction never gets set in stone or a part of the blockchain, so the confirmation is what makes the transaction actual, and the miners are the only ones who can make the confirmation (pp, 110.)

The advantages of cryptocurrencies are described by Ciaian, Rajcaniova & Kancs (2016). As aforementioned the main point of cryptocurrencies is to be a medium of exchange, without needing an intermediary and truly being a peer-to-peer transaction (pp, 7.). Cryptocurrencies also have a lower transaction cost, relative to fiat currencies, that are being used. This is made possible by the lack of a third party involved in the transaction. The difference in costs is about 1-4%, as bitcoins transaction costs vary from 0-1%, while traditional online payment systems take a fee of 2-5%, per transaction (pp, 7-8.). Another advantage is the short time for the transaction to complete which is about 10 minutes in total. The reason it takes little time is that the transaction is broadcast in a few seconds, and then a miner confirms it, which then transfers the funds, and marks the transaction as complete, on the blockchain (pp, 10.). The last advantage, they talk about is anonymity and transparency. While all the transactions made with cryptocurrencies can be seen on the blockchain and the amount that was transferred, it still does not show the identity of the two parties who made the transaction (pp, 8.).

With this in mind, cryptocurrencies do have their disadvantages as well, and they are explained well by Islam, Al-Shaikli & Mohammad. (2018) First one they bring up is the fact that the anonymity it brings, also gives criminals an easier way of financing their activities, whether that's money laundering or trading drugs. A second point they bring up is as aforementioned, that if you lose your private keys, you can just end up losing all your cryptocurrencies, and there is no possible way of ever getting them back or them being used. The third disadvantage they bring up is the volatility of cryptocurrencies, especially non-bitcoin cryptocurrencies. Because the price changes and goes up and down, it's very hard to predict if it will keep its value. This volatility means you might just end up losing all your money in a short period (pp, 71.). Eqiyi and Ofoegbu (2020) also add that there are environmental effects of cryptocurrency mining. Because cryptocurrency miners use specialized heavy power-consuming equipment, it means that they consume extreme amounts of electricity to power. So, to get new cryptocurrencies takes an enormous amount of power, which

contributes to climate change. In fact, they state that in the fall of 2018, cryptocurrency mining was responsible for 0.3% of all global energy use, which given the space of the crypto industry is massive. (pp, 20.)

2.6 Bias in cryptocurrencies

When talking about investor bias in the crypto space, there is a lot of it, and it shows itself in different means. Tokarchuk & Donkohlova (2018) state that when it comes to cryptocurrencies, cognitive biases such as confirmation bias, anchoring bias, and overconfidence bias, influence the decision-making of a lot of investors. For example, in a survey conducted, 36% of participants indicated, that they are more likely to spend more time reading the information regarding cryptocurrencies, that already aligns with their beliefs on the space, which is a clear sign of confirmation bias. Anchoring bias showed up, because of the volatility in the space. People who invested in cryptocurrencies are more likely to rely on the first piece of information they hear, so if someone starts investing after hearing Bitcoin rise exponentially from 25 USD to 19 000 USD, they are more likely to believe that their investments will skyrocket also. (pp, 65-66.)

A bias in the cryptocurrency space that is linked to the prices according to Aloosh & Ouzan (2020) is a small price bias. Small price bias as explained by them is when people consider investing in something, not because of logical reasons, but rather because it is cheap. The problem with this bias according to them, is that while cheaper cryptocurrencies are indeed more volatile than higher-priced ones, they also have lower monthly returns. So, in short, this implies that investing in low-price cryptocurrencies is suboptimal when compared to high-priced ones, showcasing that the bias produces poor investing results if it were looked at objectively. (pp, 6-8.)

Another very prominent bias in the cryptocurrency space is known as the herding bias. Ballis & Verousis (2022) explain herding behavior. In humans herding behavior is when rational people start acting irrationally because they imitate the judgment of others while making their decisions. So, when it comes to herding behavior and cryptocurrencies, it becomes apparent when people start investing impulsively and mimicking others, instead of conducting research or looking at the investment opportunities from an objective viewpoint. They also found out that when the market increases in volatility, or passes through stress, herding behavior also increases, and people start either panic buying or selling, depending on what others are doing. (pp, 546-548.) Poyser (2018.)

states in their research that herding is a partial cause for cryptocurrency price volatility. According to them, the evidence from their research confirms, that investors frequently deviate from rational behavior, and especially during market stress situations, just follow the consensus among investors. (pp, 27.)

A huge contributor to people shifting views and bias in the crypto space is also high-profile individuals such as Elon Musk. Ante (2023) claims that when Elon Musk changed his bio on Twitter to #Bitcoin, the market price of bitcoin spiked, from 32 000 USD to 38 000 USD in a matter of hours. He also found that whenever Musk tweeted about a cryptocurrency, it prompted highly significant positive surges in the minute of the tweet, and for the next two minutes. During the first minute of the tweet, 83% of events were positive with an average increase of 1.46% in the price. In the second minute, the effect increased to a 1.50% price raise, but only 77% of the events were positive. Finally, during the third minute, the market starts to revert as the effect falls off to a 0.62% increase in price, and 64% positive effects. So, Musk's tweets do increase the price volatility and affect cryptocurrency markets, but also shortly after they happen the market starts to revert to where it was before the tweet. (pp, 8-10.)

Cary (2021) explains this phenomenon of markets reacting to certain people's influence as crypto tastemakers. These tastemakers are influencers who attach their image to a certain cryptocurrency, to advocate for its growth. So, when these tastemakers tweet or make content related to cryptocurrency it prompts investors to buy said cryptocurrencies, which influences the price in real-time. This is an example of how herding bias happens in cryptocurrencies, with people like Elon Musk prompting people to invest with his tweets on social media (pp, 2230, 2234-2235.)

2.7 Synthesis of the knowledgebase

To sum up the key concepts and findings from this section covering key literature needed to understand the topic, this thesis finds the following from prior research:

Bias in humans is something that can be seen every day and in almost every context. It shows up in many ways and can have many causes behind it. It's extremely strong in the sense, that if someone becomes too biased, they can completely filter out information that offers alternative view-

points and limits a person's ability to be objective even when facts alter from their viewpoint. Biases also appear in our brains when we take mental shortcuts and don't utilize all of our brains. So, to avoid being biased it's important to thoroughly think about the matter at hand and look at all viewpoints objectively.

Investing is a broad term, but the key point is that the investor commits their funds to something they believe gives them a benefit in return for their funds. Investing historically has been considered bias-free, as the assumption from before was that investors' behavior is rational. This is not true however and more often than not investors let different biases affect their investment decisions, and it makes them steer away from rationality. These biases can occur in any form and depending on the background of the investor they are affected by different biases. So, in an investing setting it's important to try to steer away from feeling and look at the investment target objectively with the facts.

Cryptocurrencies are a new technological invention, intended to be a digital asset. They have their ecosystems which are comprised of blockchains and using blockchain data, they allow for features that regular currencies have not been able to achieve. They offer features such as complete anonymity, fast transaction times all over the world, and true peer-to-peer transactions, without needing a medium of exchange. However, they also have a lot of problematic features. The positive anonymity also makes it easier for criminals to fund their activities. If someone were to lose their private access keys, then they'd lose their cryptos for good and they wouldn't be recoverable. The price of cryptocurrencies is not tied to any actual entity, so they are very volatile and can either skyrocket or bankrupt in the span of a few days. And finally, they consume an extreme amount of energy, so they are not eco-friendly at all. Bias is also very prevalent in the crypto space. From anchoring to herding bias, investors have all sorts of things to consider before investing, if they want to make sure to invest objectively.

Cryptocurrencies are new to the world as an industry. It's important to consider how the younger generation sees them, and if they expect them to be around in the future. They are futures investors so they must see all the facts surrounding cryptocurrencies to make objective decisions if they are to invest.

3 Methodology

3.1 Research design

The reason why the author chose a quantitative approach for their thesis is explained well by Cornell. (2022) “Quantitative research is a research methodology used by researchers to test their theories and hypothesis about the attitudes and behaviors of their customers based on numerical and statistical evidence.” This way the researcher can use a survey to question a large number of people to obtain measurable and unbiased data. Another reason for quantitative research was, that it is easy to conduct prescriptive analysis on a set of quantitative data. This means that the author can figure out possible future scenarios from the data, which is one of the main research goals of this thesis.

The approach of the research on the other hand is divided into two categories, inductive and deductive. The figures below illustrate the characteristics of both. (Saylor academy, 2012.)

Figure 6. Inductive research characteristics (Adapted from Saylor academy, 2012.)

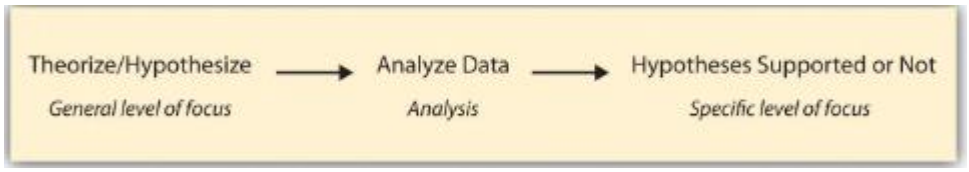

Figure 7. Deductive research characteristics (Adapted from Saylor academy, 2012.)

This thesis was done with an inductive approach. Inductive approach as defined by Saunders, Lewis & Thornhill. (2009.) An inductive research approach is when the researcher starts by collecting data on a topic of their interest. Afterward, they analyze the data and try to look for meanings to emerge from the data, which then are collected to try to identify patterns. And then with the relationship of these patterns, the researcher develops a theory that tries to explain why these

patterns come up. (pp, 48.) As becomes apparent when comparing figures 6 and 7, inductive and deductive research differs in the steps the researcher takes when conducting them. An inductive approach was more attractive for the author, as he wanted to see if any patterns would come up when discussing the views of the younger generation towards cryptocurrencies. It is important to note that descriptive statistics were also utilized in the results. As described by Saunders et al (2009) descriptive statistics are a generic term for statistics that explain variables in data. (pp, 669.)

The way the author conducted the research was a survey. Saylor academy (2012) describes the survey as a research method, in which a researcher poses some set of predetermined questions to a group of people or individuals. This approach is especially useful in research where the goal is to explain a feature of a large group or gain quick knowledge in detail about a large number of people, to aid future more in-depth research. The survey questions used in this research were designed by the author, to meet the research objectives.

There are also many kinds of surveys. The figure below illustrates the different forms of surveys used in quantitative research.

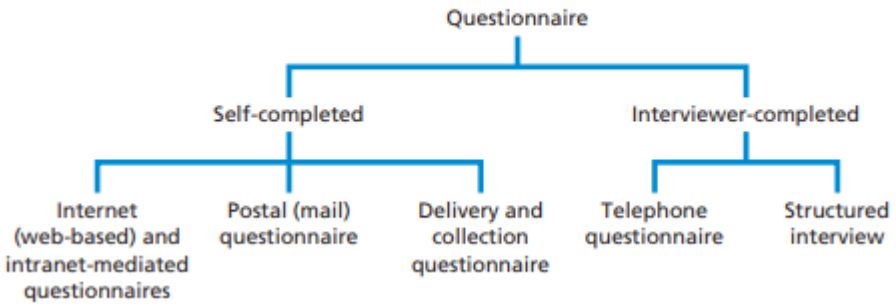

Figure 8. Types of questionnaires. (Adapted from Saunders et al 2009.)

As figure 8 illustrates, there are many different forms of questionnaires and ways to complete them. For this research, the questionnaire designed by the author was self-completed and internet-mediated. The reason for this was that, with the author's goal of having young students across the world, sharing a questionnaire over the internet was the easiest way of reaching them. The

questionnaire being self-complete also made sense, as if the author were to have to complete the questionnaire for all participants, time-zone differences would have been a big obstacle. The platform used to make the survey was Google Forms and the period when the questionnaire was able to be answered was from 29.4.2021 to 31.6.2021, This meant that the data gathering period took 2 months in total. It should be noted that, while the data was collected in 2021, the analysis did not take place until January 2023. This means that the data is over a year old, and the views may have changed, especially considering the data was collected before the 2022 crypto market crash.

The goal of the author was to investigate the minds of younger students regarding cryptocurrencies. To find out, if there were views or biases with no rationale behind them, and if the younger generation of students sees any potential in cryptocurrencies for the future. Due to this, the nature of the research was chosen to be exploratory. Saunders et al, (2009) describe exploratory research as a means to ask open questions to discover what is happening and to gain insights about the topic of interest. It is also particularly useful in clarifying the researcher's understanding of a topic.

The time horizon in which this research was conducted as defined by Saunders et al (2009) is Cross-sectional. A cross-sectional time horizon is when a particular phenomenon is studied at a particular time. The reason for this is that the thesis aimed to research a subject in a way, that gives insights into the topic at present time. They also point out that a cross-sectional timeframe is often utilized when the author employs a survey strategy. (pp, 190.)

This thesis utilizes both primary and secondary data. Secondary data is used in the literature review to give an understanding of key concepts and topics related to this thesis. Primary data is the data collected via the questionnaire, the author developed, and it is used to create a framework of views within a younger generation of students regarding cryptocurrencies and what they expect from them in the future.

3.2 Sample

The sample of the research is a younger generation of students and their views on cryptocurrencies. This sample has been confirmed to include students from various universities, all over the

world so, it's not limited to just Finland or Nordic countries, however, the focus was mainly on Finland, Germany, and the United Kingdom. These students come from varying backgrounds and some of them work, while others don't as well as others are invested in cryptocurrencies, and others are not. The sampling technique utilized in the author's research is called snowball sampling. Snowball sampling is best illustrated with the figure below:

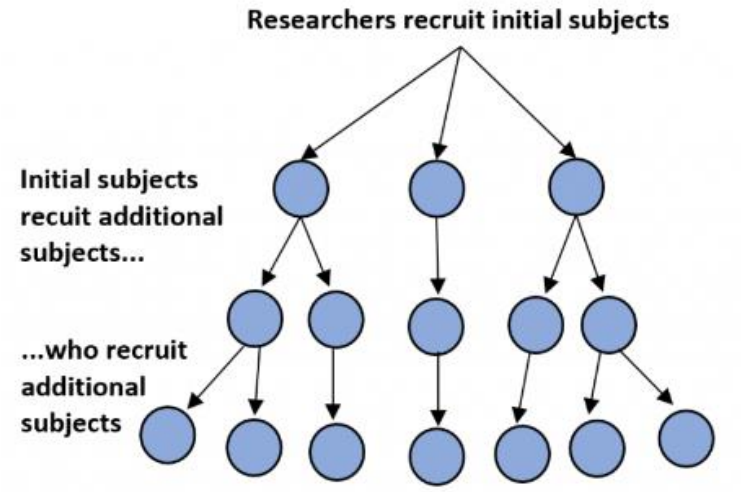

Figure 9. Snowball sampling. (Adapted from Zach, 2020.)

As figure 9 shows, Snowball sampling is when the researcher has an initial amount of subjects, who then share the survey forwards to their peers, who then respond to the questions and forward it again increasing the number of participants every time. (Zach, 2020.) Snowball sampling was an effective way to gather respondents, as students were active in sharing the survey with their peers. The author's snowball sampling began by messaging their peers, and other students in various universities in Finland, Germany, and the United Kingdom. The author also asked the respondents to send the survey to possible peers and contacts they had to increase the sample size. From the author's original answer about 45 responses were gathered, so snowball sampling was responsible for approximately 25 answers in the survey. The exact message sent to respondents can be seen in appendix 2.

3.3 The Questionnaire

According to Saunders et al (2009), three types of data variables can be collected when it comes to questionnaires. The first one is opinion variables. This variable records how a respondent feels about the topic, or what they believe to be true, or false. The behavioral variable is the second variable, and it contains data on what respondents did in the past, and what they will do in the future. It differs from an opinion variable because it is a concrete experience. The third and final variable is attribute variables. These are the respondents' characteristics. So, they are things that the respondent possesses rather than what they do. These are used to measure how opinions and behavior differ between respondents and a good example of this is age, gender, and marital status.

In the author's research, two out of the three variables are relevant to the data collected. The two utilized variables are opinion and attribute. A prime example of an opinion variable is "What do you think of cryptocurrencies as an investment method?" This question didn't ask for a reason for the answer, it just wanted people to give their opinion on cryptocurrencies and if they see them as a good or bad investment. An example of the attribute variable is the two first questions, as they ask, "How old are you?", and "What is your gender?". These are meant to chart the respondent demographic and make sure that the respondents represent the sample in chapter 3.2. The reason why the behavior variable was excluded, was that the author is primarily interested in seeing how the respondents see cryptocurrencies at the moment and what kind of scenarios they believe are relevant in the future.

For students of varying backgrounds to answer the questions as well as possible, the author had to make sure that he used language in a simple form. All of the technical questions use simple terminology for the answering options, and have an open-ended option as well so, if the respondents wouldn't understand their options, they could instead write what they want for the answer. As aforementioned, the platform utilized was Google forms, which is a simple survey platform for respondents to answer with. Forms also have a feature, where after gathering the data, it automatically creates charts from the data collected so, that the author can implement them in their research.

3.4 Data collection method

There mainly exist two types of data, primary and secondary data. Both of these are utilized in both quantitative and qualitative research. Saunders et al (2009) define primary data as new data that the researcher collects for their specific purpose. Secondary data on the other hand is data that has already been collected for another purpose. (pp, 304.) The point of secondary data in this thesis was to give the reader an idea of core concepts and ideas relevant to the research conducted. Providing them with background on what bias is, what causes it, what investing is biased in investing, what cryptocurrencies are and the bias in them is key to understanding the research conducted by the author. The primary data used is the data that surged from survey results.

Saunders et al (2009) recommend that before the author finalizes and releases their survey, they should pilot test it. (pp, 451.) Pilot testing makes sure that the questions in the survey are easily understandable and can be done by everyone without requiring additional help. Before handing out the survey to the public the author pilot-tested it with five different students he knew beforehand, to make sure that students with different backgrounds understood what was being asked. The pilot testing proved to be successful as the negative feedback the author received made him change the questions so that they were easier understood. From pilot testing, it also became apparent, that the survey was able to be answered in five to eight minutes.

As aforementioned in the sample size chapter 3.2, the survey was meant to reach young students and to get responses from them from varying backgrounds. The author sent the survey via multiple means. The most prominent ones were WhatsApp and Email. When the survey was sent the author attached a short message that described what it was for, how long it takes to complete, and his gratitude for anyone who answers it. The “snowball” effect in sampling showed itself here as the author sent the message to approximately 50 people and the ending number of people who answered the survey was 70.

3.5 Analysis methods

The data from this research was analyzed by two means. The first method was utilizing the charts that google forms created automatically and if needed the data was able to be transferred into a Microsoft Excel worksheet, which allowed for a more thorough analysis.

Most of the data did not require a more thorough analysis, seeing as the charts provided by google forms are very clear, and don't need editing. With this in mind, however, the pie charts provided did not provide everything that the author was after. A deeper analysis was used to determine whether understanding cryptocurrencies had a relationship with interest in them as an investment opportunity. If interest in them meant that the participant saw a more positive future for them. If knowledge correlated with skepticism for the future. And if first hearing about them from an influencer, as mentioned in the literature review, gave a biased viewpoint. It should be noted however, that due to the sample size being reduced by going in-depth the answers can only be described as descriptive statistics, due to the limitation of the sample size.

3.6 Research ethics and result verification

When conducting research, ethics must always be considered. Saunders et al (2009) define research ethics as *"The standard of the researcher's behavior in relation to those who become the subject of a research project, or those who are affected by it."* (pp, 680.) When conducting research many ethical problems may arise. Problems like the privacy of participants, the right to withdraw at any time, consent, maintaining anonymity, keeping data unbiased and confidential, and avoiding deception of participants are important matters that were all considered regarding this thesis.

The survey for this thesis as aforementioned was conducted using Google forms as a platform. This meant that the participants had a platform to answer that allowed them to be completely anonymous when answering the questions. None of the questions required the participants to give out personal information. All the demographic-related questions such as age and gender also had options for people who didn't feel comfortable giving direct data. Age was put into groups of 4 years to avoid anyone having to give their exact age, and gender had the option "Don't want to specify" for those that did not feel comfortable answering it. As for voluntary, the author asked people to complete the survey, but never forced anyone to do it and specified that you can always stop midway if you don't want to complete it. The survey did not require a large commitment of one's time, as it was only five to eight minutes in total to complete.

The questions themselves in the survey were formulated to be as neutral as possible. This was to avoid any bias from the author's perspective. It was also important to make sure that no answer is

"correct or incorrect" to gather the true views of people, instead of them just picking the correct answer. Another ethical issue could arise when discussing the use of secondary data within the thesis. The author made sure to critically review his sources and make sure to correctly mark their references and in-text citations, to prevent the risk of plagiarizing their text.

4 Results

This chapter shows the results of the survey. It includes every question outcome and discussion on them. The results are in separate subchapters to make it easier to find certain ones.

4.1 Demographic of respondents

There were two questions related to the demographic of respondents. The author asked for the age, and gender to make sure that the participants, fit the sample. Student status was not asked, seeing as the author confirmed that all participants were students. The nationality was not asked, as the author did not deem it relevant when discussing the global phenomenon of cryptocurrencies.

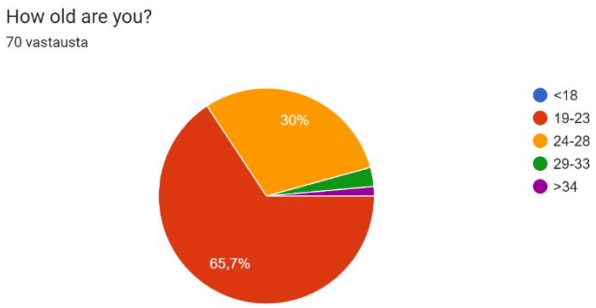

Figure 10. The age of survey respondents

From figure 10 we can see the age groups of respondents. As aforementioned, the goal of this thesis was to chart the views and biases of ages 19-33 about cryptocurrencies. The age groups that are a part of the research are 19-23, 24-28, and 29-33. The author chose to include <18 and >34 in the cases that some of the respondents who got the survey are older or younger than the age

group, however in terms of data these two groups are not relevant. Thankfully nobody who answered the survey was younger than 19 years old and only one person was age 34 or above. As becomes apparent from figure 10, the largest age group by far was 19-23. It made up over 65% of respondents and the second largest is 24-28 (30%) meaning that most respondents are a part of the sample defined earlier.

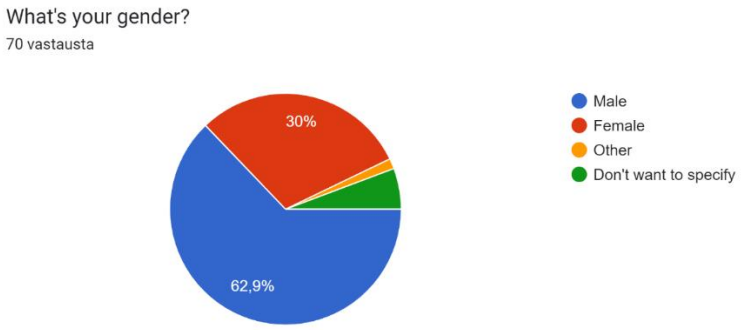

Figure 11. The gender of the respondents

Figure 11 represents the gender of respondents in the survey. The point of asking for the gender of respondents was to see if, there were any differences in views held between genders, and to get a better understanding of the respondents. As apparent males were the majority of respondents coming in at almost 63%, while females were a bit less than half of that at 30%, while 6% of the respondents did not want to specify and answer and 1% felt they are better represented as "Other" gender.

4.2 Cryptocurrencies currently

The point of this chapter is to look at how participants view cryptocurrencies currently. The answers are shown as pie charts, with percentages depicting how many participants chose which answer for the question.

The first question was intended to give an insight into where respondents had heard about cryptocurrencies from. The author wanted to find this out to better understand the channels, through which the younger generation absorbs information.

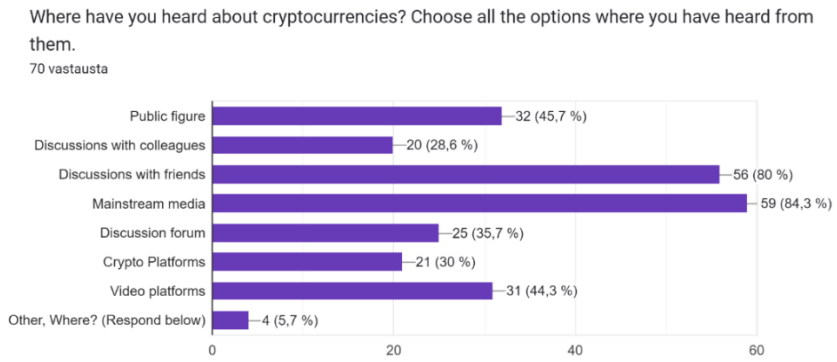

Figure 12. Where respondents had heard about cryptocurrencies from

As shown in figure 12, two answers were quite a bit more popular than anything else. Most of the participants had either heard of cryptocurrencies through mainstream media sources or from their friends. What the author found interesting was that after this public figures and video platforms were the second most common places. Public figures being above the video platform was the intriguing part, as video platforms such as YouTube are filled with adverts and recommendations about cryptocurrencies. If the respondent chose other, those open-ended answers can be seen in the table below

1. “Internet”	2. “Advertisements”
3. “Small, closed communities found by digging deep into discussion forums”	4. “Family”

Table 1. Open-ended answers for question 3

Table 1 doesn’t bring up anything surprising seeing as the first answer “internet” is such a broad answer it could include any of the premade answers. Advertisements about crypto can be seen on the tv or internet so without specification it's hard to go deeper into it. Closed communities is an interesting answer, as it suggests that besides discussion forums there are crypto communities that are not visible to the outside.

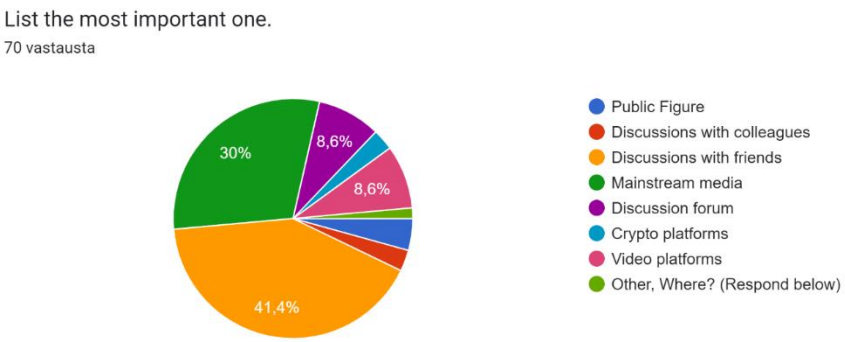

Figure 13. The most important channel, where respondents heard from cryptocurrencies

The most important takeaway from figure 13, is that respondents felt that their friends are the most trustworthy sources on the subject. Over a third of the respondents felt that their friends are their most important source where they heard from cryptocurrencies, this is a possible way for biases to occur in crypto. The second biggest one was mainstream media at a little below a third of responses, which is not surprising considering that most of the participants had heard from cryptocurrencies through them in the first place. However, while expected that the two most common categories from figure 12 would be most represented here as well, it is interesting that participants felt that their friends were a more important source of cryptocurrencies for them than mainstream media. This could be due to the controversial nature in which mainstream presents cryptocurrencies, as having people like Warren Buffet on CNBC, causes a lot of negative popularity for cryptocurrencies, while hearing Elon Musk talk about cryptocurrencies on Fox news, probably gives you a more positive outlook. The open-ended answers are formulated in the table below

1. "Internet"	2. "An article on the internet back in 2012 discussing possibilities of blockchain technology"

Table 2. Open-ended answers for question 4

Both open-ended answers mentioned the internet as the most important source of them hearing from cryptocurrencies. The Internet has the possibility of being a majority answer if we consider that multiple of the answers could have been via the internet. Public figures, mainstream media, discussion forums, video, and crypto platforms can all technically be considered as the internet. In

total, these responses make up 39 responses or 55% of the answers, so if we use the internet as a broad category without deeper research, we can see that it is the most important place where respondents had heard from cryptocurrencies.

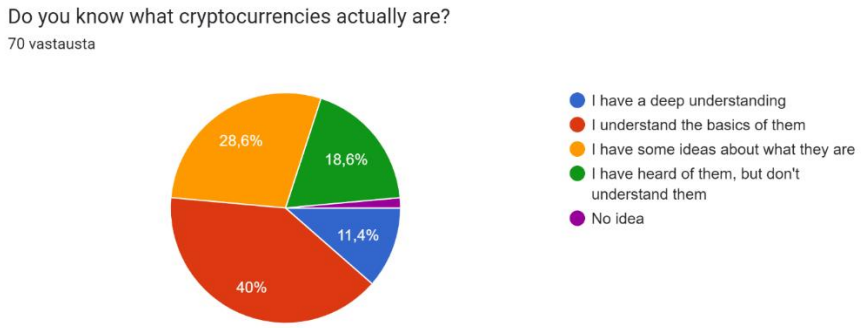

Figure 14. Do you understand what cryptocurrencies actually are

Most respondents felt that they understood what cryptocurrencies are. This includes “I understand the basics of them” and “I have a deep understanding”, which make up for 51.4% of responses. This is relevant because this data will be used when looking into how the understanding of cryptocurrencies affects the attitudes toward them. The respondents of this survey were quite informed on the matter, seeing as more than half of them at least understands the basics of cryptocurrencies. Only one response claimed that they had no idea what cryptocurrencies are, while almost half of the respondents felt that they do not understand the basics of them.

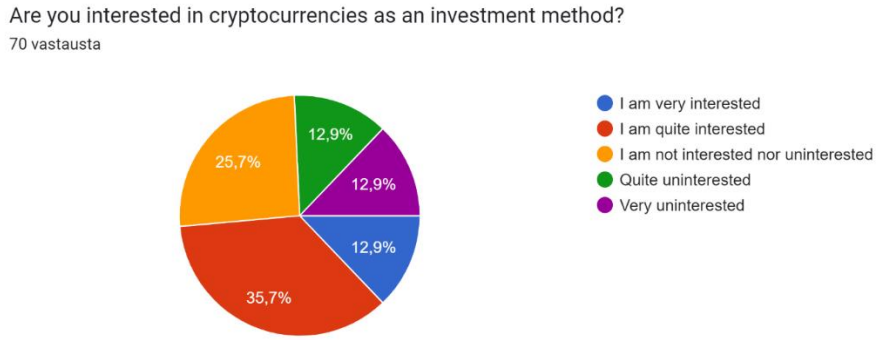

Figure 15. Interest in cryptocurrencies as an investment method

In total 48.6% of respondents expressed interest in cryptocurrencies as an investment method. It could be interesting to see the same age groups' interest in investing in real estate, stocks, and bonds to see if the number is high or not. Considering figure 14, the percentage of respondents interested to invest is almost the same as the number of respondents, that feel like they understand at least the basics of cryptocurrencies.

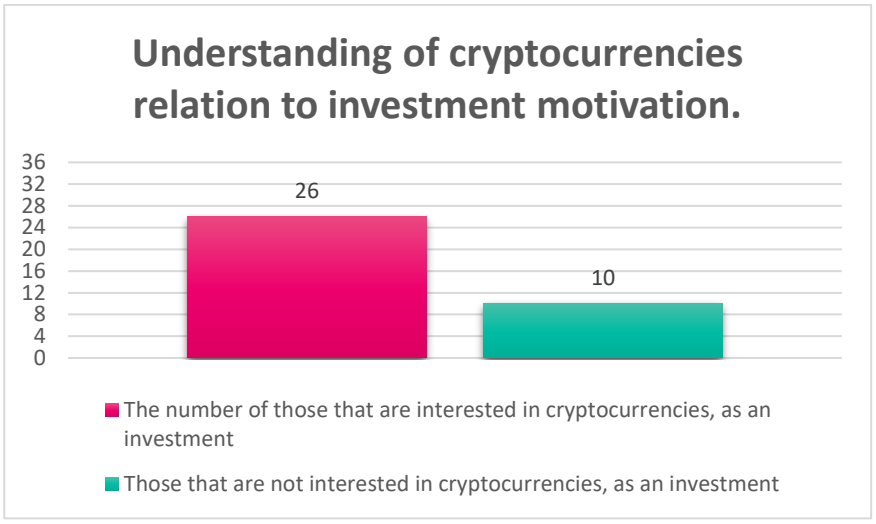

Figure 16. Understanding in relation with investment motivation

Figure 16 illustrates the relationship between understanding cryptocurrencies and the motivation to invest in them. In total 36 respondents felt that they understood cryptocurrencies whether that was just the basics of them or a deep understanding of the matter. Out of these 36 responses, 72% in total were interested in cryptocurrencies as an investment and 28% were not.

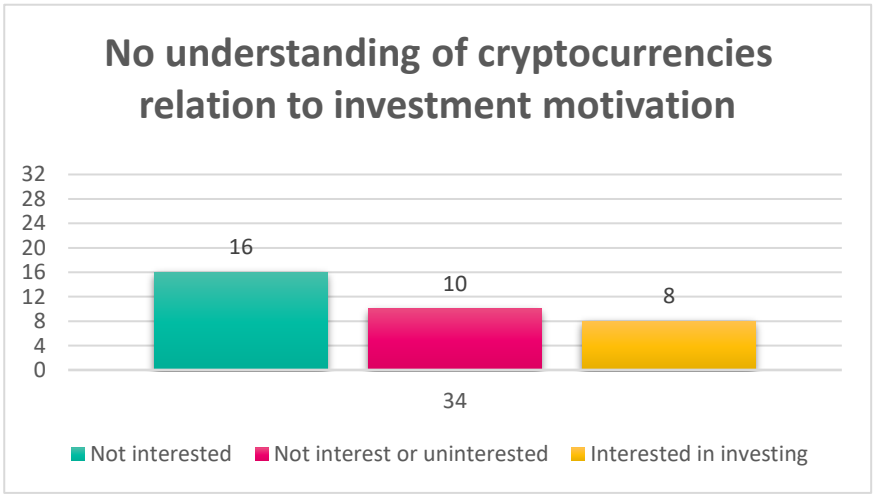

Figure 17. No understanding in relation to investment motivation

Out of the 34 respondents that said they don't understand cryptocurrencies only 8 were interested in investing. This means that only 23.5% were interested in investing. When compared to respondents that understood cryptocurrencies the difference is almost 50% (49.5%) in investment motivation. This shows us that respondents with knowledge of cryptocurrencies are more interested in investing, but it's important to note that correlation does not equal causation. Without more research, it can't be stated if respondents are more motivated towards interest in cryptocurrencies if they know beforehand or if more motivated respondents start looking into cryptocurrencies more and increase their knowledge because of this motivation to invest.

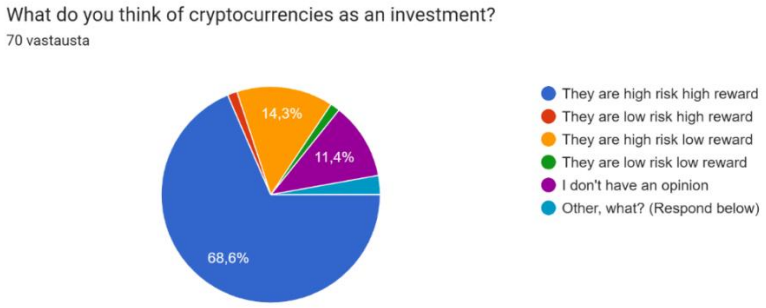

Figure 18. What do respondents perceive cryptos risk reward ratio to be

The overwhelming majority of respondents felt that cryptocurrencies are high-risk, high-reward investments. Considering the volatility and major price surges that are common in the cryptocurrency space as mentioned in the literature review, it is fair to say that this assumption is correct when it comes to analyzing the risk-returns of cryptocurrencies on a surface level. The high-risk, low-reward view came in second at almost 15%. 11,4% of respondents said that they have no opinion on the matter, and if they conceive themselves as not understanding cryptocurrencies, it makes sense that they don't feel confident enough to give an opinion.

If the respondent chose other, those answers can be seen in the table below

1. “Medium risk, low reward”	2. “I just don’t think that they are worth it, compared to stocks”

Table 3. Open-ended answers for question 7

Medium risk, and low reward is an interesting view on cryptocurrencies considering the volatility in the space. The other answer and not believing they are worth it compared to stocks. This is understandable due to the historical stability and growth of the stock market compared to insane volatility spikes and crashes of cryptocurrencies.

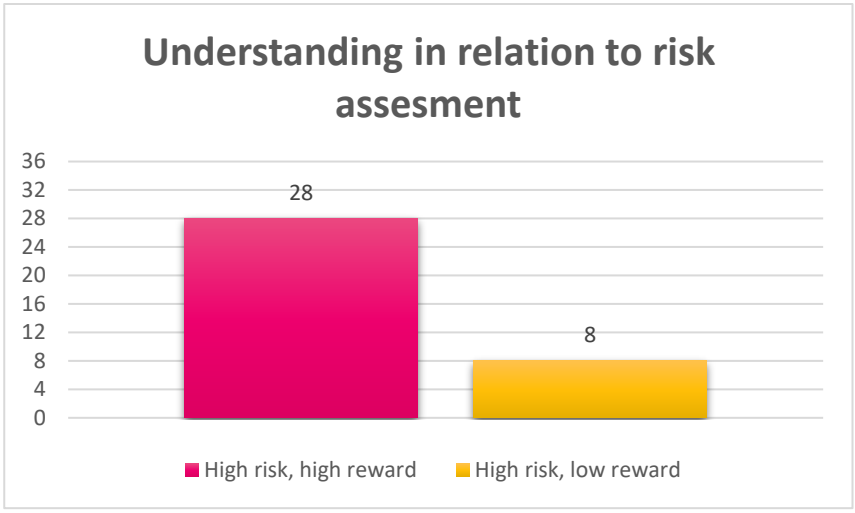

Figure 19. Understanding in relation to risk-reward assessment

The majority of respondents who understand cryptocurrencies assessed them as high-risk, high-reward investments. As aforementioned cryptocurrencies mainly fall under this category due to volatility, and price surges. The remaining 23% of respondents with an understanding of cryptocurrencies assessed them as high-risk, low-reward investments. Overall, the respondents with an understanding of cryptocurrencies perceived them as a high-risk investment.

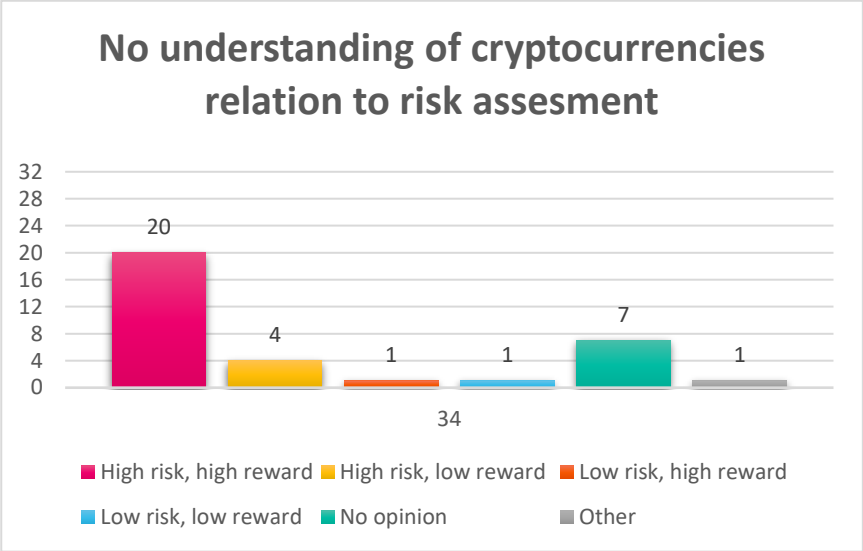

Figure 20. No understanding in relation to risk assessment

The respondents with no understanding of cryptocurrencies had a larger variance in their answers than the ones with understanding. The majority still assess cryptocurrencies as high-risk, high-reward investments. The second most common answer did differ in this group of respondents. Instead of a high-risk, low-reward, it was no opinion on the subject. After which it was the low reward. the high-risk, low-reward answer had exactly double the number of answers among the respondents with knowledge of cryptocurrencies when compared to ones without. The respondents with no understanding of cryptocurrencies also gave more variable answers than the ones with understanding, who gave more linear answers. When comparing the most common answer 77% of respondents with an understanding of cryptocurrencies perceive them as high risk, high reward, while 58% of respondents with no understanding feel the same.

4.3 Cryptocurrencies in the future

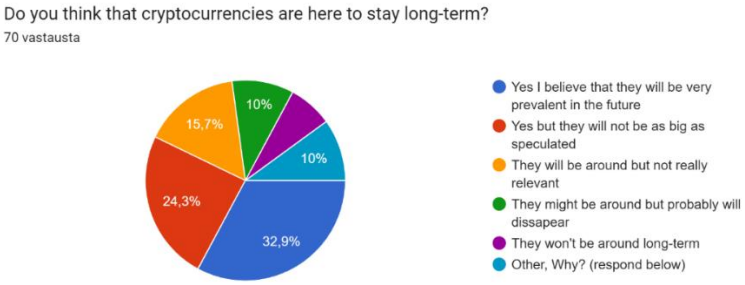

Figure 21. Belief in cryptocurrencies longevity

Cryptocurrency longevity had a lot of opinions. Most of the respondents believe that they will be around long-term, and very prevalent in the future. However, if we consider the next two choices together, that means that respondents believe that they will be around, but the relevancy won't be as big as thought. In total, these answers had 40% of the responses to this question. 15% of respondents felt that cryptocurrencies will probably disappear or just won't be around long term. The overall majority falls under believing that they will be around in the long-term in some shape or form whether they stay relevant or not.

If the respondent chose other. those answers can be seen in the table below

1. "I believe they will be prevalent in the far future; I don't see them being relevant until they are tradeable for everyday goods"	2. "I don't understand enough to specify"
3. "I don't know enough to have an opinion"	4. "I don't know enough to have an opinion"
5. "I don't know if they are here to stay long-term"	6. "I don't think they are here to stay because of environmental strain"
7. "I think we need to solve the energy crisis that comes from them before we can think long-term"	

Table 4. Open-ended answers for question 8

The open-ended answers included: not having enough knowledge about the subject to want to specify. Addressing the environmental pain points that cryptocurrencies have, is understandably a limiting factor when considering long-term. And finally lack of a simple method to use to buy everyday goods.

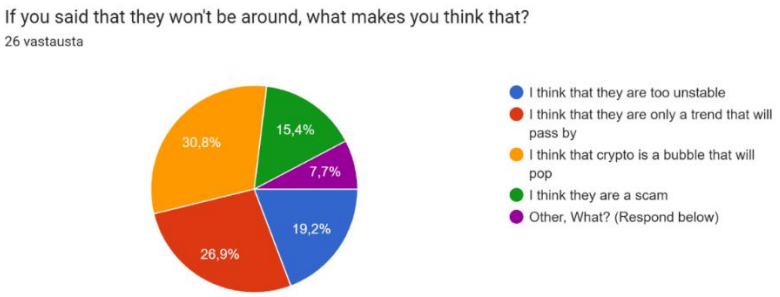

Figure 22. Reasons for doubting the longevity

The most popular answer by respondents doubting crypto longevity was that they are a bubble that will pop and eventually crash, which was almost a third of the responses. The next common answer which was a bit over a quarter of responses sees cryptocurrencies as a trend that eventually will pass by. The volatility part of them shows up here as well, seeing as 19.2% of respondents feel that the volatility is what makes them eventually leave. And then 15.4% of respondents consider them a scam.

If the respondent chose other, those answers can be seen in the table below

1. "Too harmful for the environment"	2. "I think that people realizing the energy consumption will kill them"

Table 5. Open-ended answers for question 9

Both of the open-ended answers bring up the same essential problem, which is also mentioned in table 4. This is because cryptocurrencies are harmful to the environment due to the high energy consumption needed for mining and upkeeping of blockchains.

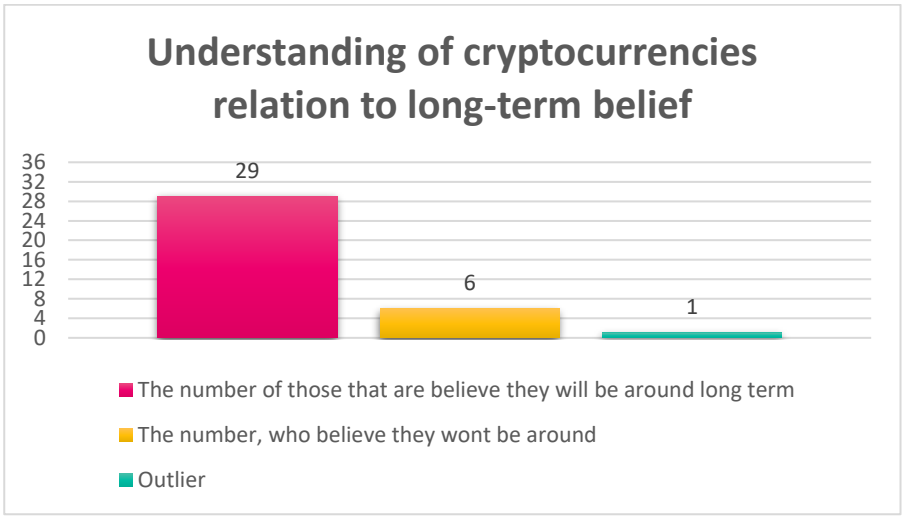

Figure 23. Understanding in relation to long-term belief

The vast majority of respondents with an understanding of cryptocurrencies believed that they will be around long-term in one way or another. Only six respondents believe that they won't be around and then there was one outlier answer. The outlier answer believed that they may be prevalent, but that requires cryptocurrencies to be tradable easily for everyday goods.

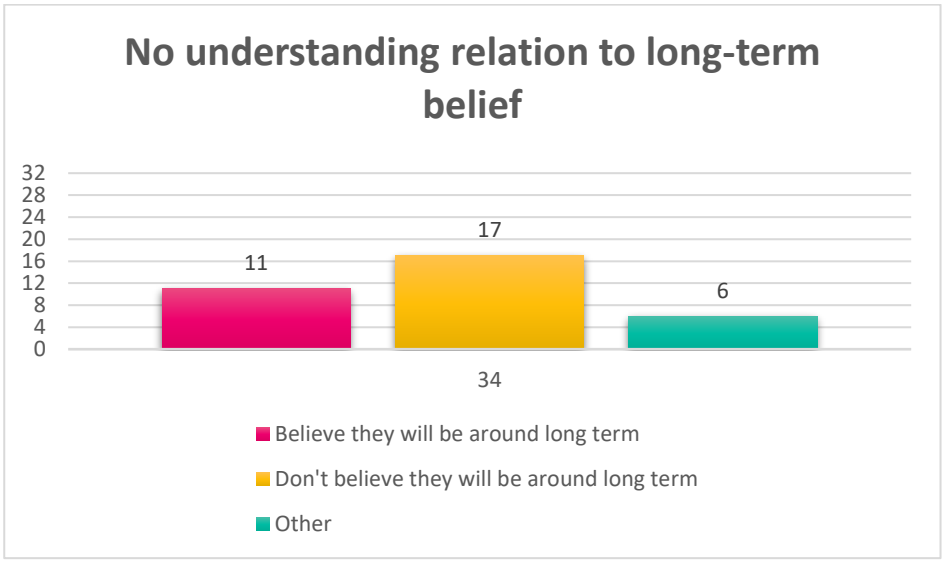

Figure 24. No understanding relation to long-term belief

While 80% of respondents with an understanding of cryptocurrencies felt that they will be around long-term, only 32.3% of those with no understanding of cryptocurrencies felt that they will be

around. Instead, half of them felt that they won't be around long-term, which was more than double when compared to ones with understanding. Six of these respondents had an open-ended answer in mind. Three out of the six either did not understand enough to give an opinion or did not have an opinion on the matter, to begin with. One respondent just said that they don't believe cryptocurrencies are here to stay long-term, and the last two mentioned the environmental issues of cryptocurrency electricity consumption. So, respondents with an understanding of cryptocurrencies had more faith in them staying prevalent in the future, than respondents without understanding.

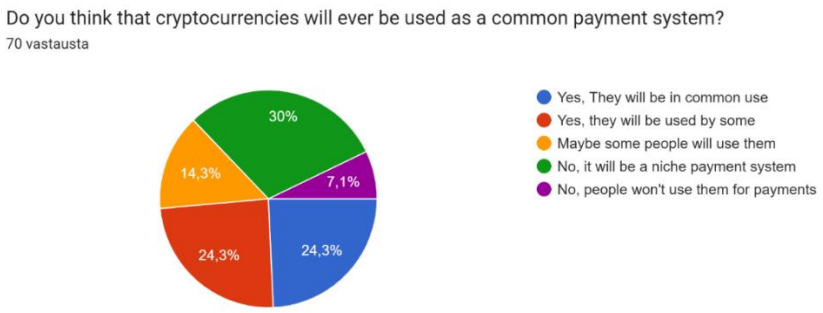

Figure 25. Respondents belief in cryptocurrencies as a payment system

Out of all the answers, almost half believed that they will be a payment system that is at least used by some people commonly. Almost 15% of respondents felt that there is a possibility for a common payment system. A third of responses thought that the system would be niche at best so it wouldn't gain a lot of traction, and finally, about 7% believed that they won't be used for payments at all.

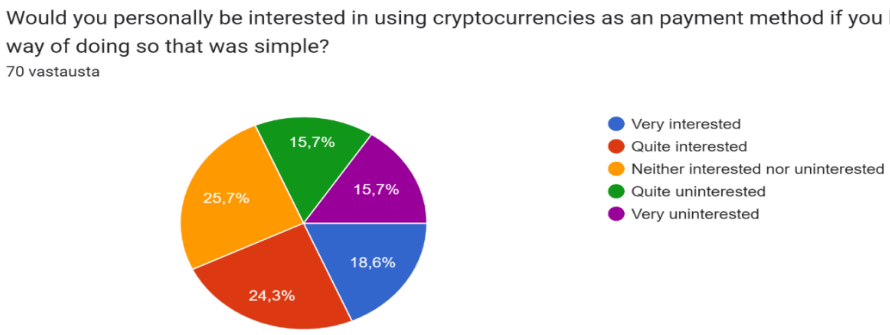

Figure 26. Would you use cryptocurrencies for transactions

About 43% of respondents were interested in using a cryptocurrency payment system as long as it would be simple to use. A bit over a quarter felt that they were indifferent towards the matter at hand, while a bit over 30% were not interested in the payment system possibility.

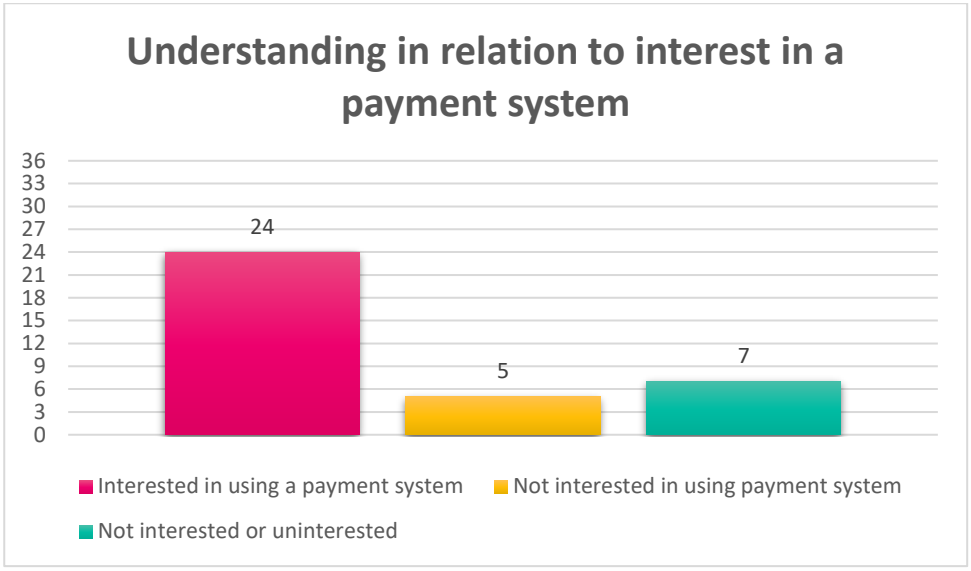

Figure 27. Understanding relation with interest in a payment system

Two-thirds of the respondents with an understanding of cryptocurrencies expressed that they would be interested in using cryptocurrencies to pay for things if the method of doing so was simple. Only five respondents said that they are not interested in using cryptocurrencies for payments, while the rest of the respondents with understanding were indifferent on the matter.

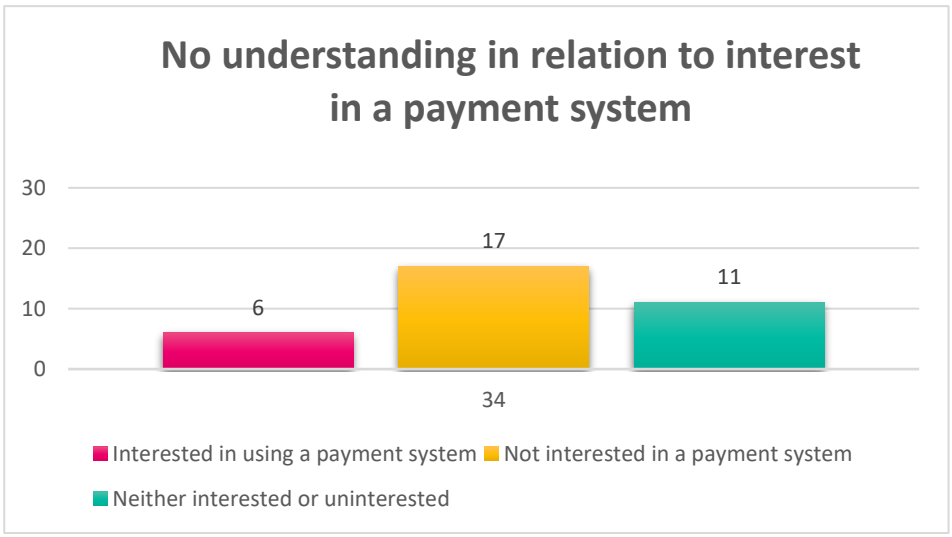

Figure 28. No understanding relation to interest in a payment system

In contrast, only a bit below a sixth of the respondents without an understanding of cryptocurrencies felt that they would be interested in using a payment system with cryptocurrencies. Half of these respondents instead expressed that they are not interested in making payments with cryptocurrencies and a bit below a third of them were indifferent on the matter. When we compare the interested differences in using a payment system it is quite big. 66.6% of those respondents with an understanding of cryptocurrencies are interested in a payment system, while only 17.5% of those without knowledge express interest. Also, while half of those with no understanding straight up said they are not interested in paying with cryptocurrencies, only 14% of those with understanding said the same. It would seem that knowledge of cryptocurrencies correlates with interest in using them as a payment system for the respondents.

4.4 Cryptocurrency education

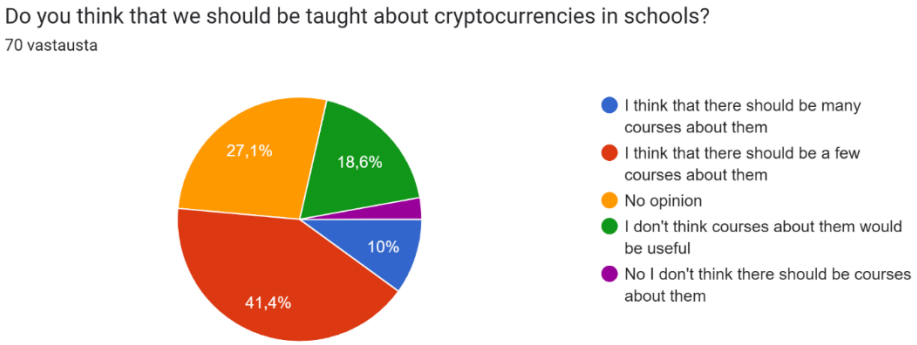

Figure 29. Do you believe cryptocurrencies should be taught about

Over half of the respondents believed that there should at the very least be a few courses about cryptocurrencies in schools. Slightly over a quarter of respondents had no opinion on this matter. Finally, 21.5% of respondents felt that courses about cryptocurrencies in schools would not be useful, or that there should not be ones in the first place.

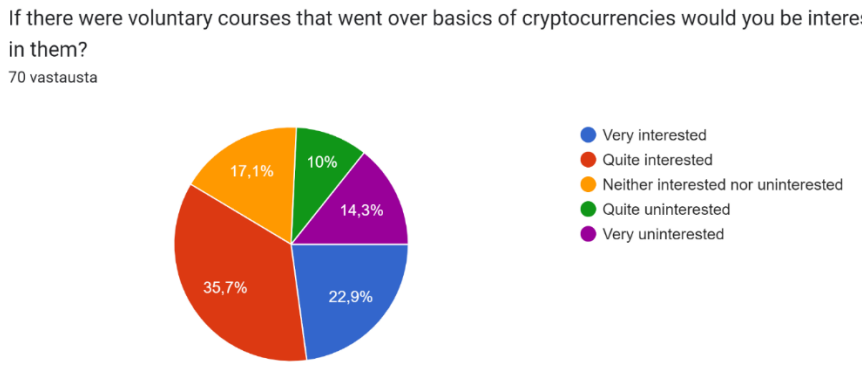

Figure 30. Would you be interested in voluntary cryptocurrency courses

More than half of the respondents expressed themselves as interested in courses going over the basics of cryptocurrencies. 17.1% of respondents expressed neither interest nor uninterest in these possible courses, while about 24% expressed themselves as not interested in participating in said courses.

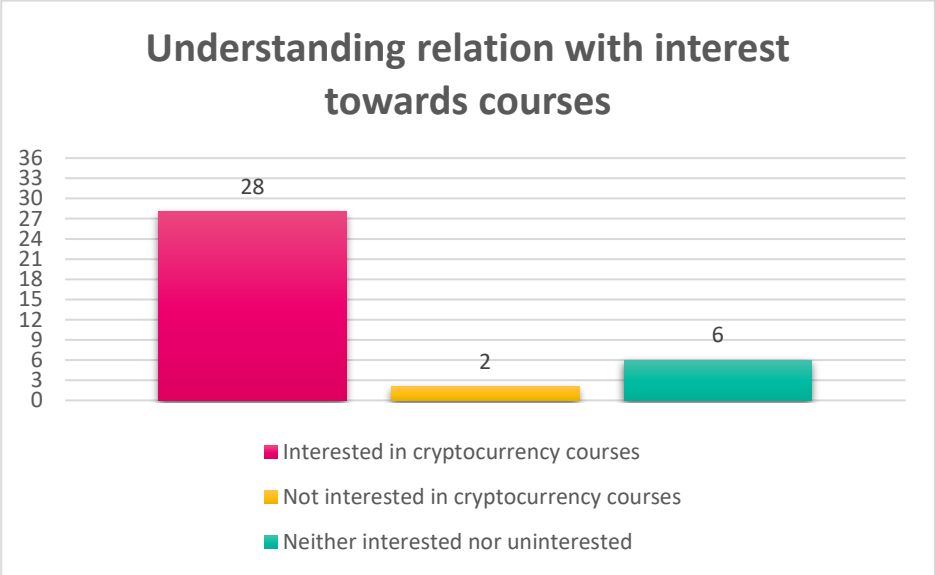

Figure 31. Understanding relation with interest in courses

Over three-fourths of the respondents with an understanding of cryptocurrencies expressed interest in courses that would go over cryptocurrencies. Then one-sixth of the respondents felt that

they are indifferent towards courses and wouldn't see them as a good or a bad thing. Only two responses from this sample expressed that they are not interested in cryptocurrency courses in education.

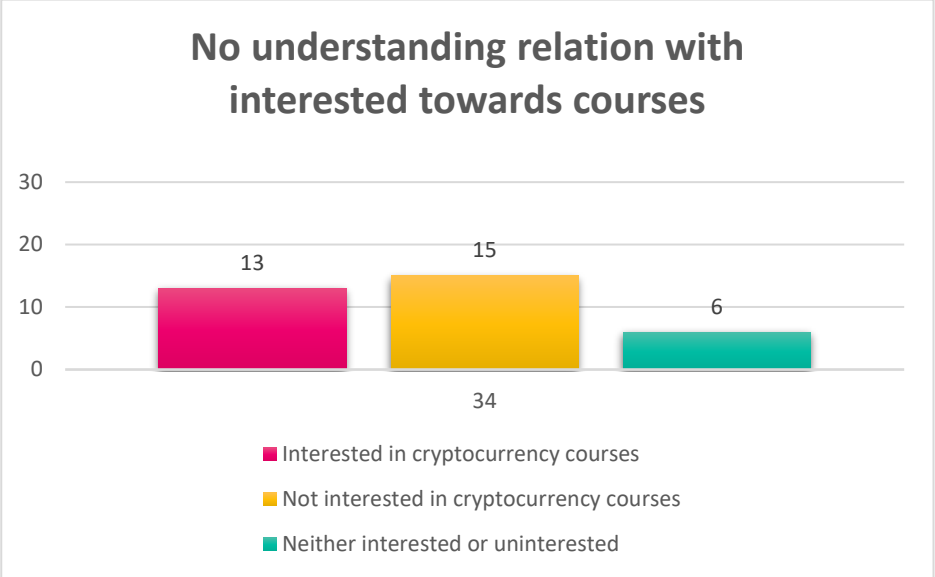

Figure 32. No understanding relation with interest in courses

Almost half of the respondents with no understanding expressed that they are not interested in cryptocurrency courses. Almost 40% of the respondents did express interest in possible cryptocurrency courses and like in figure 31 the number of respondents that were indifferent towards the matter was also 6. When comparing figures 31 and 32, it becomes apparent that respondents with an understanding of cryptocurrencies were almost twice as interested in courses as respondents without an understanding. The number of respondents to show uninterest was also way lower among those with knowledge as they were more likely to be indifferent than express no interest. Among the no-understanding respondents, this was way different, however, as the number of answers that showed uninterest towards the courses was more than double the amount that was indifferent. It is fair to say that respondents with an understanding of the subject are more interested in taking cryptocurrency courses than others.

5 Conclusions and discussion

The research results have given a chance to look into the minds of the younger generation of students and their views on cryptocurrencies as a possible investment opportunity. While most respondents showed interest in any way or another, whether that was as an investment opportunity, a long-term concept, or as something to be taught about in schools, there still are a lot of pain points that need to be addressed. The volatility and high energy consumption for example are problems that get brought up and need a change for cryptocurrencies to have a better chance to last long-term.

In general, the results indicated that respondents with more knowledge on the matter were also more interested in investing in cryptocurrencies, more optimistic about them lasting long-term, and showed more interest in courses about them in education. It is important to note, however, that the data was gathered a year and a half ago, which means that attitudes and views may have shifted drastically since then.

Another key point of the research was the word bias and how it affects people's perception of investment possibilities. In the literature review, the author opened up about how different biases can show up in an investment scenario and what causes them. In a volatile investment space such as cryptocurrency, space biases are likely to occur. From the research, confirmation, and herding bias look to be the most common ones, as the majority of respondents listed their friends as their most important source of cryptocurrencies, and depending on their friends' views on the matter this can cause suboptimal outcomes in investing. The second most common response for the most important source was mainstream media and depending on which media has been listened to opens up the possible confirmation bias, as different media assess cryptocurrencies very differently from one another.

5.1 Answering research questions

As the title of the thesis suggests, the point of the research was to find out the different views and attitudes of the younger generation of students toward cryptocurrencies. To properly analyze the data gathered the author felt that they had to make themselves familiar with key concepts such as Bias, Investing, and Bias in investing & Cryptocurrencies. All the research questions were aimed to

be answered with primary data from the survey. All in all, the research objectives were met, and the research questions got answered.

5.1.1 Research question 1

What kind of views does the younger generation of students have towards cryptocurrencies?

The data from the survey indicate that over half of the respondents understand at least the basics of what cryptocurrencies are and how they function. Almost half of the respondents also state that they are interested in investing in cryptocurrencies, while a bit over-fourth is either indifferent or not interested. This number also changes drastically when we compare respondents with an understanding of cryptocurrencies vs without. Out of the ones with understanding, 72% say they are interested in investing, while out of those that have no understanding only 23.5% are interested in investing.

The perceived risk-reward ratio of cryptocurrencies as an investment is viewed by the majority as high-risk, high-reward. The majority of respondents with or without an understanding of cryptocurrencies still answered that they view them as high-risk, high-reward investments. More of those with an understanding of cryptocurrencies did state that they believe them to be high-risk, low rewards, while the ones without understanding had more variance in their responses, and 20% of them stated they had no opinion.

Interest in cryptocurrency courses in education was overall high. Out of all respondents more than half expressed interest in courses about them. The most common consensus, however, was that there should be a few courses about them and that they should be voluntary. About a fifth of respondents also expressed that they don't feel courses about them would prove useful or just shouldn't exist. The trend where understanding correlated with the positive outcome for cryptocurrencies continued. 77% of those with an understanding of cryptocurrencies had an interest in courses about them, while 38% of those without understanding answered the same. Only 5% of those with the understanding expressed uninterest in the courses and the rest were indifferent, while 44% of those without understanding expressed uninterest, while the number of indifferent answers was almost the same.

Overall, the respondents were split on their views of cryptocurrencies. In total views were more on the positive and interested side when it came to cryptocurrencies. Slightly more respondents considered that they understand them at least at a basic level and this understanding showed clear differences when compared to respondents that didn't feel like they understand cryptocurrencies at a basic level. Investment motivation, risk-reward assessment, and interest in courses about them were all higher among respondents that felt they understood the topic, over those that didn't.

5.1.2 Research question 2

Which are the most important sources of information about cryptocurrencies for younger generations?

The survey had eight options in total to choose from for where the respondents had heard about cryptocurrencies from. Mainstream media and discussions with friends were the most picked answers by the respondents, having 80% or more people choosing them as one of the ways they had heard about cryptocurrencies from. When looked in depth as to what was the most important factor for respondents, the two most common answers remained the same but switched orders. Instead of mainstream media being more common in the first question, discussions with friends ended up being the most common answer and it gathered over 40% of the respondents in saying that their friends have been their most important source of cryptocurrency information for them. Mainstream media was the second most picked important source of information and it had 30% of responses exactly. The rest of the responses were spread out across the other choices and none of the other answers stood out.

Seeing as discussions with friends and mainstream media in total gathered over 70% of responses as the most important source, that respondents had heard of cryptocurrencies from, it means that those two have contributed to these views and behaviors. Both of these answers are subject to bias as depending on what your friend thinks and the news you follow your idea of cryptocurrencies and they in the current world may alter significantly. As mentioned in the results chapter it is important to consider the source of the information as different news outlets contribute to differing views on cryptocurrencies heavily, seeing as the people they have on can have very opposing

views to one another. When using your friend as a source herding bias can be apparent as well if you just go off what you hear from them without looking into the matter at hand by yourself.

5.1.3 Research question 3

What kind of future scenarios on cryptocurrencies does the younger generation of students see as probable, possible, and likely?

The future of cryptocurrencies is very open at least when looking at the answers respondents provided. The majority of respondents believe that they will be around even if they don't stay that relevant. Some of the issues for longevity that were brought up were: that they need a simple method to use in trade for everyday goods and the environmental issues that come from their massive energy consumption. The trend of understanding in relation to positive views on cryptocurrencies kept up in the longevity beliefs as well. 80% of respondents with understanding believe in cryptocurrencies sticking around long-term and being relevant, while only 32% of those with no understanding believe the same. When compared to not believing in them lasting long-term, 14% of those that understand cryptocurrencies believed so, while 50% of those that didn't answer the same. A difference here as well was that out of the non-believers, two respondents stated that if the energy consumption issues were fixed, then they would believe in them lasting long-term.

When discussing the possibility of a cryptocurrency payment system the respondents were close in their views. Almost 50% believed that yes, they will be used by at least some people in the future as a payment system. About 37% stated that they don't believe they will be used by a lot of people and at best will be a very niche payment system, while the rest were quite indifferent towards the idea. When asked, the respondents themselves were quite split on their interest in using a payment system themselves, even if it was simple. About 43% of respondents were interested in using a payment system, while 31% were not and the rest again felt indifferent toward the matter at hand. When looking at how much understanding affected this interest, it became apparent that there is a difference once again. 66% of those with understanding are interested, while only 32% of those were not.

Overall, the younger generation of students sees a wide variety of possible scenarios for cryptocurrencies and how they can stand the test of time. The respondents that understand cryptocurrencies were more likely to see them last long-term and have a payment system that is more common than just niche. One common theme for longevity as well as the energy consumption problem and how it needs to be addressed for cryptocurrencies to last in the minds of some respondents.

5.2 Assessment of research process and result quality

5.2.1 Reliability and validity

The methods used for researching this study were thoroughly explained in the methodology chapter. The reliability of this study relates to the fact that the author was not reliant on the organization's representatives and followed scientific ethical guidelines when parsing and analyzing the gathered data. The data gathered even while being a year and a half old still represents the views and investment motivation of the younger generation of students towards cryptocurrencies in the given timeframe it was collected. There might be some errors that are out of the author's control, like respondents not being consistent with their answers or passing the survey forwards to people who are not students or belong to the targeted age group. The survey method was the best possible alternative for the author to reach a large enough sample and allowed the author to ask different sorts of questions concerning the research topic. It is important to note that the in-depth analysis part of the results, did not meet the quota of 70 respondents because it effectively cut the original sample size in half. Therefore, it’s important to consider the parts of the results that go over understanding of cryptocurrencies in relation to them as descriptive statistics that look for patterns, rather than hard conclusions on the topic. As for the validity, it is important to consider how well the survey measures the topic which it was made to measure. The questions were formulated in a simple matter so, that all respondents could understand them the same way and it was meant to give an overall view into the views and attitudes of the younger generation of students which the questions accomplished.

5.2.2 Theoretical and practical contributions

Theoretically, this thesis adds to the knowledge base of cryptocurrencies. It offers a look into the views of the younger generation of students towards cryptocurrencies and their motivation towards investing in them, what they believe will happen to them, and if they would be interested in education about cryptocurrencies. Seeing as the data is a bit old, it offers a view that can be compared to views from current times to see how they have shifted as well. The academic literature on cryptocurrencies is quite scarce so, this thesis brings a perspective that is not that well researched beforehand and allows for future research to have baseline ideas to utilize and go off on. It also brings the ideas of the younger generation of students forwards on cryptocurrencies and what they deem to be the possible advantages, pain points, and what they think is their most important source of information on cryptocurrencies.

Practically this thesis contributes by giving the views of younger generations. This can help cryptocurrency exchanges and developers to understand what the younger generation feels are problems cryptocurrencies bring and how motivated they are towards investing. By seeing how motivated investors they are cryptocurrency exchanges can start to cater and market towards younger generations if they deem that the interest is enough for them to deem profitable. It is still important that they note, the sample size is mainly focused on Finland, Germany, and the United Kingdom so the enthusiasm to invest might change depending on the country and market they are focused in. It also provides educational facilities information on how interested the respondents are in cryptocurrency courses and how many would take them if offered. This would allow them to see if it would make sense to offer cryptocurrency education as a way of separating your facility from others.

5.3 Reflection on the research and its limitations

The research process in total had its ups and downs for the author but in the end, proved less painful than anticipated. The order in which the author approached the process changed multiple times but, in the end, the author found a way that made it possible for the author to complete the research given the amount of time.

The most challenging part of the research was collecting secondary literature on the topic. Cryptocurrencies are a new concept and the amount of literature going over them and views about them is limited and focused more on the utilization of blockchain technology, rather than attitudes towards them and investing in them. The author had to look in multiple places for academic literature on the topic which ended up being the most time-consuming part of the process overall. This was beneficial in other ways than just the literature however, as it gave the author more ideas on how to approach the research and what kind of questions to have on the survey so, it helped the research become more diverse. This research of secondary literature also assisted with creating the methodology chapter, as it gave the author more sources to look at when considering the choices made in the methodology.

The survey was made in a way that was easy as possible for respondents to answer. The structure of the questions was as simple as possible so that everyone could understand the questions and responses without a problem. The survey itself was planned so that it wouldn't take more than eight minutes max to answer so, respondents wouldn't feel that answering was too long of a time commitment. Making the survey as simple and fast as possible hopefully makes it so, that the respondents stay interested in answering and give the most honest and accurate responses possible. The questions were also aimed to be as unbiased as possible and prevent any bias from the author showing up in any sense or matter. The intent was that no personal views of the author were apparent and none of the questions were made so, that answering in favor of the author was possible. The author also tried to make them in a way so, that there are no correct answers but just views on the matter.

The survey was meant for the younger generation of students. It was shared mainly in Finland, the United Kingdom, and Germany. This means that the responses were mainly focused on students from these three countries. When considering the results and conclusions it's important to note this factor, as the views and ideas towards cryptocurrencies might be very different depending on the region of respondents. It's also important to note that because of snowball sampling, there is a possibility that the survey was answered by non-students or people from different countries where it was shared to. It's also important to note the gathering period of the data and that the data is a bit old in the context of current times. Views and attitudes may have altered greatly during the year-and-a-half period that has passed.

The research could have gone more in-depth with a qualitative interview with respondents that agreed to one. This would have helped in opening backgrounds on how where they have heard from cryptocurrencies has impacted how they understand them and what kinds of future scenarios they seem likely. The data could also be analyzed with a tool for statistical data analysis like SPSS. The author deemed an in-depth analysis utilizing MS excel worthy enough for this thesis, as it allowed the author to compare the understanding of cryptocurrencies in relation to other views, but in terms of limitations, a more statistical analysis could have been conducted.

The sample size used especially in the in-depth analysis was too small to draw actual conclusions off. The size dropped from 70 responses to two categories of 36 and 34 responses and the way this means that conclusions from this analysis should be seen as descriptive statistics due to the lack of statistic evidence. So, while the in-depth analysis shows the differences in how respondents view cryptocurrencies depending on their knowledge it should not be taken as hard evidence for a phenomenon, but rather as a pattern formed from a small sample.

Another limitation is the lack of experience of the author in conducting an academic study since this is the first thesis that was made by the author. It also should be mentioned that the author has no work experience when it comes to investing or cryptocurrencies so, the theoretical stance is purely based on the educational experiences of the author.

5.4 Ideas for future research

While this research provides insights into the views of the younger generation of students towards cryptocurrencies, it would be beneficial to conduct it with a larger sample size. This would allow for conclusions to be generalized more on the respondents depending on where they are from. As aforementioned this research's respondents are students mainly from Finland, Germany, and the United Kingdom so, having a larger sample size and more respondents from different countries could allow formulating the views more globally than just the three main countries that were participants in this research. With a larger sample size, a deeper statistical analysis could also be conducted to help open possible patterns and views and see how they correlate.

Another way to improve this research is to conduct qualitative research with the same respondents that are willing to participate in one. This could help with understanding the backgrounds of

their views, how they got them, what were the most important factors, what they use for their knowledge, and how they believe the future will go. It would also allow the respondents to give longer and more in-depth answers instead of predetermined survey answers.

Since cryptocurrencies are so volatile and the dataset used for this research has already aged more than a year it could be beneficial just redoing the research in almost the same way. This is because in 2022 cryptocurrency prices dropped quite a bit and a lot of skepticism was caused by this. It would be interesting to see the results a similarly conducted research produces only a year and a half later given everything that's happened in the world and especially in the cryptocurrency space. Also, because the cryptocurrency space is still a new topic in the investment market any research going in-depth on specific attitudes or ideas of any possible investors is needed and could help the space progress onwards.

References

Ante, L. 2023. How Elon Musk's twitter activity moves cryptocurrency markets. Retrieved from: https://www.researchgate.net/profile/Lennart-Ante/publication/349007665_How_Elon_Musk's_Twitter_activity_moves_cryptocurrency_markets/links/61de817e5c0a257a6fe0bce1/How-Elon-Musks-Twitter-activity-moves-cryptocurrency-markets.pdf

Ballis, A., & Verousis, T. 2022. Behavioural finance and cryptocurrencies. Retrieved from: https://www.emerald.com/insight/content/doi/10.1108/RBF-11-2021-0256/full/pdf?title=behavioural-finance-and-cryptocurrencies

Blanco, F. 2017. Cognitive bias. Retrieved from: https://www.researchgate.net/profile/Fernando-Blanco-11/publication/317344882_Cognitive_bias/links/59cbafeba6fdcc451d5cde62/Cognitive-bias.pdf

Cambridge Dictionary. 2023. Bias. Retrieved from: https://dictionary.cambridge.org/dictionary/english/bias

Cary, M. 2021. Down with the# dogefather: Evidence of a cryptocurrency responding in real time to a crypto-tastemaker. Retrieved from: https://www.mdpi.com/0718-1876/16/6/123/pdf

Chen, J. 2021. Fiat money. Retrieved from: http://www.trueworldpolitics.com/video-pages/images/fiat-money-definition-investopedia.pdf

Chinchu, C. 2021. Cognitive biases in everyday life. Retrieved from: https://www.researchgate.net/profile/Chinchu-Mullanvathukkal/publication/356162132_Cognitive_Biases_in_Everyday_Life/links/618e3f0a3068c54fa5d67642/Cognitive-Biases-in-Everyday-Life.pdf

CIAIAN, Pavel; RAJCANIOVA, Miroslava; KANCS, d'Artis. 2016. The digital agenda of virtual currencies: Can BitCoin become a global currency. Retrieved from: https://link.springer.com/content/pdf/10.1007/s10257-016-0304-0.pdf?pdf=button

Coinmarketcap, N'd. Retrieved from: https://coinmarketcap.com/

Collins, J. 2011. A short history of the debit card. Retrieved from: https://www.market-place.org/2011/08/18/short-history-debit-card/

Cornell, J. 2022. Quantitative research: Types characteristics, methods & examples. Retrieved from: https://www.proprofssurvey.com/blog/quantitative-research/

David Kuo Chuen Lee, Li Quo & Yu Wang, 2018. Cryptocurrency: A new investment opportunity? Retrieved from: https://ink.library.smu.edu.sg/cgi/viewcon-tent.cgi?referer=https://scholar.google.com/&httpsredir=1&article=6783&context=lkcsb_research

Egiyi, M. A., & Ofoegbu, G. N. 2020. Cryptocurrency and climate change. Retrieved from: http://eprints.gouni.edu.ng/2575/1/CRYPTOCURRENCCY%20AND%20CLIMATE%20CHANGE.pdf

Eyal, I. 2022. On Cryptocurrency Wallet Design. In 3rd International Conference on Blockchain Economics, Security and protocols. Retrieved from: https://ieeexplore.ieee.org/stamp/stamp.jsp?ar-number=9591634

Gitman, L. J., Joehnk, M. D., Smart, S., & Juchau, R. H. 2015. Fundamentals of investing. Retrieved from: https://books.google.fi/books?hl=fi&lr=&id=DB3iBAAAQBAJ&oi=fnd&pg=PP1&dq=what+is+investing&ots=Kj06gArtgD&sig=h_rWYo2fcG4cjoQyTazK_sXQsGI&redir_esc=y#v=onepage&q&f=false

Hirshleifer, D. 2015. Behavioral finance. Retrieved from: https://escholarship.org/content/qt58s0w0c7/qt58s0w0c7.pdf

Anonymous author. 2020. History of contactless payments Retrieved from: https://www.globalpaymentsintegrated.com/en-us/blog/2020/09/15/the-history-of-contactless-payments

Inderst, G., Kaminker, C., & Stewart, F. 2012. Defining and measuring green investments. Retrieved from: https://www.georginderst.com/app/download/5810346479/Inderst+et+al.+2012+Green+Definitions+OECD.pdf

Islam, M. R., Nor, R. M., Al-Shaikhli, I. F., & Mohammad, K. S. 2018. Cryptocurrency vs. Fiat Currency: Architecture, Algorithm, Cashflow & Ledger Technology on Emerging Economy: The Influential Facts of Cryptocurrency and Fiat Currency. Retrieved from: https://ieeexplore.ieee.org/abstract/document/8567098

Konoth, R. K., van Wegberg, R., Moonsamy, V., & Bos, H. 2019. Malicious cryptocurrency miners: Status and Outlook. Retrieved from: https://arxiv.org/pdf/1901.10794.pdf

Last Mazambani & Emmanuel Mutambara, 2019. Predicting FinTech innovation adoption in South Africa: the case of cryptocurrency. Retrieved from: https://www.researchgate.net/publication/336777356_Predicting_FinTech_innovation_adoption_in_South_Africa_the_case_of_cryptocurrency

Merriam Webster Dictionary. 2023. Gold standard. Retrieved from: https://www.merriam-webster.com/dictionary/gold%20standard

Milutinović, M. 2018. Cryptocurrency. Retrieved from: https://scindeks-clanci.ceon.rs/data/pdf/0350-137X/2018/0350-137X1801105M.pdf

Mladine, P., & Grant, C. 2016. From Behavioral Bias to Rational Investing. Retrieved from: https://cdn.northerntrust.com/pws/documents/commentary/investment-commentary/behavioral-bias.pdf

Nofsinger, J. R. 2017. The psychology of investing. Retrieved from: http://digitallibrary.loyolacollegekerala.edu.in:8080/jspui/bitstream/123456789/2165/1/The%20Psychology%20of%20Investing.pdf

Poyser, O. 2018. Herding behavior in cryptocurrency markets. Retrieved from: https://arxiv.org/pdf/1806.11348.pdf

Rosemary, B. 2018. A decade of cryptocurrency: from bitcoin to mining chips. Retrieved from: https://www.telegraph.co.uk/technology/digital-money/the-history-of-cryptocurrency/

Rosic, A. 2017. What is cryptocurrency. Retrieved from: https://blockgeeks.com/guides/what-is-cryptocurrency/

Saunders, M., Lewis, P., Thornhill, A. 2009. Research methods for business students. 5th ed. Retrieved from: https://gibsoncollege.edu.et/wp-content/uploads/2022/01/Research-Methods-for-Business-Students-by-Mark-Saunders-Philip-Lewis-Adrian-Thornhill-z-lib.org-1.pdf

Saylor Academy. 2012. Inductive or Deductive? Two different approaches. Retrieved from: https://saylordotorg.github.io/text_principles-of-sociological-inquiry-qualitative-and-quantitative-methods/s05-03-inductive-or-deductive-two-dif.html

Simundic, A. M. 2013. Bias in research. Retrieved from: https://hrcak.srce.hr/file/142923

Smith, J., & Noble, H. 2014. Bias in research. Retrieved from: https://ebn.bmj.com/content/ebnurs/17/4/100.full.pdf?casa_token=RsqaAmItmXMAAAAA:9Q5FGo-baEX5OokDKukxA0kyCRETIyobrH3vKoGPWRghWulZJjidUgwEOFoLXjXRz6w3odtT63TdS

Tokarchuk, V., & Donkohlova, T. 2018. Effects of behavioral biases on investment decisions in the context of cryptocurrency market. Retrieved from: http://ekmair.ukma.edu.ua/bitstream/handle/123456789/13824/Effects_of_behavioral_biases_on_investment_decisions.pdf?sequence=3

Wall, E., Blaha, L. M., Paul, C. L., Cook, K., & Endert, A. 2018. Four perspectives on human bias in visual analytics. In Cognitive biases in visualizations. Retrieved from: https://aedee-gee.github.io/bookchapter18.pdf#page=38

Zach. 2020. Snowball Sampling: Definition + examples. Retrieved from: https://www.statology.org/snowball-sampling/

Appendices

Appendix 1. The questionnarie used

How old are you?

- <18
- 19-23
- 24-28
- 29-33
- >34

What's your gender?

- Male
- Female
- Don't want to specify
- Other

Where have you heard about cryptocurrencies? Choose all the options that apply

- Public figure
- Discussions with colleagues
- Discussions with friends
- Mainstream media
- Crypto platforms
- Video platforms
- Other, where?

If you chose other, where did you hear from them?

_____

List the most important one

- Public figure
- Discussions with colleagues
- Discussions with friends
- Mainstream media

- Crypto platforms
- Video platforms
- Other, where?

If you chose other which was the most important one?

_____

Do you understand what cryptocurrencies actually are?

- I have a deep understanding
- I understand the basics of them
- I have some ideas about what they are
- I have heard of them but don't understand them
- No idea

Are you interested in cryptocurrencies as an investment method?

- I am very interested
- I am quite interested
- Neither interested nor uninterested
- Quite uninterested
- Very uninterested

What do you think of cryptocurrencies as an investment?

- They are high risk high reward
- They are low risk high reward
- They are high risk low reward
- They are low risk low reward
- I don't have an opinion
- Other, what?

If you chose other, why?

_____

Do you think that cryptocurrencies are here to stay long-term?

- Yes, I believe that they will be very prevalent in the future
- Yes, but they will not be as big as speculated

- They might be around but not really relevant
- They might be around but probably disappear
- They won't be around long-term
- Other, why?

If you chose other, why?

_____

If you said no, what makes you think that?

- I think that they are too unstable
- I think that they are a trend that will pass by
- I think that crypto is a bubble that will pop
- I think that they are a scam
- Other, what?

If you chose other, why?

_____

Do you think that cryptocurrencies will ever be used as a common payment system?

- Yes, they will be in common use
- Yes, they will be used by some
- Maybe some people will use them
- No, it will be a niche payment system
- No, people won't use them for payments

If you said no, what makes you think that?

- I think that they are too unstable
- I think that they are a scam
- I think that we don't know enough about them
- I think that they won't last long-term
- Other, why?

If you chose other, why?

_____

Would you personally be interested in using cryptocurrencies for a payment, if you had a method of doing so that was simple?

- Very interested
- Quite interested
- Not interested nor uninterested
- Quite uninterested
- Very uninterested

Do you think that we should be teaching about cryptocurrencies in schools?

- I think that there should be many courses about them
- I think that there should be a few courses about them
- No opinion
- I don't think courses about them would be useful
- No, I don't think there should be courses about them

If there were voluntary courses that went over the basics of cryptocurrencies, would you be interested in them?

- Very interested
- Quite interested
- Neither interested nor uninterested
- Quite uninterested
- Very uninterested

Appendix 2. The message sent to respondents

Hi! I am currently in the process of conducting my thesis research about the views of younger generation of students towards cryptocurrencies. If you have the time, I'd really appreciate you answering my survey, which at max should take 5-8 minutes of your time. Thanks in advance.

Also due to the nature of my thesis I need as many responses as possible. If you know students that would be able to answer this survey, I would really appreciate it, if you would forward it to them as it allows me to get a better sample size. With kind regards: Teemu Jääskeläinen!