



MASTER THESIS

Motivations of young people in The Netherlands to invest in cryptocurrencies

Master of Business Administration
Financial Management
Faculty of Behavioural, Management and Social Sciences

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1 July 2022

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Abstract

This paper investigates the motivations of young people in The Netherlands to invest in cryptocurrencies. A review of current literature is put forward, proving the limited amount of research into the domain of cryptocurrencies and cryptocurrency investment. In order to fill this gap, literature not only on cryptocurrency investment, but also equity-, bitcoin- and ICO-research as well as research on crowdfunding investment is combined and commonly recognized motivations are extracted. It is hypothesized that a total of eight motivations identified in literature significantly affect an individual's motivation to invest in cryptocurrencies, namely the following: Financial gains, Third party influence, Shared thoughts, values and beliefs, Ideology and technology, Macroeconomic environment, Hobbyist features, Regret and Utility. Furthermore, the effect of several demographic factors is controlled for, namely gender, educational level, income level, field of study or occupation and investment experience in the cryptocurrency market. Using data of 116 respondents, Structural After Measurement (SAM) as an approach to Structural Equation Modelling is used to analyze survey results. This method of analysis is two-fold, initially testing and confirming the measurement model (measuring the variables) only after which the structural model and thus relationships between variables are reported. This approach is known to be feasible with relatively small sample sizes and prevents model convergence issues due to the previous. Additionally, a qualitative question is put forward in the survey in order to expand and nuance quantitative survey results. It is found that Financial gains, Third party influence, Ideology and technology, Regret and Utility significantly affect an individual's motivation to invest in cryptocurrencies; the first three in a positive way and the latter two negatively. Also, diversification is put forward as a motivator in the qualitative responses. These findings contribute to the field of behavioural finance and scarce literature on cryptocurrencies and cryptocurrency investment as well as prove the feasibility of a SEM approach in this field of study. Additionally, an overview of relevant motivations to invest is put forward and firms in the cryptocurrency domain as well as investors and policymakers are provided with findings relevant to their day-to-day business (or future business). Limitations are related to the research methodology as well as the fast-paced character of the cryptocurrency market. Both verifying the results with an increased or different sample and further exploration of concepts in a qualitative way are areas for future research.

Keywords: *cryptocurrencies, cryptocurrency investment, investor motivations, structural equation modelling, structural after measurement.*

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1 Introduction

42% of young adults between the ages 18 and 30 in The Netherlands invest their money. Their main reason for that is to build wealth (Prins et al., 2021). Investing among young people has gained more popularity over the past couple of years, specifically in cryptocurrencies. Multiple studies have been conducted by individual institutes in The Netherlands in recent months of 2021. Research conducted by the Dutch National Institute for Budget Information (Nibud) in November 2021, shows that 27% of young adults invest in cryptocurrencies (Prins et al., 2021). They conducted a sample of over 1,500 people in The Netherlands between the ages 18-30. Additionally, the Dutch Authority of Financial Markets has ordered Ipsos, an independent market research firm, to dive deeper into the attitude and holdings of persons in The Netherlands towards cryptocurrencies (Hardeveld Kleuver & Van der Boom, 2021). This has received national media attention in The Netherlands multiple times in the second half of 2021 (van den Dungen, 2021).

Cryptocurrencies are growing exponentially in terms of coin availability and market capitalization. Its total market capitalization has increased from around 120 billion USD at the end of 2018 to over 2 trillion USD in December 2021 (CoinMarketCap, 2021). This growing popularity has captured attention of several groups, among which (central) banks, governments and not to forget; individuals (Subramaniam & Chakraborty, 2020). There has been an ongoing discussion as to whether or not bitcoin is primarily a currency or simply a speculative asset (Glaser et al., 2014). Bitcoin does not however provide any interest or dividend feature; profits are made from price increases or active trading. Novel developments also offer unconventional ways of earning money with cryptocurrencies seemingly similar to earning interest, namely staking and liquidity providing.

Much work has been done in literature on investment decision behaviour, which has been confirmed in behavioural finance literature over the recent years (Jaiyeoba et al., 2018; Mattke et al., 2021). However, behavioural finance does not put forward a consolidated theory to understand investor behaviour (Subrahmanyam, 2008). Several studies have investigated investor motivations under different circumstances. The most commonly related fields to cryptocurrency investment in literature are equity-, crowdfunding and ICO-investing. Next to that, research is conducted in the context of technology adoption (Khairuddin et al., 2016).

Cryptocurrencies are gaining popularity as an investment category among young people. Despite the fact that the market capitalization of cryptocurrencies as well as its investor adoption is growing rapidly, very scarce literature is to be found researching the topic of cryptocurrency investment (Xi et al., 2020). There are very few papers to be found that research cryptocurrency investor motivations in the context of retail investors, and the existing literature has a variety of focuses. Research that is to be found focuses either on crowdfunding or equity-investment, or on bitcoin investor motivation in the context of regret theory (Mattke et al., 2021), ICO investor profiles (Fisch et al., 2021), motivation to adopt the bitcoin technology (Khairuddin et al., 2016) or cryptocurrency investment attitudes based on market research (Hardeveld Kleuver & Van der Boom, 2021). On top of that, existing literature calls upon researchers to further widen and deepen our understanding of cryptocurrencies by means of academic research. "Empirically oriented research is only now beginning, presenting an extraordinary research opportunity for academia", is said in reference to cryptocurrency literature (Härdle et al., 2020).

Questions that give rise to this study are: 'What motivates retail investor decision-making into cryptocurrencies?', 'How can we measure investor motivations in the context of cryptocurrencies?' and 'What are the strongest motivations for investing in cryptocurrencies?'. The approach of this study builds upon existing literature and theories consistent with investor motivations in other areas of research and applies them into the field of cryptocurrencies. This study aims to find answers to these questions by means of structural equation modelling. With use of a conceptual model incorporating

investor motivations together with relevant control variables, this research confirms or denies longstanding hypotheses from well-renown investment areas. Additionally, this study will begin with laying the groundwork for the newly developing field of academic studies into cryptocurrencies as a potential asset class or investment category.

The research question this study aims to answer is:

“What are the motivations of young people in The Netherlands to invest in cryptocurrencies?”

This paper is divided into the following sections. It starts with laying out the characteristics of cryptocurrencies and why they are different from traditional asset classes. After that, the literature review of this study explains the focus on young people, after which the relevant and identified motivations to invest from literature are described together with their hypotheses. A structural model is built based on the abovementioned. Next, the research method and approach are described, after which the results and findings of this study are explained. Lastly, a discussion is put forward together with limitations and contributions to both theory and practice as well as a final conclusion.

2 Cryptocurrencies

Cryptocurrency investing is different from stock and equity investing, crowdfunding investing and initial coin offerings (Mattke et al., 2021). It is stated that it is the unique characteristics of such, that limit the transfer of knowledge from related research into the context of cryptocurrencies. Cryptocurrencies can be seen as a phenomenon that stands apart from and shares few similarities with many other known investment categories. A synthesis of relevant information about cryptocurrencies is put forward, to explain the aforementioned.

2.1 What are cryptocurrencies

Cryptocurrencies are a subset of digital currencies, contrasting with the concept of currencies because of their lacking connection with central institutions for money supply (Glaser et al., 2014; Lee et al., 2018). Relying on a fundamentally innovative technology, its full potential is yet to be understood.

Cryptocurrencies enable users a means of payment free from a central authority, without the need for a third party (Farell, 2015; Lee et al., 2018). It is a technology not centrally issued, not circulated within a specific community or location, and not tied to fiat currency or an issuing organization. Decentralization allows increased capacity, security, speed and overrules the need for a trusted third party or central authority for verification purposes. These are all characteristics that resemble the major drawbacks of traditional fiat currencies (Lee et al., 2018).

Bitcoin and other cryptocurrencies have some unique characteristics that distinguish it from other 'classic' investment categories. "[...] is not associated with any person, organisation, or intermediary, does not finance any venture, and individuals do not acquire a stake in a company or venture. Furthermore, the bitcoin price does not depend on traditional financial assets, such as stocks, and because of its volatility bitcoin does not fulfil the requirements of a currency" (Mattke et al., 2021).

2.2 The rise of cryptocurrencies

Global financial markets have witnessed the fast rise of cryptocurrencies as a novel asset class in today's society (Maasoumi & Wu, 2021). The financial crisis together with a lack of confidence in the financial system, awakened the increasing interest in cryptocurrencies (Lee et al., 2018). The invention of bitcoin can be seen as the invention that spurred development of several new cryptocurrencies, also referred to as altcoins. The market of virtual currencies has grown hugely both in terms of number of currencies (or altcoins) as well as its user base and transaction frequency (Haubo, 2015). Today, many other cryptocurrencies are actively traded by investors (Lee et al., 2018).

Detractors regard cryptocurrencies as a speculative bubble, comparing it to the tulip mania or internet bubble, and even renowned investor Warren Buffet said, "It's a gambling device." It is said to be an asset that has no value, unless people think it has value (Shiller, 2019). But then again, can't we say the same for money as we know it? (with value dependent upon the agreement of large institutions and in turn transferred to society) In spite of the previous, the growth rate at which cryptocurrencies were able to gain market capitalization continues to be astonishing. Total market capitalization has increased from around 120 billion USD end of 2018 to over 2 trillion USD in December 2021, surpassing the precious metal silver as an asset, which has a capitalization of around 1.2 trillion (CoinMarketCap, 2021). Comparisons with gold, the U.S. dollar, and other types of asset classes are swiftly made (Haubo, 2015). Appendices 1.1 and 1.2 show a comparison of cryptocurrencies relative to other asset classes.

2.3 Currency or asset

The name 'currency' can be deemed misleading, as nowadays substantial amounts of people holding cryptocurrencies do so as a means of investment. There is an ongoing discussion about cryptocurrencies and bitcoin whether to view them as an asset or as a currency (Glaser et al., 2014).

Even in academic literature there is no agreement. It is the unique characteristics of cryptocurrencies that allow it to carry features of both an asset or investment class as well as a currency.

Research has investigated the similarities between bitcoin, gold, and the dollar. Bitcoin functions such as a means of exchange are clear, and prices react somewhat similar to indicators that currencies respond to. However, its decentralized and unregulated nature suggest we cannot look at cryptocurrencies and regular currencies as equal (Haubo, 2015). Bitcoin can be said to be positioned between gold and the dollar, which are seen as artifacts for respectively a store of value and a medium of exchange (Haubo, 2015).

Cryptocurrencies are said to outperform traditional asset classes with regard to returns (Lee et al., 2018). This, regardless of the extreme volatility and susceptibility of the market to financial and macroeconomic activity (Maasoumi & Wu, 2021). Research confirms that cryptocurrency tokens in their ICO-process tend to behave similar to equities in an IPO-process (Lyandres et al., 2019). The primary usage of cryptocurrencies in a study by Mahomed (2017) appears to be as an investment, for both current and potential users, while transactional use was a large minority of the sample. Rudolf et al. (2021) also conclude that bitcoin possesses the ability to compete with gold as an alternative hedge and asset class. However, the payment features of cryptocurrencies remain unique in comparison to other asset classes such as equity and precious metals.

Valuation models are deemed useless since cryptocurrencies do not have a feature of interest rate in contrast to traditional currencies, whereas pursuing cryptocurrencies to be an alternative asset also lacks validation. Non-existence of appropriate valuation methods is said to cause a high influence of available information on cryptocurrency prices (Glaser et al., 2014).

2.4 Types of cryptocurrencies

Cryptocurrencies can be divided in to many different types of tokens, each with their own consensus mechanism, latency or hashing algorithm (Härdle et al., 2020). According to Härdle et al. (2020) there are seven types of cryptocurrency classes, namely: transaction tokens, distributed computation tokens, utility tokens, security tokens, fungible tokens, non-fungible tokens and stablecoins. Utility tokens and transaction (or payment) tokens are said to be the most common types of cryptocurrencies (Software Testing Help, 2022). Utility tokens are often associated with ICOs and are aimed at gathering funds to develop a cryptocurrency project, and solely allow the holder to buy or sell the token as preferred. They are meant to provide access to the platform service they reside on, and value depends on demand for the project. On the other hand, payment or transaction tokens can be seen as units of account and are used for paying or in exchange for goods and services. (Merchant, 2022; *The Different Types of Cryptocurrency Tokens Explained*, 2020). Security tokens represent ownership of a company and are regulated by governmental agencies providing oversight in financial markets, therefore considered much safer and having great potential as a case of blockchain technology. They derive value from an external asset and can be traded under financial regulation as security (Merchant, 2022; Software Testing Help, 2022). Non-fungible tokens represent a digital ownership certificate to “a unique, non-replaceable item or one not tradeable with another, and one-of-kind asset on the blockchain” and is mainly used for works of art, photographs, videos, etcetera (Software Testing Help, 2022). Stablecoins are coins that are collateralized by traditional currencies or real assets, while distributed computation tokens refer to tokens running on a single network which is being run and verified by multiple computers (Härdle et al., 2020). Fungible tokens are simply tokens that can be traded or exchanged. As can be concluded from this explanation, the types of tokens can overlap and are not mutually exclusive. Due to scope and time limitations as well as a focus on researching the general investor interest and motivation into cryptocurrencies, this research takes cryptocurrencies altogether and regards them as one asset class.

2.5 Influence of the crowd

Bitcoin, together with thousands of other issued cryptocurrencies, has stimulated large amounts of talk, enthusiasm and activity around it (Shiller, 2019). It is for that reason that one could regard attention as a major determinant for investor decisions into cryptocurrencies. Robert J. Shiller, who got awarded a Nobel Prize for Economics, claims that the popularity of bitcoin stems purely from the interest of others in it (Shiller, 2019). Research has found evidence of cryptocurrencies responding to both momentum and investor attention, with low attention to other asset classes and macroeconomic factors (Liu & Tsyvinski, 2021). In research on bitcoin, it is discovered that novel users interact differently with the means of use of the cryptocurrency. New, uninformed users also tend to regard bitcoin as a speculative asset without the intention of using it as a currency and means of payment (Glaser et al., 2014).

“In the bitcoin context, future research should examine the role of social influence, such as peer pressure, herding behaviour, or the influence of the actions of cryptocurrency experts and gurus” (Mattke et al., 2021). Herding behaviour is the tendency of many investors to take the same actions as others at the same time (Lin, 2018), or, follow others’ behaviour (Berger et al., 2018). Additionally, herding behaviour seems to increase under uncertainty. It is also found that, when people share a common identity, more often individuals ignore their private information when making a decision, and thus herd behaviour takes place (Berger et al., 2018).

3 Literature review

In order to investigate what the major motivations of young people in The Netherlands are to invest in cryptocurrencies, we conduct a review of the relevant and existing literature both into demographics and investor motivations.

Motivational factors to invest in cryptocurrencies are not extensively researched. There is scarce literature on investment motivations into cryptocurrencies, and the literature that exists makes use of handles offered by literature in ICO-investing, crowdfunding, and equity investment. Since there are few papers researching investor motivations in the context of cryptocurrencies, and for the purpose of enriching this study with potentially other relevant motivators, this review also includes papers researching investor motivations into similar contexts such as equity and crowdfunding. The studies that are conducted in the context of cryptocurrencies are to be categorized into ICO investment, bitcoin investment and cryptocurrency or technology adoption and/or usage.

After identifying a good starting set of papers to begin the search, the backward snowballing method is implemented to identify new papers to include in our analysis (Wohlin, 2014). Papers are inspected on the basis of their research goal and whether or not this fits with the objective of this study. Motivators are composed on the basis of literature on behavioural theories, the beforementioned similar studies, and brainstorming with a cryptocurrency-expert. Next to identifying and describing investor motivations in an exhaustive manner, this research looks into the demographic characteristics of investors that are reported in the reviewed papers. Investors are assumed to be different in their approach to investment decisions. It is recognized that investors make decisions under uncertain conditions and are influenced by their demographic characteristics (Nagy & Obenberger, 1994). This research argues why young people are an important target group to focus on for investigating investor motivations in cryptocurrencies.

3.1 Young people

It is deemed important to study which socio-demographic characteristics may affect individuals to participate and invest in the cryptocurrency market (Xi et al., 2020). The sample for this research consists of young people residing in The Netherlands. Their age can vary from 18-34 years. It is argued that young people are both an important and interesting group to focus on in this research. The reason for focusing on this age category is multi-fold.

First, several relevant studies in The Netherlands have investigated people in this age category. In recent studies, conducted by market research firms in The Netherlands, it is found that young people represent a large share of the people investing in cryptocurrencies. Both studies investigate, among other variables, the motivations of people to invest in cryptocurrencies. One study solely focuses on people of the age group 18-30, since it recognizes the popularity of investing among young people and feels the need for adequate information dispersion (appendix 2) (Prins et al., 2021). The other study is looking for more insight into the attitudes of crypto-owners and finds that the majority of crypto-owners is below the age of 34 years old (appendix 3) (Hardeveld Kleuver & Van der Boom, 2021).

Second, it can be concluded that relevant academic literature does not have a clear focus on the proposed age group. No academic literature can be found that specifically focuses on young people related to investment in cryptocurrencies. Whereas the average age of respondents is reported in both studies that investigate investor motivations into cryptocurrencies, there is no clear focus on this specific age group in either of the studies (Fisch et al., 2021; Mattke et al., 2021). In research conducted by Mattke et al. (2021), a mixed-method study into motivations to invest in bitcoin is deployed. From the participant demographics it can be seen that over 70% of participants are in the age category 18-30 years old. The mean age of participants in the interview-round is 34, whereas the mean age of survey-participants is almost 29. Fisch et al. (2021), who report motives and profiles of ICO investors,

solely report the mean age of respondents which lies at 32 years old. Khairuddin et al. (2016) explore motivations among bitcoins by means of explorative interviews, and report that all of their nine respondents range between 23-37 years old, with a mean age of 34 years old. Additionally, a study conducted in 2017 in Canada, reports that that 18-to-34 age group represents the largest share of bitcoin users (Henry et al., 2018). Xi et al. (2020) also find that a majority of the existing cryptocurrency surveys reviewed have incorporated in their research.

Next to the abovementioned, people of younger age are deemed an important target group for this research considering their unique traits in relation to risk-taking. There are several personal factors individuals possess, over which they have little influence. One of those is their risk affinity, or risk-taking behaviour. Choudhary (2016) finds evidence that mainly demographic factors are determinants for decision-making in equity investment. The variable age is said to play a vital role in deciding whether or not to invest, while dimensions of risk-taking play a part in this (Choudhary, 2016). Xi et al. (2020) confirm that young people are more likely to invest in cryptocurrencies. It is said that the risk-seeking part of our brain physically changes as we get older, which the authors propose as a potential explanation for this. Additionally, higher exposure to and familiarity with the technology might be an explanation (Xi et al., 2020). In general, an increase in age leads to an increase in risk-aversion among investors. An individual's risk-aversion has an adverse effect on motivations to invest, saying that more risk-averse people are less likely to invest. This notion has been confirmed to influence investor decision-making in literature (Choudhary, 2016; Fisch et al., 2021; Mattke et al., 2021; Phan & Zhou, 2014; Xi et al., 2020).

3.2 Investor motivations

As mentioned before, this literature review consists of articles in cryptocurrency investor motivations as well as investment motivations in similar contexts such as equity and crowdfunding. This study aims to discover what are the major motivators recognized in literature and wants to confirm and/or enrich literature on cryptocurrency investment motivators. A table is composed that includes all motivators identified in literature, both in the context of cryptocurrencies as well as in equity- and crowdfunding research. This table can be found in appendix 4. In the following section, the identified motives are described and explained in an exhaustive manner.

3.2.1 Financial gains

In traditional finance literature, investors are assumed to be mainly driven by their expected financial return, depending on their risk-return ratio. Investors are assumed to have the single motivation of selecting investments, such as stocks, based on their highest expected return for a given level of risk (Aspara & Tikkanen, 2011). Even in behavioural finance, which assumes that investors are not perfectly rational but instead persuaded by external and internal factors with decision-making under uncertain circumstances, financial motives are recognized as a major motivator for individual investment (Fisch et al., 2021). In its core, individual investment decisions are seen as a trade-off between the benefits of current consumption and the benefits of future consumption (Nagy & Obenberger, 1994). Several studies in the field of equity and crowdfunding investment recognize or identify profit expectancy and personal financial gains as a motivation for investing (Aspara & Tikkanen, 2011; Bagheri et al., 2019; Choudhary, 2016; Mutswenje & Jagongo, 2014; Ngahu, 2017; Prins et al., 2021). Choudhary (2016) states that money's value is reflected in purchasing power, and investment can help bridge the gap between available and required funds. 85% of respondents in recent research conducted by the Dutch National Institute for Budget Information (Nibud) give building wealth as the reason for investing (Prins et al., 2021).

Not only in traditional finance literature, but also in literature on investor motivations in cryptocurrencies, the goal of financial gains is recognized. Fisch et al. (2021) sees that gaining an equity stake, financial gains, and the future sale of the token at a higher price are subcategories of this

motivator in the context of ICO-investment. The chance to make large profits and the view that bitcoin will substantially increase in value in the foreseeable future is also what drives investors. “The main reason to invest in bitcoin is clearly that I expect that bitcoin’s value will increase in the next years” (Mattke et al., 2021). Hardeveld Kleuver and Van der Boom (2021), in their research ordered by the Dutch Authority of Financial Markets (AFM), find that making a quick profit and the price development of cryptocurrencies are major reasons for investing.

The abovementioned leads us to compose the following hypothesis:

Hypothesis 1: *Financial gains motivate young people in The Netherlands to invest in cryptocurrencies.*

3.2.2 Third party influence

Third party influence on investor motivations has been largely studied in literature. Herding behaviour regards the mimicking of others’ behaviour, sometimes even against available information saying otherwise. Linked to that is third party opinions influencing behaviour, which considers the opinions of notable others influencing behaviour (Phan & Zhou, 2014). Herding behaviour is said to be much more present among individual investors in contrast to institutional ones, even though it is found that investors going against the crowd improve performance (Merli & Roger, 2013).

Nagy and Obenberger (1994) identify advocate recommendation as one of the factors influencing investor motivation in equity selection in their research. Recommendations can stem from for example an advisor broker, friends, colleagues, or family. A study conducted by Ngahu (2017) identifies third parties’ opinions as encouraging stock purchase decisions. Additionally, some evidence was found that which shows that other people’s investment decisions influence decision-making among retail investors. Herding behaviour can be said to influence investment attitude as well as the subjective norm in research deploying the theory of planned behaviour. The subjective norm considers the opinions of significant others on whether or not to conduct certain behaviour, whereas herd behaviour is recognized by following other people’s behaviours. The latter, in spite of information telling investors to act otherwise (Phan & Zhou, 2014).

In the context of technology adoption, social influence has also been recognized as a predictor of individual intention to invest in cryptocurrencies. A potential explanation that is offered is the networking nature of the technology underlying cryptocurrencies, and the mass media attention that is given to cryptocurrencies (Mahomed, 2017). Robert Shiller, Nobel Prize winning economist, also marks bitcoin’s popularity as a topic of interest for the following reason: “[...] people are interested in Bitcoin precisely because so many other people are interested in it” (Shiller, 2019). The Dutch Authority of Financial Markets (AFM) also found that a reason for investing is the fact that people in their circle of acquaintances have invested. Lower ranked motivators are recommendations from analysts or famous persons via social media (Hardeveld Kleuver & Van der Boom, 2021). Specific choice for which cryptocurrencies is mainly motivated by recommendations stemming from friends or acquaintances. Remarkably, the two studies that investigate investor motivations in the cryptocurrency-context, do not include any of the previously mentioned information in their analysis. However, it is mentioned by Mattke et al. (2021) that ICO investors may simply follow others because of the ‘social contagion’ of information in the media. They call for future research that examines the role of social influence (such as peer pressure and herding behaviour) on the investment motivation of individuals.

The abovementioned leads us to compose the following hypothesis:

Hypothesis 2: *Third party influence motivates young people in The Netherlands to invest in cryptocurrencies.*

3.2.3 Shared thoughts, values and beliefs

Besides more traditional motivations for investing, such as financial returns, in more recent years there has gone attention towards the role of affective evaluations on motivations for equity and crowdfunding investing. In crowdfunding research, the motivation of shared values and beliefs for investing is prevalent. This regards positive associations with the investment project that are analogous with personal beliefs are a motivation for investing, as for efforts that are consistent with people's identity or identity aspirations (Gerber & Hui, 2013). Bagheri et al. (2019) identify similar motivations regarding the alignment of projects with a person's thoughts, beliefs, and values. A sample comment from research is "the subject itself was important for me. I supported the projects that the activity was valuable for me."

Nagy and Obenberger already identified the self-image/firm-image factor for investment motivation in 1994. It was found that firm reputation, firm status and feelings about a firm's products and services as well as ethics are ranked highly as an investment consideration among retail investors. In their research deploying the theory of planned behaviour, Phan and Zhou (2014) also find strong evidence that a more favourable attitude towards a specific behaviour increases the likelihood of conducting such behaviour, e.g. investment. It is also said that excessive optimism, usually stemming from overconfidence, has a positive impact on one's investing attitude and thus encourages people to invest. The amount of people conducting socially responsible investment behaviour is steadily growing, incorporating social and environmental principles into investment decisions. This approach to investing yields mixed results with regard to whether or not it generates abnormal returns (Halbritter & Dorfleitner, 2015; Kempf & Osthoff, 2007). Regardless, socially responsible investing is seen as a justifiable category of its own (Halbritter & Dorfleitner, 2015).

Personal or societal motives for investing such as sustainability and philanthropy gain mixed results in the cryptocurrency-context. Where some respondents rate such motives highly, others do not regard them important at all (Fisch et al., 2021). It is argued that, in spite of alignment of personal features with the investment, individuals still only invest when there is profit expectancy (Mattke et al., 2021). However, the extant body of research incorporating social- and self-image into investment motivations leads us to derive sufficient grounds for composing this motivator.

The abovementioned leads us to compose the following hypothesis:

Hypothesis 3: *Shared thoughts, values and beliefs towards cryptocurrencies motivate young people in The Netherlands to invest in cryptocurrencies.*

3.2.4 Ideology and technology

Identity-congruency and shared thoughts, values and beliefs are motivators that have readily been recognized in the context of crowdfunding and equity research (and somewhat in cryptocurrency research). A separate motivator that is solely related to cryptocurrencies is related to the ideology and technology thereof.

Support of bitcoin ideology is said to be specifically relevant to bitcoin investments (Mattke et al., 2021). The ideology of decentralization is mentioned here as a key aspect of this motivator. Even though existing research does not provide insights into the influence of ideology on investments, it does state that non-financial motives are deemed relevant. In later research, Fisch et al. (2021) also identify ideological together with technological motives as a major motivation for investment into cryptocurrencies. These motivations rest upon the features of blockchain technology, such as desirability of anonymous transactions and the high degree of decentralization and are driven by belief in the future potential of the technology regardless of unclarities and uncertainties in present day.

Disruption of established structure or industries and personal enthusiasm for the technology or business idea are what composes this factor.

In research into the technology adoption of cryptocurrencies, Mahomed (2017) identifies trust as a dimension influencing the intention to adopt. “The decisions to invest money in households and organizations are made under uncertain conditions (Jaiyeoba et al., 2018)”. This also leads to a discussion regarding regulation, as regulation to reduce uncertainty is said to be key for investors going forward. Lack thereof strengthens the problem of information asymmetry and influences investor trust (Xi et al., 2020). However, issues of trust and regulation do not seem to dominate investor motivations in relation to ideology and technology motives. Research conducted by the Dutch Authority of Financial Markets (AFM) also confirms that belief in the underlying technology of cryptocurrencies is a reason for investing (Hardeveld Kleuver & Van der Boom, 2021).

In an exploratory study by Khairuddin et al. (2016) into users’ motivations, the three main motivations that are found all relate to ideology and/or technology. The potential that bitcoin has to transform global financial institution and democratization features are deemed very important motivators. More specifically, bitcoin’s predicted role in the monetary revolution, users’ empowerment (open source, decentralized and unregulated platform) and the perceived real value of bitcoin currency (paralleling to gold) are mentioned. It is assumed that the following is a major thought underlying cryptocurrency adoption and usage: “Bitcoin will be bigger than the Internet revolution because Internet is only the revolution of communication. Bitcoin is about the money revolution” (Khairuddin et al., 2016).

The abovementioned leads us to compose the following hypothesis:

Hypothesis 4: *Ideology and technology aspects motivate young people in The Netherlands to invest in cryptocurrencies.*

3.2.5 Macroeconomic environment

Macroeconomic factors and the general state of the economy have an effect on business decision-making regarding spending, borrowing, and investing (Khartit & Rathburn, 2021). One of the main indicators of the macroeconomic environment is the inflation rate, which has a large influence on stock market performance (McDermott, 1996). While Choudhary (2016) marks the macroeconomic environment and inflation rate as a force driving equity investment, there are no studies to be found that investigate this as a motivation for investing in cryptocurrencies. The Dutch Authority of Financial Markets (AFM) conducted research among 18+ investors in The Netherlands, and did find that the low interest rates on savings accounts nowadays is the second largest motivator to invest in cryptocurrencies (Hardeveld Kleuver & Van der Boom, 2021). Whereas in general, higher inflation rates push up interest rates which in turn declines investment propensity (because of increased cost of capital), this has not been the case in recent years (Madsen, 2003).

The abovementioned leads us to compose the following hypothesis:

Hypothesis 5: *Macroeconomic factors motivate young people in The Netherlands to invest in cryptocurrencies.*

3.2.6 Hobbyist features

Beside the more renown motivations for people to invest, research has also uncovered somewhat more inelaborate or basal motivations. Retail investors in both equity and cryptocurrencies have identified more hobbyist motivations for investing. The excitement, passing time and being busy with money in a fun way are mentioned in this fashion (Prins et al., 2021). Technology adoption of cryptocurrencies also seems to mark hedonic motivations as significant for the process, as it influences

individuals' intention to adopt (Mahomed, 2017). Additionally, research conducted by the Dutch Authority of Financial Markets (AFM) shows that the main reason for cryptocurrency owners above 18 years old in The Netherlands is 'to take a guess'. Also, the excitement of investing plays a part in their motivation to invest (Hardeveld Kleuver & Van der Boom, 2021).

The abovementioned leads us to compose the following hypothesis:

Hypothesis 6: *Hobbyist features motivate young people in The Netherlands to invest in cryptocurrencies.*

3.2.7 Regret

Loomes, Graham and Sugden (1982) build upon the prospect theory and introduce the concept of regret in their model of decision making. It states that people anticipate regret when making decisions and consider this in the process. Regret theory impacts investors because it can either cause them to be unnecessarily risk-averse or it can motivate them to take risks they should not take. Mattke et al. (2021) identify motivations to invest in bitcoin whilst deploying regret theory, since regret theory is tailored to the uncertainty aspect of decision-making. It is found that either anticipated or experienced inaction regret sentiments are a motivation for individuals to invest bitcoin. They pose that even though prior studies do investigate the influence of regret avoidance or aversion, their contribution shows that regret can be anchored in the future or in the past. Respondents state, "I could have been rich, if I invested earlier, that motivates me to invest now" and "I do not want to miss the chance now, or I will regret the decision in the future." It is argued that, due to the nature of cryptocurrencies and their potentially accelerated return rate in comparison to more traditional investment categories, regret plays a part in motivation to invest in cryptocurrencies.

The abovementioned leads us to compose the following hypothesis:

Hypothesis 7: *Regret anticipation or experience motivates young people in The Netherlands to invest in cryptocurrencies.*

3.2.8 Utility

Cryptocurrencies can be categorized in several different ways. The most prevalent categories mentioned are classification as either a currency or an asset. Lesser known or described functions of cryptocurrencies concern their use as a utility token or as a security token. A utility token grants the right of access to a product or service of the start-up to its owner (Xi et al., 2020). It can be used to redeem products or services or as a medium of exchange among users of the venture's platform (Fisch et al., 2021). A security token, on the other hand, is comparable to an equity stake in the business using cryptocurrencies as means of raising money (Xi et al., 2020). They designate rights to their holders to ownership shares, dividends, and or other financial benefits. Therefore, security tokens can be seen as vehicles of providing early-stage financing to ventures which issue such tokens at a previously set price (Fisch et al., 2021).

Fisch et al. (2021), in their research into investor motivations in ICO's, identify the use of tokens for their intended utility function as one of the ideological motives to invest. It is argued that investors driven by technological motives, might invest in utility tokens for the purpose of later using them for their intended purposes. Investors that have financial motives might invest in security tokens for the purpose of collecting the financial rewards that are directly tied to such coins. Research conducted into the investment behaviours of people over the age of 18 in The Netherlands also uncovers that investors' reasons to invest in cryptocurrencies can be related to their intended function as a means of payment for other goods or services, although this is confirmed by a relatively small part of the sample (Hardeveld Kleuver & Van der Boom, 2021).

The abovementioned leads us to compose the following hypothesis:

Hypothesis 8: *Their intended utility function motivates young people in The Netherlands to invest in cryptocurrencies.*

3.3 Research gap

This research assumes a total of eight motivators identified in previous literature. While several studies have investigated investor motivation in the context of equity- and crowdfunding, few performed their studies in the context of cryptocurrencies. The ones that did, solely focused on ICO-, bitcoin-, or technology adoption (Fisch et al., 2021; Khairuddin et al., 2016; Mattke et al., 2021). Moreover, some motivators have only been measured in non-academic literature or results come forward as inconclusive in cryptocurrency-adjacent literature (Hardeveld Kleuver & Van der Boom, 2021). The verification of the eight mentioned motivators is not readily available in research that investigates investment motivations into cryptocurrencies as an asset class. In research, clarification of several investor motivations in the context of cryptocurrency retail investing is called upon (Härdle et al., 2020; Mattke et al., 2021; Xi et al., 2020).

3.4 Expert validation

In order to gain confidence regarding the abovementioned motivators that are subtracted from literature, an expert in the field of cryptocurrencies has been consulted. This expert has six years of experience with the cryptocurrency market and cryptocurrency investment and is currently working in this field in a professional manner. The expert has worked fulltime for some years now with individual investors that have little to no experience in cryptocurrency investing and guides them in the process. To be able to determine if the established motivational factors are reported in an exhaustive manner, the expert is posed the following open question: "What are, according to you, the motivations of young people to invest in cryptocurrencies?." A short conversation took place after which a list with potential motivators the expert recognized is composed. The expert's suggestions can be found in appendix 5 and can all be accommodated under existing and previously identified motivators. This functions as an additional confirmation of the existence and relevance of identified motivators in literature.

3.5 Overview hypotheses

Below an overview of the formed hypotheses based on the literature reviewed.

Hypothesis 1: *Financial gains motivate young people in The Netherlands to invest in cryptocurrencies.*

Hypothesis 2: *Third-party influence motivates young people in The Netherlands to invest in cryptocurrencies.*

Hypothesis 3: *Shared thoughts, values and beliefs towards cryptocurrencies motivate young people in The Netherlands to invest in cryptocurrencies.*

Hypothesis 4: *Ideology and technology aspects motivate young people in The Netherlands to invest in cryptocurrencies.*

Hypothesis 5: *Macroeconomic factors motivate young people in The Netherlands to invest in cryptocurrencies.*

Hypothesis 6: *Hobbyist features motivate young people in The Netherlands to invest in cryptocurrencies.*

Hypothesis 7: *Regret anticipation or experience motivates young people in The Netherlands to invest in cryptocurrencies.*

Hypothesis 8: *Their intended utility function motivates young people in The Netherlands to invest in cryptocurrencies.*

3.6 Structural model

In order to be able to conduct structural equation modelling, the theoretical concepts (motivators) and their hypothesized relationships should be transformed into a structural model. “The structural model represents the core of the theory proposed” (Benitez et al., 2020). This study makes use of existing literature on investor motivations to develop the following structural model. It is composed based on literature from both cryptocurrency literature as well as equity and crowdfunding research. The figure below shows the identified and thus to be measured motivations of individuals to invest in cryptocurrencies. The left-hand (latent) variables can be seen as motivations having an effect on cryptocurrency investment motivation, which will be measured with the help of indicators/items in the survey.

The structural model visualizes this study’s approach; an investigation of what are the major motivations of young people in The Netherlands to invest in cryptocurrencies.

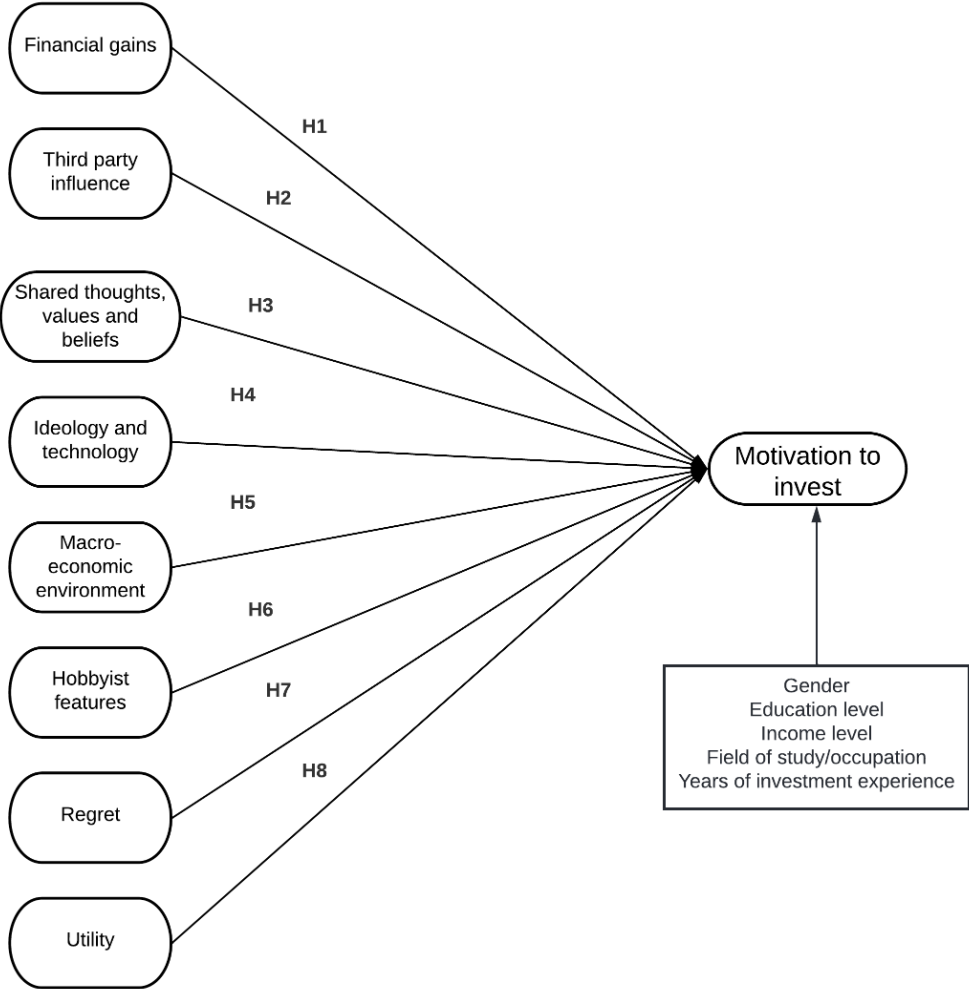


Figure 1. Structural model of motivations to invest in cryptocurrencies.

4 Methodology

In the following, the methodology that is used to answer the research question “What are the motivations of young people in The Netherlands to invest in cryptocurrencies?” is described. First, the research design is laid out together with the selection and sample of respondents. Next, the measurement process of the variables is described, after which the data collection and analysis are put forward.

4.1 Research goal and design

The goal of this study is to identify the motivations of young people in The Netherlands to invest in cryptocurrencies. In order to answer the research question previously defined, a quantitative survey approach is deployed incorporating both descriptive and exploratory questions. Survey research can be defined as “the collection of information from a sample of individuals through their responses to questions” (Brant et al., 2015). This type of research is often used to describe and explore human behaviour in both social and psychological research. Since this study aims to identify human motivations in a financial context, a survey approach is deemed appropriate.

Measurement items are composed for each motivator and measured with use of an interval scale. Originally, as few as three or four points can be on a scale to measure a motivator. It is decided to deploy a 7-point Likert scale, since more scale points result in a closer approach to the underlying distribution. Additionally, this increases generalizability of results (Wu & Leung, 2017). Respondents are asked to rate the influence of identified motivators on their decision to invest on a 7-point scale ranging from strongly agree to strongly disagree. Goal is to validate the items per construct and ensure reliability of the indicator constructs. There is no amount of increase in sample size that can decrease bias or increase reliability in single-indicator models, while an increase in the number of items/indicators per construct decreases the necessary sample size. The amount of increase in sample size requirements for multi-construct models depends on the power of the items to load on the construct (Wolf et al., 2013).

Next to quantitative closed-ended questions on a Likert-scale, respondents are asked to reply to one open question. This question asks respondents to note down any motivators they have in mind for investing other than previously mentioned in the survey. Reason for this, is to be able to draw further conclusions regarding the composed structural framework and whether or not the identified motivators in literature can be complemented. This approach is expected to yield both similarities and dissimilarities between the quantitative and qualitative part of the survey (Glik et al., 2006). Additionally, divergence from the given answering possibilities in the closed-end questions might lead to conclude a bias in the proposed motivations. An overview of the survey that is conducted can be found in appendix 6.

Structural After Measurement (SAM) will be used as an approach to Structural Equation Modelling (SEM) for data analyses. Structural Equation Modelling has become an important tool in social and behavioural sciences and is capable of “expressing theoretical concepts through constructs and connecting these constructs via a structural model to study their relationships” (Benitez et al., 2020). It is deemed a major tool for examining and understanding relationships among latent variables (Deng et al., 2018). When using SEM as a data analysis method, empirical evidence can be obtained with the use of statistical tests. Two types of theoretical concepts can be used with the help of SEM: behavioural science concepts and design science concepts. This research measures a behavioural science concept, observed by indicators, and operationalized with a measurement model. The decision for composing a reflective measurement model is based on literature, and backed by figure 2 below (Henseler, 2017).

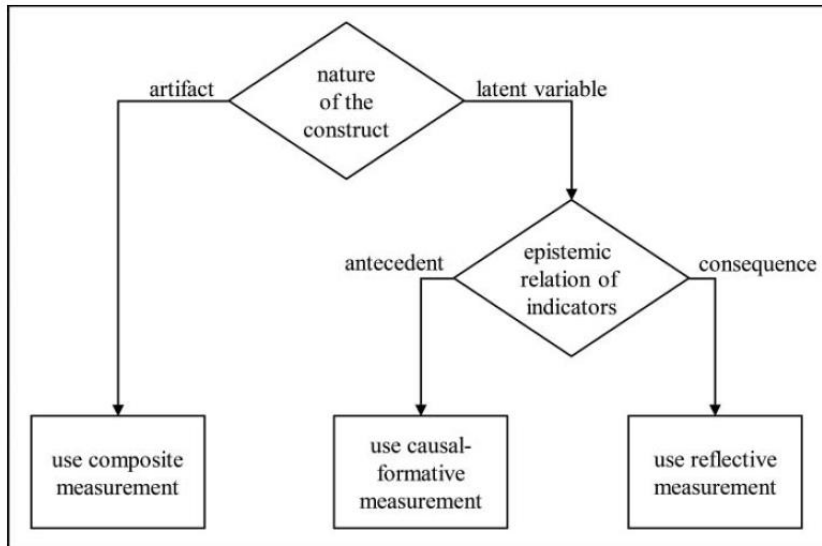


Figure 2. Decision tree for measurement models (Henseler, 2017).

A characteristic of SAM is the order of measurement, in which first the measurement model and second the structural model is assessed, in contrary to simultaneous estimation of global model fit in other estimation methods. Naturally, analysing relationships among variables would be easiest if all latent variables are observed (and thus measured without measurement error). This because then linear regression could be used to estimate coefficients for the effect of the independent variables on the dependent variables. However, factor scores contain measurement error, which would lead to biased estimates of the regression coefficients (Rosseel & Loh, 2022). SAM as an approach to SEM is chosen as estimation method not only because of the above, but also because of the following two reasons. First of all, estimates in a SAM model are more robust against local model misspecification. Secondly, this approach is known to work better to prevent convergence issues in small samples. Non-convergence can even occur when a model is correctly specified, simply because of small sample size (Rosseel & Loh, 2022).

Where CFA can be seen as the measurement part of SEM, SAM subsequently shows how the variables are related (structural model). It incorporates latent variables or constructs and also specifically specifies measurement error (Suhr, n.d.). The chance of success is highest for researchers which build upon a strong conceptual foundation, be it from prior research, theory or commonly accepted principles (Hair et al., 2010). Additionally, sufficient correlations need to be present among variables. This research assumes to adhere to this. Since there are no established scales available to measure the motivators identified in literature, this research composes multiple measurement items per construct and will move on with analyses with those items that load high on the construct.

Below in figure 3, a fictive visualisation of the relationship between factors or constructs, indicators and loadings is given, to clarify the relationship among these concepts to the reader. Factors or constructs represent the independent and dependent variables ($X_1, X_2, X_3; Y$), while indicators are the items measuring each factor or construct (x_{11}, x_{21}, y_1 , etc.).

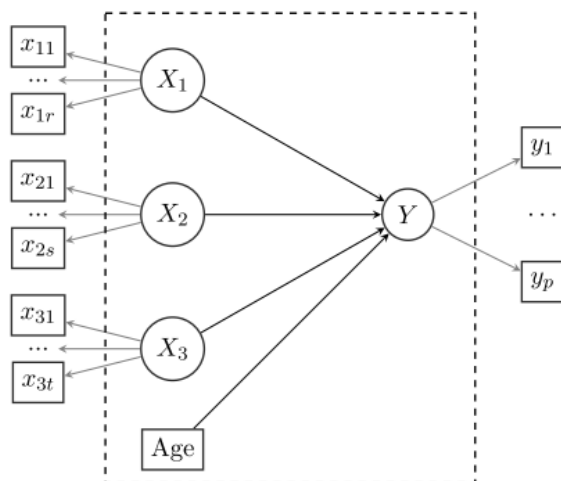


Figure 3. “An example of a structural equation model with a clear distinction between the measurement part and the structural part of the model. The structural part of the model (inside the dashed box) is an example of a multiple regression model. The measurement part relates the latent variables (Y , X_1 , X_2 and X_3) to their respective set of indicators” (Rosseel & Loh, 2022).

Common method bias or variance is “variance that is attributable to the measurement method rather than to the constructs the measures represent” (Podsakoff et al., 2003). Method bias can form a serious problem, since it is often one of the main sources of measurement error, which threatens validity of the conclusions drawn from research. Systematic measurement error resulting from this could provide an alternative explanation for the observed relationships, thus it is crucial to follow guidelines proposed to decrease this bias. Protecting respondent anonymity together with improving scale items is within the possibilities of this research in order to decrease bias. The items measure in the survey do not include ambiguous terms, avoid vague concepts, keeps questions simple and specific, avoids double-barrelled questions, and attempts to eliminate socially desirable answering (Podsakoff et al., 2003). In order to prevent the error term of the dependent variable correlating with the independent variables, every effort was made to include all relevant independent variables in the model. This decreases the chance of omitted variable bias occurring (Benitez et al., 2020). Additionally, a qualitative question is asked to uncover whether omitted variable bias was present.

4.2 Selection and sample respondents

The sample for this research consists of young people residing in The Netherlands. Their age can vary from 18-34 years. Unit of analysis in this study is the motivation for investing in cryptocurrencies, whereas the unit of observation is the previously mentioned sample. The sample of this research includes individuals that reflect the intended population and is similarly distributed in accordance with the matching characteristics of that population (Brant et al., 2015). Additionally, the accordance of the research sample with the population reduces the chance of sampling error. Also, for the purpose of attaining the needed number of participants in a timely manner, focusing on The Netherlands is beneficial since spreading the message is easier within the researcher’s country of residence.

It is noted that reasonable results can be obtained with SEM analyses when the sample size is below 200. However, there is no consensus in literature regarding what is an appropriate sample size for SEM. For reasonable results to be obtained, sample size should be at least above 100, or, with a normal distribution have a ratio of 5:1 variables and a ratio of 10:1 with other distributions of data (Deng et al., 2018). A sample size of more than 4-5 times as many respondents as there are variables is the minimum for conducting analyses. Additionally, it is kept in mind that according to the Central Limit Theorem, when there is a sample size of above 200, we can neglect any potential biases in the results.

Incomplete surveys are assessed on a one-by-one basis. Depending on whether there are any questions structurally unanswered by multiple respondents, responses are either auto filled (when the incomplete fields are <10% per respondent), respondents are left out of the analysis, or it can be decided to exclude a variable from the analysis.

A total of 170 responses is recorded, while after exporting a total of 149 is displayed correctly. Leaving outliers out of the picture, an average of a bit more than five minutes is needed by respondents to complete the survey. Leaving out responses that have stated not to consider investing, not residing in The Netherlands, incomplete responses and respondents above the age of 34 years old makes a total of 116 useful responses.

4.3 Measurement

The structural model in figure 1 has been composed for the purpose of conducting SEM. The left-hand oval variables are the independent variables of this research, and are also referred to as latent variables. They are not directly observable, however, are measured with the use of other observable variables. The observable variables are referred to as indicators or items, which are not visible in this figure. The right-hand oval is the latent, dependent variable of this research and is also operationalized with the use of measurement items. The inner model contains the independent variables and their relationship to the dependent variable (also called the structural model). The outer model is what connects the latent variables with the items that measure the variable (also called the measurement model).

Because this research is the first to the researcher's knowledge to develop a structural equation model for measuring investor motivations in cryptocurrencies, scales for both the independent and dependent variable(s) are composed based on existing literature in both cryptocurrency investment as well as equity and crowdfunding. Typically, the pool of items that measures a construct is validated first in research. However, because of limited time to conduct the study, this research composes an above average number of items per construct and continues modelling with the items that load sufficiently high on that construct.

4.3.1 Independent variables

The independent variables studied in this research are 1. Financial gains, 2. Third party influence, 3. Shared thoughts, values and beliefs, 4. Ideology and technology, 5. Macroeconomic environment, 6. Hobbyist features, 7. Regret, and 8. Utility. In order to test which motivators mainly influence cryptocurrency investment, several items or statements are composed based on literature and put forward in the survey, related to the beforementioned independent variables. The survey statements for each independent variable will be based for the largest extent possible on statements used in prior literature into investment motivations. Items are composed for each motivator and measure with use of a 7-point Likert scale, as previously mentioned. This helps increase generalizability of results and approach a normal distribution. Standard errors in the construct loading estimates decrease with the number of items per construct, thus we compose at least 4 items per construct to be measured (Deng et al., 2018; Podsakoff et al., 2003). Items that do not load sufficiently high on the construct it should measure, will be deleted from further analysis and model assessment. This is an acceptable approach in the starting phase of research and in latent variable (reflective measurement model) analyses. Below, in table 1, an overview of the measurement constructs and items can be found.

Construct	Items
<i>Independent variables</i>	<i>I would invest in cryptocurrencies because...</i>
Financial gains	<ul style="list-style-type: none"> ... I want to generate high returns ... I aim for financial gains ... I believe it's price will increase ... I want to build wealth ... I expect to make a profit
Third party influence	<ul style="list-style-type: none"> ... I saw it in the news ... I got recommendations from acquaintances ... people whose opinion I value think I should do so ... analysts/advisors think I should do so ... my friends/family members do it too
Shared thoughts, values and beliefs	<ul style="list-style-type: none"> ... I want to be part of the community ... it aligns with my personal thoughts, values and beliefs ... I have positive feelings towards cryptocurrencies ... from an identity standpoint, I want to be associated with such an investment
Ideology and technology	<ul style="list-style-type: none"> ... I believe in the technology behind cryptocurrencies ... of its future role in the monetary revolution ... of its open source network ... of its decentralized nature ... of its unregulated characteristics ... of its disruptive potential for established structures or industries ... of its perceived true value (beyond monetary)
Macroeconomic environment	<ul style="list-style-type: none"> ... of the current level of inflation ... of the current level of interest rates ... of currency depreciation ... of the current monetary policy
Hobbyist features	<ul style="list-style-type: none"> ... I like the excitement of it ... I like to pastime with this activity ... I like to be busy with money ... its fun/entertaining/enjoyable to do
Regret	<ul style="list-style-type: none"> ... I regret not investing earlier ... I don't want to regret it later ... I don't want to be too late ... I wish I would have done so earlier ... I want to prevent regretting not doing it
Utility	<ul style="list-style-type: none"> ... I want to use them for doing transactions ... I want to use them for purchasing goods or services ... I want to use them for their intended utility function ... I want to discover how I can use them
<i>Dependent variable</i>	
Motivation to invest	<ul style="list-style-type: none"> I intend to invest in cryptocurrencies I want to invest in cryptocurrencies I expect to invest in cryptocurrencies

Table 1. Measurement items per construct.

4.3.2 Dependent variable

The dependent variable of this study is the individual's motivation to invest in cryptocurrencies. Motivation to invest is operationalized with the use of previously identified motivators in literature, which are the independent variables in this study. The measurement items are composed on the basis of prior literature. Inspiration was taken from literature by Ali (2011) on investors' intention to invest, previous theses and discussion with a SEM-expert.

4.3.3 Control variables

Additionally, there are several other factors worth mentioning that might influence a person's motivation or likelihood to invest. Men that hold higher educational and income levels, have a field of study or occupation inherent or adjacent to investing and have prior investment knowledge and/or experience are more likely to invest (Choudhary, 2016; Fisch et al., 2021; Hardeveld Kleuver & Van der Boom, 2021; Prins et al., 2021; Xi et al., 2020). In order to prevent the results from being biased, we include the following characteristics as control variables that are extracted from literature on investor motivations; Gender, Education level, Income level, Field of study or occupation (in relevant field of knowledge or not) and Prior investment knowledge/experience in cryptocurrencies. Additionally, age and country of residence are asked to ensure the correct target audience, bringing the number of demographic questions to a total of seven.

4.4 Data collection

Data is collected using a survey approach with both quantitative questions as well as a qualitative question. The measurement instrument that is used for conducting the survey is Qualtrics. Survey responses are collected for four weeks in a row. The survey also asks respondents to spread the survey to their peers. Additionally, it contains a brief introduction about the study and researcher for informational purposes. The survey is composed both in English and Dutch language, to offer respondents a choice of language for filling it in. This, because people residing in The Netherlands might not always fully comprehend the Dutch language or Dutch natives the English language. Additionally, this avoids any information getting lost in translation and the accompanying bias. An overview of the complete survey can be found in appendix 6.

4.4.1 Survey testing

Before starting data collection, the survey is assessed by a SEM expert as well as a group of knowledgeable young people working in the field of cryptocurrencies. Next, the survey is tested by random people without prior experience in cryptocurrencies to determine the understandability of the survey questions. Some minor changes have been made regarding layout, language settings and understandability of questions. For example, there were two items that potentially are not clear to every respondent, thus explanations of the concepts were added. Also, the order of questions was put logically starting with questions regarding the willingness for investing, followed by motivations to invest and lastly measuring several demographical and control variables.

4.4.2 Survey distribution

The survey that is composed for this research is pushed via the channels available to the researcher. These are, among others, social media channels such as Facebook, LinkedIn, WhatsApp and Twitter, family members' contact base(s), and the channels provided by the University of Twente, to reach the correct target audience. After four weeks, the number of respondents is assessed. Since the data was collected in four weeks, the possibility of late response bias will not be assessed. Additionally, survey collection takes place fully anonymously and in compliance with ethical regulations of the University of Twente.

4.5 Data analyses

Data gathered for this study will be analysed using statistical testing with Rstudio software to find empirical evidence for the composed model. Because we are working with a pre-determined structural model and want to test hypotheses, SEM is deemed appropriate. It helps verify the structure of the set of variables. Multiple statements, or what this research refers to as items, are composed that reflect the construct or factor in the best way possible. Several steps are taken to get to the assessment of the structural and measurement model. Measures for the overall-, inner- and outer-model are reported.

First of all, descriptive statistics are reported. Means, standard deviations and other distributions of the data are put forward to be able to form a clear description of the sample of respondents.

Secondly, a CFA is conducted to assess measurement model fit. This will determine which items or indicators load sufficiently on their construct and which need to be eliminated in order to increase model fit. Measurement model fit is assessed with the help of measures such as Chi-Square, SRMR and RMSEA. Indicator reliability, construct reliability (both Cronbach's alpha and a model-specific Omega reliability estimate), discriminant validity (HTMT) and convergent validity (AVE) are assessed after that.

Third, Structural After Measurement (SAM) will be deployed as a special case of Structural Equation Modelling to determine the relationship between the dependent and independent variables. SAM is used because this research is dealing with relatively small sample size for conducting SEM, subsequently leading to non-convergence of the model. This can happen in cases even where the model is correctly specified (Rosseel & Loh, 2022). Therefore, it is decided to perform a SAM-analysis thereby being able to conduct Structural Equation Modelling.

5 Findings

In this chapter the findings of this study, regarding the motivations of young people in The Netherlands to invest in cryptocurrencies, are reported.

5.1 Descriptive statistics

Getting to know your data is the first and foremost step in doing any type of statistical analyses. Therefore, before getting into model fit assessment, the data is analysed by means of descriptive statistics.

A total of eight independent variables, one dependent variable and five control variables are measured. Additionally, two questions regarding age and country of residence are asked to assure the correct target audience as well as two more questions to separate between respondents considering to invest or already investing (excluding respondents not investing nor considering to invest to prevent biased results). Lastly, an open question was asked to assess whether there are any other motivators for investing other than previously mentioned in the survey.

Below, in table 2, the mean and standard deviation of all independent and dependent variables are reported.

	<i>Mean</i>	<i>St. Deviation</i>
Financial gains	5.65	1.16
Third party influence	3.84	1.77
Shared thoughts, values and beliefs	3.47	1.60
Ideology and technology	4.60	1.62
Macroeconomic environment	4.89	1.57
Hobbyist features	4.53	1.65
Regret	4.60	1.84
Utility	3.63	1.73
Motivation to invest	5.57	1.37

Table 2. Mean and standard deviation of variables (n = 116).

As can be seen in table 3, the average age of respondents lies around 24 years old, while there are slightly more males than females in the sample (54% to 45%). Additionally, it is clear that the largest share of participants has completed some form of higher education (around 78%). What can possibly be concluded from the amount of respondents having a below-modal income, is that the largest share of respondents is either student or young professional. Additionally, a large share of the respondents' field of work or study is adjacent to Technology (around 40%). Lastly, the average amount of investment experience in years lies around 1.6, with an equally large standard deviation of 1.6, suggesting potential outliers and a large variety in investment experience.

Age	
17-22	32%
23-28	56%
29-34	11%
Average	24.2
St. Dev.	2.5
Gender	
Male	54%
Female	45%
Prefer not to say	1%
Highest completed level of education	
Primary school, lower/general secondary education	1%
Vocational education (MBO), Pre-university education	17%
HBO/University Bachelor Degree, Master Degree, PhD, or higher	78%
Prefer not to say	3%
Income level (in euros)	
Below 36.500,- per year	61%
36.500 - 43.500,- per year	14%
Above 43.500,- per year	8%
Prefer not to say	44%
Applicable fields of study or occupation	
Technology	39%
Finance	20%
Neither	41%
Years of investment experience in the cryptocurrency market	
Average	1.6
St. Dev.	1.5

Table 3. Respondent demographics (n = 116).

Additionally, multicollinearity is tested and it can be noted that all Variance Inflation Factor (VIF) values are below 5, indicating no evidence of multicollinearity. The frequency distribution of all independent variables can be found in appendix 7.

5.2 Confirmatory Factor Analysis and Measurement model fit

As mentioned before, two types of concepts can be measured with the help of SEM. This research is dealing with a reflective measurement model, in which a phenomenon of interest is measured by means of latent variables. Those latent variables represent the independent and dependent variable(s) of the structural model, and the independent variables are measured with indicators or items. Since the indicators do not fully compose the latent variable but instead cause it, random measurement error is accounted for. Dropping one indicator is necessary when it does not load high enough on the variable and will not alter the meaning of the variable. Generally, loadings higher than 0.707 are advised, however, somewhat lower values are not really problematic as long as the construct validity and reliability criteria are met (Benitez et al., 2020).

After a first assessment of CFA, it is determined that PROF3, THIRD1 and ALIGN1 are removed from the analysis due to insufficient loading on their construct. This is confirmed by assessing the correlation matrix that puts forward residual values, sometimes showing values as large as at one point after the decimal. Next, both item loadings and residual values are assessed together with a determination of which items best represent the variable. On the basis of this, it is decided to delete additional items (loadings below 0.7 and/or too high residual values as well as potentially incorrect representation of the variable) in order to create a more fitting model. Table 4 shows in red the indicators that were removed due to initially having too low factor loadings, as well as the orange items that were deleted in the second assessment step.

Construct	Items
<i>Independent variables</i>	<i>I would invest in cryptocurrencies because...</i>
Financial gains	<ul style="list-style-type: none"> ... I want to generate high returns ... I aim for financial gains ... I believe it's price will increase ... I want to build wealth ... I expect to make a profit
Third party influence	<ul style="list-style-type: none"> ... I saw it in the news ... I got recommendations from acquaintances ... people whose opinion I value think I should do so ... analysts/advisors think I should do so ... my friends/family members do it too
Shared thoughts, values and beliefs	<ul style="list-style-type: none"> ... I want to be part of the community ... it aligns with my personal thoughts, values and beliefs ... I have positive feelings towards cryptocurrencies ... from an identity standpoint, I want to be associated with such an investment
Ideology and technology	<ul style="list-style-type: none"> ... I believe in the technology behind cryptocurrencies ... of its future role in the monetary revolution ... of its open source network ... of its decentralized nature ... of its unregulated characteristics ... of its disruptive potential for established structures or industries ... of its perceived true value (beyond monetary)
Macroeconomic environment	<ul style="list-style-type: none"> ... of the current level of inflation ... of the current level of interest rates ... of currency depreciation ... of the current monetary policy
Hobbyist features	<ul style="list-style-type: none"> ... I like the excitement of it ... I like to pastime with this activity ... I like to be busy with money ... its fun/entertaining/enjoyable to do
Regret	<ul style="list-style-type: none"> ... I regret not investing earlier ... I don't want to regret it later ... I don't want to be too late ... I wish I would have done so earlier ... I want to prevent regretting not doing it
Utility	<ul style="list-style-type: none"> ... I want to use them for doing transactions ... I want to use them for purchasing goods or services ... I want to use them for their intended utility function ... I want to discover how I can use them
<i>Dependent variable</i>	
Motivation to invest	<ul style="list-style-type: none"> I intend to invest in cryptocurrencies I want to invest in cryptocurrencies I expect to invest in cryptocurrencies

Table 4. Items per construct.

After deleting these items, a CFA is run again in Rstudio. The following fit measures are reported with regards to measurement model fit. Both Benitez et al. (2020) and Schermelleh-Engel et al. (2003) are relied upon for reporting goodness-of-fit (descriptive) measures and their threshold values. Appendix 8 contains the main source for thresholds of the measures.

Chi-square (χ^2) is used to evaluate whether the population covariance matrix is equal to the model-implied covariance matrix and is a test of exact fit. The null hypothesis states the difference are zero, thus a p-value of above 0.05 accepts this and shows a fit. However, this is a very stringent measure assuming large sample sizes with multivariate normal data and its value decreases when parameters are added to the model. Consensus is reached about not using the chi-square value as a sole basis for judging model fit. Rather a comparison between the test statistic and degrees of freedom should be assessed. "For a good model fit, the ratio χ^2/df should be as small as possible. As there exists no absolute standard, a ratio between 2 and 3 is indicative of a "good" or "acceptable" data-model fit, respectively" (Schermelleh-Engel et al., 2003). It can be seen in table 5 containing the results, that both the Chi-square value as well as the χ^2/df ratio are below the threshold value.

Root Mean Square Error of Approximation (RMSEA) and Standardized Root Mean Square Residual (SRMR) are measures of overall model fit. The first measure concerning, a close fit is regarding a value less than or equal to 0.05, an adequate fit is a value between 0.05 and 0.08, a mediocre fit a value between 0.08 and 0.1 and values above 0.1 are not accepted. SRMR is assessed with as rule of thumb a value of less than 0.05 for a good fit, while values smaller than 0.10 can also be interpreted acceptable. Nonnormed Fit Index (NNFI) values range from 0 to 1, with higher values (above 0.9) indicating a better fit, while the same goes for the Comparative Fit Index (CFI) (Schermelleh-Engel et al., 2003). "The fit indices RMSEA, NNFI and CFI are sensitive to model misspecifications and do not depend on sample size as strongly as χ^2 (Fan, Thompson, & Wang, 1999; Hu & Bentler, 1998; Rigdon, 1996), therefore they should always be considered (Schermelleh-Engel et al., 2003)." In table 5 it can be seen that all measures are within the mentioned threshold value.

<i>Fit Measure</i>	<i>Criterion</i>	<i>Value</i>	<i>Met?</i>
<i>Exact Model Fit</i>			
χ^2 (Chi-square)	$\leq 3df$	534,5/369 = 1.45	Yes
Chi-square p-value	≤ 0.05	0.00	Yes
χ^2/df	≤ 3	1.45	Yes
<i>Overall Model Fit</i>			
Standardized Root Mean Square Residual (SRMR)	≤ 0.10	0.066	Yes
Root Mean Square Error of Approximation (RMSEA)	≤ 0.08	0.062	Yes
<i>Comparison Model Fit</i>			
Nonnormed Fit Index (NNFI)	≥ 0.90	0.913	Yes
Comparative Fit Index (CFI)	≥ 0.90	0.926	Yes

Table 5. Measurement model fit.

Below, in table 6, an overview is given of the constructs (independent variables) together with the items that are used to measure the construct. Composite or construct reliability is assessed with both Cronbach's Alpha and an Omega-based reliability measure. Cronbach's Alpha is one of the most common and widely used measures of internal consistency and commonly used when multiple Likert-scaled question are used in a survey and compose a scale (Laerd Statistics, n.d.). A value of 0.7 or higher is referred to as acceptable, however, lower values tend to sometimes also be acceptable in order to prevent wrongfully rejecting analyses due to low Cronbach values (Nunally, 1978). Additionally, an Omega-based reliability estimate is used to confirm construct reliability, since this allows for differences in path coefficients between items and the construct. Also, it quantifies the amount of random measurement error in construct scores thus determining their reliability (Hayes & Coutts, 2020). All constructs appear to have a sufficiently high value for both reliability measures.

Construct	Nr. of Items	Omega	Cronbach's Alpha	Loadings
Financial gains	3	0.756	0.733	0.81, 0.90, 0.53
Third party influence	3	0.812	0.811	0.77, 0.84, 0.70
Shared thoughts, values and beliefs	3	0.711	0.754	0.74, 0.79, 0.56
Ideology and technology	6	0.900	0.900	0.77, 0.76, 0.74, 0.77, 0.81, 0.80
Macroeconomic environment	3	0.824	0.813	0.71, 0.85, 0.77
Hobbyist features	3	0.838	0.826	0.86, 0.68, 0.84
Regret	3	0.930	0.929	0.93, 0.87, 0.90
Utility	3	0.900	0.885	0.94, 0.86, 0.77
Motivation to invest	3	0.929	0.931	0.84, 0.94, 0.93

Table 6. Reliability and Factor Loadings.

Convergent validity, measured with the average variance extracted (AVE), is the proportion of explained variance in a latent variable. It shows whether a researcher is able to extract a dominant factor out of a set of indicators and is a measure of unidimensionality. It should ideally be above 0.5, since there cannot be a second factor explaining as much variance as the first one, and is based on factor loadings (Benitez et al., 2020; Henseler, 2017). Table 7 displays the constructs and their belonging AVE-values. The variable 'Shared thoughts, values and beliefs' can be seen to have rather low factor loadings and being somewhat more unreliable, however, deleting more than one item for this construct only decreased reliability and factor loadings. Therefore, this variable is continued in the analysis, however, it is lower reliability in measuring the concept should be kept in mind. The same applies to the variable 'Financial gains'. All other variables have sufficiently high proportions of explained variance.

Construct	AVE
Financial gains	0.494
Third party influence	0.591
Shared thoughts, values and beliefs	0.488
Ideology and technology	0.602
Macroeconomic environment	0.601
Hobbyist features	0.629
Regret	0.815
Utility	0.742
Motivation to invest	0.891

Table 7. Average Variance Extracted per construct.

Discriminant validity is measured with the heterotrait-monotrait ratio of correlations (HTMT) and measures the correlation between latent variables. As a rule of thumb, correlation between indicators belonging to the same construct or variable should be higher than those belonging to different constructs/variables. This because, two conceptually different constructs should also be statistically different (Henseler, 2017). Correlations between latent variables should be less than one. <0.85 is acceptable evidence of validity for small samples and <0.90 for larger samples. In the sample of this research, all HTMT values lie below 0.85 and are thus deemed acceptable.

5.3 Structural After Measurement and hypotheses

After conducting a CFA to determine measurement model fit by means of several statistical measures, SAM is conducted. Regression or path coefficients and their significance are assessed to determine to what extent the hypotheses of this study are true. The hypotheses of this study can be accepted or rejected on the basis of the reported p-values and beta-coefficients in the table below.

From table 8 it can be seen that five out of eight independent variables turn out to have a significant influence on motivation to invest. The independent variables financial gains ($\beta = 0.25$, $p = 0.001$), third party influence ($\beta = 0.39$, $p < 0.001$), ideology and technology ($\beta = 0.68$, $p < 0.001$), regret ($\beta = -0.17$, $p = 0.046$) and utility ($\beta = -0.20$, $p = 0.021$) have a significant effect on motivation to invest (with a significance level of 5%). This leads to the acceptance of hypotheses 1, 2, 4, 7 and 8. The variables shared thoughts, values and beliefs ($\beta = 0.14$, $p = 0.377$), macroeconomic features ($\beta = 0.12$, $p = 0.33$) and hobbyist features ($\beta = -0.02$, $p = 0.78$) do not prove to have a significant effect on motivation to invest. This leads to the rejection of hypotheses 3, 5 and 6.

When looking at the control variables, it can be concluded that females have a significantly lower motivation to invest ($\beta = -0.15$, $p = 0.04$) compared to males. Additionally, with each extra year of investment experience in the cryptocurrency market, motivation to invest increases with 0.23 ($p < 0.001$). It can also be seen that people with their highest level of completed education in the category EDU1¹, have significantly lower motivation to invest ($\beta = -0.13$, $p = 0.04$), compared to the reference category EDU2². There is no significant difference between people from category EDU3³ in comparison to EDU2. When looking at income level, there are no significant influences dependent upon income level. However, when loosening significance level slightly, it can be noted that having an income below 36.500, - per year has a significantly positive effect on motivation to invest ($\beta = 0.14$, $p = 0.05$). Lastly, having a study or occupation in the field of technology or respectively finance, significantly decreases motivation to invest ($\beta = -0.15$, $p = 0.02$; $\beta = -0.15$, $p = 0.03$).

Construct	p-value	Significant?	β (Coefficient)
Financial gains	0.001	Yes	0.251
Third party influence	0.000	Yes	0.389
Shared thoughts, values and beliefs	0.377	No	0.140
Ideology and technology	0.000	Yes	0.677
Macroeconomic environment	0.325	No	0.121
Hobbyist features	0.781	No	-0.024
Regret	0.046	Yes	-0.169
Utility	0.021	Yes	-0.204
FEMALE	0.042	Yes	-0.148
YEARS	0.001	Yes	0.231
EDU1	0.044	Yes	-0.127
EDU3	0.225	No	-0.075
INCOME1	0.052	No	0.136
INCOME3	0.204	No	0.090
STUDYOCC1	0.023	Yes	-0.150
STUDYOCC2	0.026	Yes	-0.153

Table 8. Independent constructs regressed.

¹ Primary school, lower/general secondary education (LBO, VMBO (basis/kader/GL/TL), MAVO)

² Vocational education (MBO), Pre-university education (HAVO/VWO)

³ HBO/University Bachelor Degree, Master Degree, PhD, or higher

A syntax of the Rstudio coding used to get to the results, including the composed model, can be found in appendix 9.

5.4 Qualitative assessment

As mentioned before, respondents of the survey were asked one qualitative question to both be able to draw further conclusions regarding the composed framework as well as provide more preliminary in-depth insights into the motivations to invest. The qualitative question asked after the quantitative part of the survey was: *“Are there, to you, any other motivations for investing in cryptocurrencies not previously mentioned in this survey?”* For the largest part (around 80% of all respondents), it was noted that no other motivations for investing not previously mentioned in the survey are present. Responses were for example ‘no’ or ‘not applicable.’ Around 20% of all respondents put forward a textual reply to the open question. Few responses were left out of the analysis due to inadmissibility (unreadable or not understandable).

For the largest part, the additional motivations mentioned can be accommodated at previously identified motivators in literature and the conceptual model. Among these are for example mentioning of financial gains:

“To build wealth. Invest savings.”

“I use crypto for long term profit, and then purely to earn on it, not as a means of payment.”

Also, ideology and technology are often mentioned as motivators:

“The technology behind it and its countless possibilities.”

“Expect it to play a major role in the future. Think there will come a time when banks are slow/unwieldy/obsolete and fail to meet flexible customer demand. In addition, I think that people are starting to realize that the financial world can be organized more efficiently (cheaper/faster), partly by means of (by then) proven services of crypto. However, I think that at the moment the masses are not ready to start using crypto on a daily basis and so far, it is mainly “hype” that drives prices.”

Lastly, third party influence and hobbyist features are also considered:

“Interesting way of investing.”

“Mainly to follow the trends.”

With regards to newly posed motivators, portfolio diversification is a response that comes forward multiple times (almost a quarter of the qualitative responses mentions this). Next to that, hedging is also mentioned by a respondent as a motivation to invest.

“Diversification beyond stocks or commodities such as gold.”

“Motivation to hedge a portfolio.”

A table with a complete overview of all qualitative responses given by respondents can be found in appendix 10. For the interested reader, the responses from respondents not investing neither considering to invest in cryptocurrencies can be found in appendix 11. A recurring motivation not to invest is environmental impact next to investment yield and payment possibilities.

6 Discussion

In this section, the results are again summarized, and a deep dive is taken into those results in order to attempt providing the reader of a further explanation.

6.1 Key findings

It is found that, with regards to quantitative motivators measured, financial gains, third party influence, ideology and technology, regret and utility significantly influence an individual's motivation to invest in cryptocurrencies. The first three relationships are positive whereas the latter two are negative. People expecting financial gains are more likely to invest in cryptocurrencies, as well as people being influenced by third party opinions. The ideology and technology of cryptocurrencies also significantly positively influences a person's motivation to invest. The beforementioned three variables also increase in terms of effect size, concluding with ideology and technology having the largest effect (0.68). This is in line with previous findings in cryptocurrency research, identifying ideology and technology as one of the major motivations for using the technology (Khairuddin et al., 2016) or ICO development (Fisch et al., 2021). The existence of financial motives for investing was already an established finding for traditional investment categories (Aspara & Tikkanen, 2011; Bagheri et al., 2019; Choudhary, 2016; Mutswenje & Jagongo, 2014; Ngahu, 2017; Prins et al., 2021), and little evidence existed in cryptocurrency literature prior to this research. The expectation of financial gains influencing motivation to invest is now confirmed in the context of investing in cryptocurrencies. Third party influence is also a recognizable motivator for investing in traditional asset classes, while it was only suggested to be one in cryptocurrency literature by Shiller (Shiller, 2019). This research confirms the hypothesis that third parties influence motivation to invest in the cryptocurrency context and fill in the research gap posed by Mattke (Mattke et al., 2021).

The variables regret and utility have a significant negative influence on motivation to invest, indicating that people regretting not investing earlier are less likely/motivated to invest as well as people motivated by utility functions of cryptocurrencies currently have a decrease motivation to invest. No prior literature was found specifically investigating the influence of regret on motivation to invest, though its influence on investor actions is clear (i.e., regret theory in relation to risk-aversion and risky behaviour). The finding that increased feelings of regret decrease motivation to invest, provide preliminary evidence that investors in the cryptocurrency market do not take excessive risk when feeling they 'missed the boat' but rather they remain risk-averse in relation to an investment. Once feelings of regret have been experienced, motivation for investing decreases. Secondly, the utility function of investing appears to negatively influence motivation to invest. This could mean that given the early stages of discovery and establishment of the utility functions of cryptocurrencies in mainstream society (for example as means of payment or exchange), there is still a negative relationship between utility and motivation to invest today. It might be that, in the future, when cryptocurrencies are regarded a more established means of payment for example, this relationship will reverse into a positive one.

Results of this research are only partly in line with evidence in literature concerning control variables influencing motivation to invest. This study does find a difference in investor motivations related to gender, where females are less motivated to invest compared to males. Additionally, it is found that people having completed solely the first educational level⁴ are less motivated to invest compared to one category higher (EDU2⁵). This is in line with previous research (Choudhary, 2016; Fisch et al., 2021; Hardeveld Kleuver & Van der Boom, 2021; Prins et al., 2021; Xi et al., 2020). The reverse effect is not

⁴ Primary school, lower/general secondary education (LBO, VMBO (basis/kader/GL/TL), MAVO)

⁵ Vocational education (MBO), Pre-university education (HAVO/VWO)

found when comparing the highest educational level (EDU3⁶) to the one below (EDU2⁷). This study also does not find evidence for higher incomes having an increased motivation to invest. However, having an income below 36.500, - almost significantly increases motivation to invest. This is contrary to prior literature findings, suggesting higher incomes are more likely to invest. This might potentially be due to a high number of students participating in this survey, not yet earning a fulltime salary. Additionally, the influence of studying or working in the field of finance or technology has a negative influence on motivation to invest, compared to having neither as field of study or occupation, which is contrary to the expectation. However, demographic distribution does show that investors more often have technology as a field of study or occupation compared to finance.

Lastly, results from the qualitative open question posed at the end of the survey put forward a new motivator not previously identified in literature. Around one-fourth of the respondents that answered the open question mention diversification as a motivation to invest in cryptocurrencies. This is a motivation not previously identified in academic literature, however which can now be added to the academic literature on cryptocurrency investor motivations, thereby further exploring the field of retail investor motivations at an academic research level.

6.2 Contributions

This study deepens our knowledge of the motivations of young people in the Netherlands to invest in cryptocurrencies. Increasing our understanding of why individuals invest in cryptocurrencies is relevant for a variety of different stakeholders both in research and in practice.

6.2.1 Theoretical contributions

It is clear that individual investor motivations have been studied before in different contexts, among which crowdfunding, ICO's, equity financing and bitcoin investments. This, while very little research has been done that extends investor motivations in equity or other asset classes into the field of cryptocurrencies. This research contributes to the research in the field of behavioural finance by extending prior research on investor motivations into the field of cryptocurrencies. The scarce literature on cryptocurrencies and cryptocurrency investment is supplemented and a basis for further exploration of relevant investor motivations in cryptocurrencies is provided.

Not unimportantly, this research provides a description and analysis of what might be relevant items measuring the concepts composed as variables in this research. To the knowledge of the researcher, only few of the constructs have been measured before in literature on the basis of established measurement scales. Concepts such as macroeconomic environment, hobbyist features and utility do not possess measurement scales established and confirmed in literature. This research can function as a starting point for establishing such scales. Additionally, the feasibility of performing a structural equation modelling-analysis for small sample sizes and potentially non-converging models by means of a Structural After Measurement (SAM) approach is proven.

Lastly, this research provides an overview of the relevant motivators extracted from literature in the different fields of investment. This provides readers or researchers interested in the existing literature on investment and investor motivations in both traditional as well as the novel asset class of cryptocurrencies with a useful overview. This overview of motivators composed based on prior literature can function as the starting point for further exploration or research into the field of cryptocurrencies or investor motivations.

⁶ HBO/University Bachelor Degree, Master Degree, PhD, or higher

⁷ Vocational education (MBO), Pre-university education (HAVO/VWO)

6.2.2 Practical contributions

There are several ways in which this research can prove to be beneficial for business life and society as a whole. Especially today, being in the early stages of cryptocurrencies (and cryptocurrency investments) becoming more mainstream, these findings can be highly relevant.

Firms wanting to finance new ventures by means of launching cryptocurrencies (e.g., through initial coin offerings), benefit from knowing investor motivations to optimally design their own coins or tokens. Understanding the motivations of individuals to invest can help companies such as wallet providers, cryptocurrency exchanges and coin initiating start-ups to optimize their operations such as marketing and advertising to better place their services in the market and attract more customers. This will stimulate their business and operations and increase efficiency as well as operational result. Mattke et al. (2019) also argue this in their findings.

Additionally, for investors to understand the underlying dynamics and pricing of cryptocurrencies such as bitcoin, it is evident they need an understanding of investment reasons. It can help guide such private investors in their investment decisions and motives for doing so, by placing their behaviours into a wider frame of reference. This aids investors in thinking through their investment strategy and further validate monetary decision-making and ensures investments are made in a rational manner and are part of a predetermined strategy. Jaiyeoba et al. (2018) confirmed this and have found that researching investor decision behaviour can improve such behaviours for both retail investors and fund managers.

Since cryptocurrencies are a relatively new and loosely (or not at all) regulated phenomenon, this research can also prove to be of added value to policymakers that are interested in or looking for ways to regulate cryptocurrencies. Cryptocurrencies and their underlying blockchain technology have the potential to radically disrupt established practices and industries due to their novel technology (enabling fully decentralized communication anonymously yet visible and verifiable). Potential applications all relieve the necessity of the 'middleman' in among other things enabling funding and verifying transactions. "According to the World Economic Forum's Global Future Council on Cryptocurrencies, there has been no internationally coordinated regulation of cryptocurrencies — though international bodies have been working on assessing risks and appropriate policy responses to the rise of cryptos" (World Economic Forum, 2022). Research into the motivations of investors as well as other utilities of cryptocurrencies can aid those instances attempting or wanting to analyze, assess and come up with appropriate regulation for cryptocurrencies. Difficulty therein is of course the balance between the nature and ideology of cryptocurrencies (decentralised and government-independent) and regulating this potentially novel asset class.

6.2.3 Potential limitations

With every study, limitations are present. Therefore, the main limitations potentially influencing the results of this study are put forward. Limitations are related to the search and selection method, research method, sample size and cryptocurrency market developments.

First of all, a limitation might be present due to the search and selection method of literature. Aim of this study was to include all potentially relevant theoretical information regarding investors' motivation to invest (stemming from crowdfunding, equity, and cryptocurrency research). However, it is always possible that the article selection method as well as inclusion criteria for choosing articles is subjectively biased by the researcher. Additionally, the papers selected were solely written in the English language, which might exclude papers with relevant findings that were written in different languages. It was attempted to mitigate this bias as much as possible, by incorporating multiple types of research articles, such as journal articles, book chapters and conference papers.

Second, a limitation might stem from the research method used. Survey approaches can be subject to several types of biases. Naturally, it was attempted to mitigate bias as much as possible. Sampling bias was mitigated by ensuring a relatively evenly distributed sample in terms of demographics, which was collected via a number of different channels. However, there being sampling bias present even to a limited extent cannot be ruled out. Response bias was mitigated by ensuring anonymous responses solely used for research purposes as well as clear questions with explanations of concepts where needed. Additionally, as mentioned before, every effort was made to include all relevant independent variables in the model to prevent omitted variable bias.

Another limitation might be related to the sample size and distribution of this study. A sample size of 116 is sufficient for performing the analyses in this study, however, the higher the sample size the more generalizable and reliable the results are to a certain population. Also, this would have allowed for further exploration and confirmation of the results with multiple types of SEM estimation methods.

Lastly, the fast-paced developments and changing sentiment in the cryptocurrency market as well as the taking together of all types of cryptocurrencies as one might bias results. Responses to this survey were collected for four subsequent weeks in the months April and May 2022, and while the cryptocurrency market and its developments are very fast paced, it is not to be ruled out that circumstantial factors such as market sentiment might have influenced responses. Combining all types of cryptocurrencies as one category while measuring motivation to invest might present a bias.

6.2.4 Areas for future research

There are several avenues for future research that became relevant in the course of this research. With regards to the research method deployed, it is suggested that future research collects an increased sample for a similar target group to determine whether results hold when the study is replicated. This will also allow for an estimation of the identified relationships with multiple types of SEM-methods. Also, it is suggested to perform similar studies with differing target groups to identify potential differences and/or similarities in results between those different target groups.

This research verifies diversification as a motivation to invest by means of qualitative exploration. It would prove to be interesting to enrich this finding with further qualitative research going beyond the single qualitative question asked in this survey. Diving deeper into the motivations of people to invest in cryptocurrencies might put forward nuances not previously identified in literature and this study.

With regards to the identified relationships, the influence of feelings of regret in the context of investor motivations in cryptocurrencies should be further explored in future research. That way, the negative relationship observed between regret and motivation to invest can be further assessed and explained. Additionally, it is suggested to further explore cryptocurrencies' utility functions and perform scenario analyses measuring people's motivation to invest once cryptocurrencies are for example proven to be an established means of payment or store of value.

Lastly, it is necessary to investigate the motivations for investing in cryptocurrencies for different types of cryptocurrencies individually. This, because the existing cryptocurrency tokens and coins differ in terms of for example utility and functioning. Investor motives might differ when making a comparison between contrasting cryptocurrencies. This research can form a starting point for conducting further research and discovering nuances and discrepancies while comparing retail investor motives into different types of cryptocurrencies. For that, first of all an overview of the different types of cryptocurrencies and their characteristics should be provided, after which the beforementioned can be researched.

7 Conclusions

The motivations of individual investors are a topic of interest not only for firms or people active in the cryptocurrency market, but also for investors themselves and society as a whole. In order to increase our common understanding of novel phenomena such as cryptocurrencies together with human motivation, research is needed. Previous research into investor motivations has mainly focused on equity-, ICO- and crowdfunding investment and on the adoption of cryptocurrencies as a technology rather than an asset class (Aspara & Tikkanen, 2011; Bagheri et al., 2019; Choudhary, 2016; Fisch et al., 2021; Khairuddin et al., 2016; Mutswenje & Jagongo, 2014; Ngahu, 2017; Prins et al., 2021). In order to expand scarce literature on the topic, a summary and extraction of motivations is taken from existing literature. An overview of relevant motivations to invest is composed. Survey responses are analyzed by means of Structural After Measurement (SAM), which is an approach to Structural Equation Modelling. Findings show that Financial gains, Third party influence, Ideology and technology, Regret and Utility significantly affect an individual's motivation to invest in cryptocurrencies. Furthermore, age, gender, educational level and field of study or occupation also (partially) influence motivation to invest. Diversification as a motivation to invest is identified by means of qualitative questioning. The importance of this research not only as a contribution to literature but also to business life is explained. Additionally, the feasibility of a SEM-approach in this field of study is proven. Lastly, relevant recommendations to the field of behavioural finance in cryptocurrency investment are given to further validate and explore the results of this study.

8 Acknowledgements

I would like to express sincere gratitude to my first supervisor dr. Ekaterina Svetlova for her continuous support, guidance, and helpful contributions during the entire research process. Additionally, I want to thank my second supervisor Vijaya Bhaskar Marisetty PhD for his helpful directions. Not unimportantly, I want to express a big thank you to dr. Florian Schuberth for being there to assist me and guide my way through the (to me) previously unknown paths of Structural Equation Modelling. A special thank you should also be given to the participants that took the time and effort to take part in this study, which enabled me to conduct this research. Finally, I want to thank my friends, family, and boyfriend for their loving support and for helping me in any way possible in order to allow me to most successfully complete my masters.

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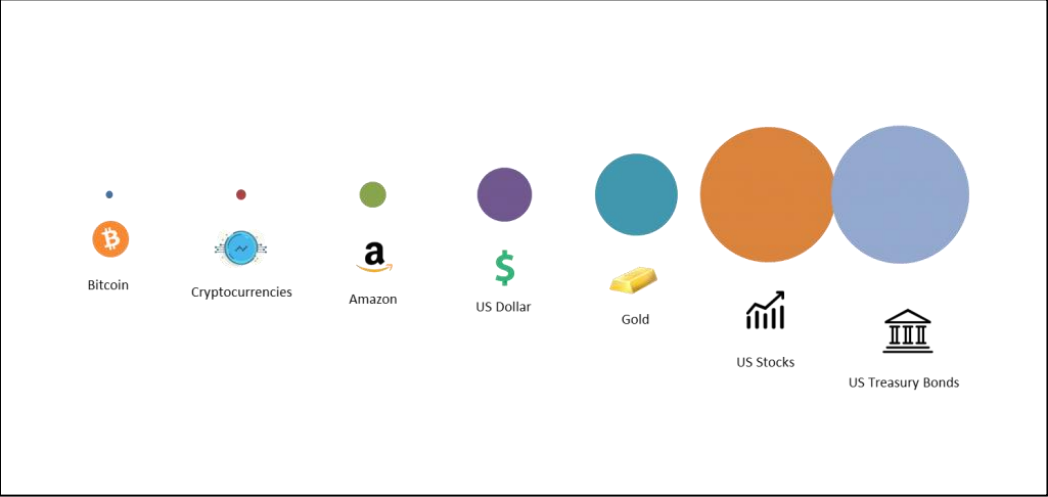
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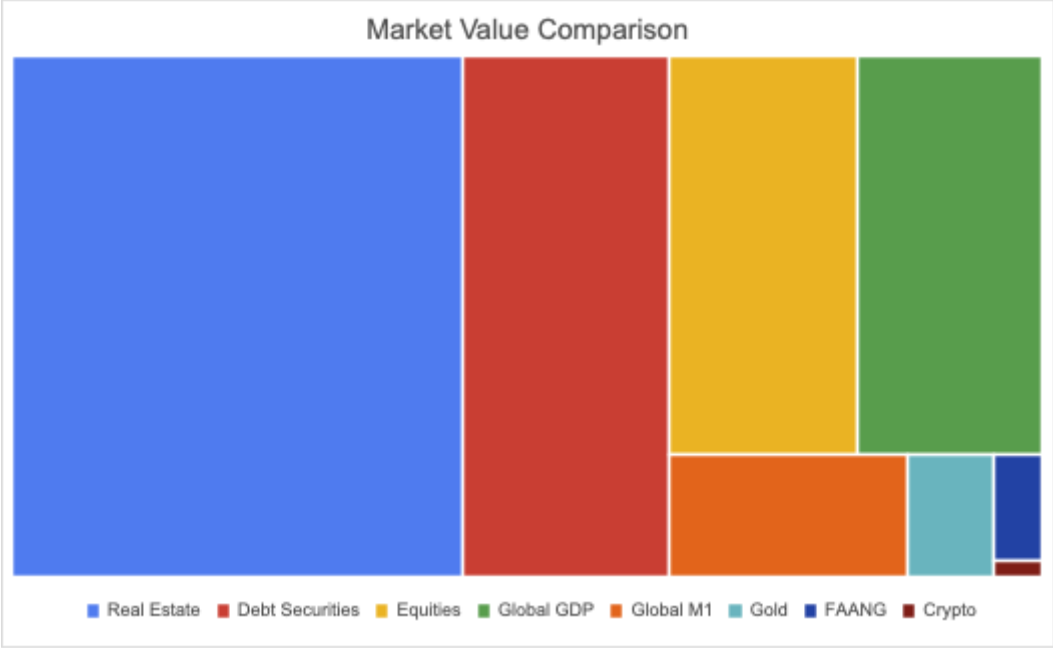
10 Appendices

10.1 Appendix 1. Cryptocurrency market capitalization.

2.1. Crypto market cap compared to traditional asset classes (Leccese, 2019).



2.2. Market Value Comparison (Bus, 2021).



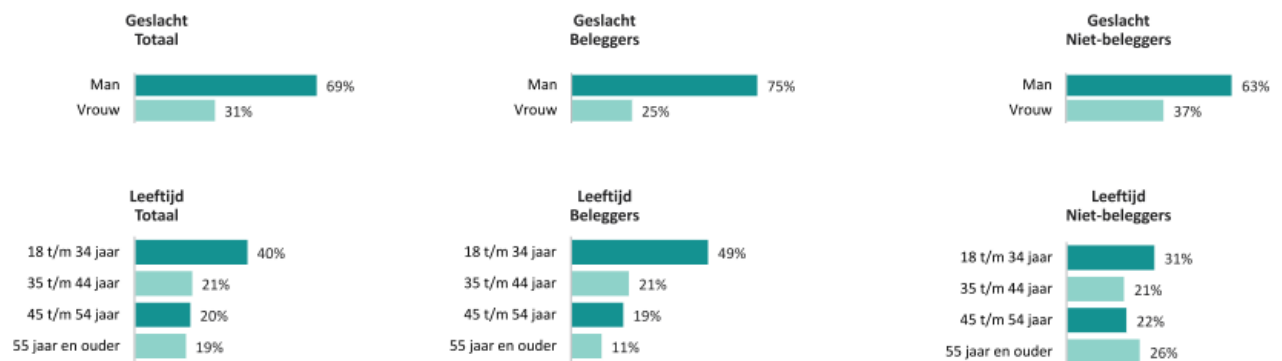
10.2 Appendix 2. Investors according to background features.

		Belegt traditioneel (n=481) %	Belegt enkel traditioneel (n=215) %	Heeft crypto (n=418) %	Heeft enkel crypto (n=154) %	Belegt niet (n=917) %
Geslacht	Man	38	15	36	13	53
	Vrouw	24	13	17	6*	65
Leeftijd	18-24 jaar	28	11	27	10	59
	25-30 jaar	33	17	26	10	58
Inkomen	< 1.000	22	11*	19	7*	68
	1.000 – 2.000	35	13*	33	12*	55
	2.000 – 3.000	38	18	29	11*	56
	3.000 – 4.000	32	14*	29	12*	61
	> 4.000	51	22*	38	10*	43
	Geen antwoord	16	8*	18	7*	63
Opleiding	Laag	20*	5*	26	10*	58
	Midden	27	11	28	12	62
	Hoog	41	22	25	7*	53
Woonsituatie	Thuis	24	9	27	10	63
	Zelfstandig	35	17	26	9	55
Werkstatus	Student	31	13	27	8*	59
	Werkend	33	15	29	11	57
	Niet-werkend	15*	8*	14*	7*	64
Totaal		31	14	27	10	59

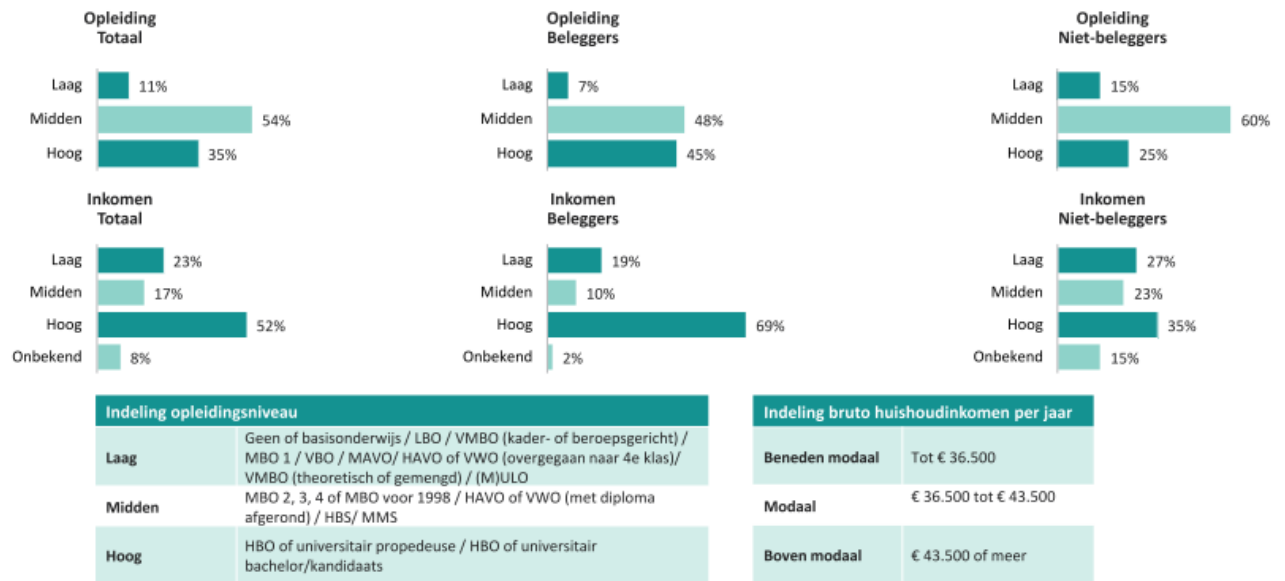
Dutch National Institute for Budget Information (Nibud) (n = 1.568) (Prins et al., 2021).

10.3 Appendix 3. Demographic breakdown crypto-owners.

Demografische gegevens Cryptobezitters – I



Demografische gegevens Cryptobezitters – II



Demographic information crypto-owners (Hardeveld Kleuver & Van der Boom, 2021).

10.4 Appendix 4. Investor motivations identified in literature.

Motivator / Influencer	Context	Author	Quote or measure	Method
Financial gains				
Profit expectancy	Bitcoin	(Mattke et al., 2021)	“The main reason to invest in bitcoin is clearly that I expect that bitcoin’s value will increase in the next years.”	Mixed-method interviews and survey on basis of regret theory.
Financial motives	ICO	(Fisch et al., 2021)	Gaining an equity stake in the ICO venture.	Survey ICO investment based on crowdfunding literature + factor analysis.
Financial motives	ICO	(Fisch et al., 2021)	Financial gains.	Survey ICO investment based on crowdfunding literature + factor analysis.
Making profit	Cryptocurrencies	(Hardeveld Kleuver & Van der Boom, 2021)	Price developments Addition to pension/income Pay off mortgage	Survey among Dutch investors of 18+ ordered by the Dutch Authority of Financial Markets (AFM)
Financial motives	Cryptocurrencies	(Prins et al., 2021)	Build wealth, attain goals, higher reward	Survey among young adults in The Netherlands.
Financial motives	Equity	(Prins et al., 2021)	Build wealth, attain goals, higher reward	Survey among young adults in The Netherlands.
Personal financial needs	Equity	(Nagy & Obenberger, 1994)	Financial needs, time horizon, diversification	80 surveys among Kenyan retail stock investors
Monetary	Equity	(Choudhary, 2016)	The gap between available and required funds can be bridged through generating returns by way of doing investment.	Literature and expert interviews (ISM).
Third party influence				
Third-party opinions or recommendations	Cryptocurrencies	(Hardeveld Kleuver & Van der Boom, 2021)	Recommendations of acquaintances, analysts, or people famous from social media. After seeing news.	Survey among Dutch investors of 18+ ordered by the Dutch Authority of Financial Markets (AFM)
Social influence/pressure to use a technology	Cryptocurrencies (technology)	(Mahomed, 2017)	People who are important to me think that I should use Cryptocurrencies. People who influence my behaviour think that I should use Cryptocurrencies People whose opinions that I value prefer that I use Cryptocurrencies.	Survey data on cryptocurrency adoption using UTAUT.
Third party opinions	Equity	(Ngahu, 2017)	Friends, family, brokerages	Survey of investors on the Nairobi stock exchange.
Advocate recommendation	Equity	(Nagy & Obenberger, 1994)	Broker, friend, co-worker, advisory/opinions family	80 surveys among Kenyan retail stock investors

Subjective norm	Equity	(Phan & Zhou, 2014)	It captures individual's perception regarding whether most of their significant others think they should or should not conduct the behaviour.	SEM analysis on survey among investors in Vietnamese stock market (theory of planned beh.).
Shared thoughts, values and beliefs				
Shared thoughts, values and beliefs	Crowdfunding	(Bagheri et al., 2019)	"The subject itself was important for me. I supported the projects that the activity was valuable for me." "The alignment of the project and its content with their personal thoughts, beliefs... and values"	Interviews with donors of crowdfunding projects.
Self-image/firm-image	Equity	(Nagy & Obenberger, 1994)	Reputation, status, feeling about products or services, ethics	80 surveys among Kenyan retail stock investors
Social relevance	Equity	(Nagy & Obenberger, 1994)	Environmental, local, international	80 surveys among Kenyan retail stock investors
Attitude towards investment	Equity	(Phan & Zhou, 2014)	If an individual has a more favourable attitude toward a specific behaviour, the chances are higher that they will have an intention to conduct the behaviour.	SEM analysis on survey among investors in Vietnamese stock market (theory of planned beh.).
Affect-based positive attitude towards company	Equity	(Aspara & Tikkanen, 2011)	"What kind of attitude did you have towards [company X]?" (Anchored by -3 = "very negative", +3 = "very positive"). "Did you like the products of [company X]?" (Anchored by -3 = "didn't like at all", +3 = "liked very much").	Questionnaire among investors Helsinki stock exchange (SEM).
Affect-based identity congruent company	Equity	(Aspara & Tikkanen, 2011)	"How well did [company X] reflect the kind of person you are?" The responses were recorded on a 7-point bipolar scale anchored by 0 (not at all) and 6 (very well).	Questionnaire among investors Helsinki stock exchange (SEM).
Social motives.	ICO	(Fisch et al., 2021)	Ideological motives (factor). Sustainability, philanthropy	Survey ICO investment based on crowdfunding literature + factor analysis.
Be part of a community	Crowdfunding	(Gerber & Hui, 2013)	"There's definitely a sense of community ... some sort of responsibility [to support]."	Interviews with participants crowdfunding.
Support a cause	Crowdfunding	(Gerber & Hui, 2013)	Technology, ideology, analogous with personal beliefs. "Design to create social impact. ... My goal is to be as supportive of	Interviews with participants crowdfunding.

			these initiatives as possible. ... From an identity standpoint, that is something that I would want to be associated with.”	
Ideology and technology				
Support of bitcoin ideology	Bitcoin	(Mattke et al., 2021)	“I believe in the ideology of bitcoin, and I trust the concept of blockchain, which is why I would invest in bitcoin.”	Mixed-method interviews and survey on basis of regret theory.
Bitcoin’s predicted role in the monetary revolution	Bitcoin	(Khairuddin et al., 2016)	“Bitcoin will be the future money.” “Bitcoin will be bigger than the Internet revolution [...] is about the money revolution.”	9 semi-structured interviews from technology perspective.
User’s empowerment: Open Source, Decentralized and Unregulated Bitcoin Platform	Bitcoin	(Khairuddin et al., 2016)	“Bitcoin is a very cheap money transfer.” “Bitcoin gives us 100% freedom to control our money.” “It can avoid bank bureaucracy.” “Seeing resemblance between the foreign exchange and cryptocurrency exchange makes me trust that it is something worth going for.”	9 semi-structured interviews from technology perspective.
Perceived real value of bitcoin currency	Bitcoin	(Khairuddin et al., 2016)	“The gold philosophy was backed by physics while bitcoin is backed by mathematics.”	9 semi-structured interviews from technology perspective.
Ideological motives	ICO	(Fisch et al., 2021)	Disrupting established structures/industries.	Survey ICO investment based on crowdfunding literature + factor analysis.
Technological motives	ICO	(Fisch et al., 2021)	Personal enthusiasm for the technology of ICO venture.	Survey ICO investment based on crowdfunding literature + factor analysis.
Technological motives	ICO	(Fisch et al., 2021)	Personal enthusiasm for the business model/idea.	Survey ICO investment based on crowdfunding literature + factor analysis.
Belief in underlying technology	Cryptocurrencies	(Hardeveld Kleuver & Van der Boom, 2021)		Survey among Dutch investors of 18+ ordered by the Dutch Authority of Financial Markets (AFM)
Future sale of the token at a later point in time.	ICO	(Fisch et al., 2021)	Future sale of the token at a higher price (at a later point in time).	Survey ICO investment based on crowdfunding literature + factor analysis.
Macroeconomic				
Macroeconomic environment	Equity	(Choudhary, 2016)	Various economic factors including inflation, interest rate, fiscal policy, monetary policy, and so on.	Literature and expert interviews (ISM).
Low interest on savings account	Cryptocurrencies	(Hardeveld Kleuver & Van der Boom, 2021)	Low interest rates on savings accounts.	Survey among Dutch investors of 18+ ordered by the Dutch Authority of Financial Markets (AFM)
Hobbyist features				

Hobby or interest	Equity	(Prins et al., 2021)	Like the excitement, to pastime, be busy with money	Survey among young adults in The Netherlands.
Hobby or interest	Cryptocurrencies	(Prins et al., 2021)	Like the excitement, to pastime, be busy with money	Survey among young adults in The Netherlands.
Hedonic motivation	Cryptocurrencies (technology)	(Mahomed, 2017)	Using Cryptocurrencies is fun. Using Cryptocurrencies is enjoyable. Using Cryptocurrencies is entertaining.	Survey data on cryptocurrency adoption using UTAUT.
Take a guess or excitement of investing	Cryptocurrencies	(Hardeveld Kleuver & Van der Boom, 2021)		Survey among Dutch investors of 18+ ordered by the Dutch Authority of Financial Markets (AFM)
Regret				
Experienced inaction regret	Bitcoin	(Mattke et al., 2021)	“I was thinking about investing in bitcoin in early 2011 and did not take the chance. That is why I want to invest now.” “I was confronted with the decision whether to invest in Bitcoin in early 2015 and I decided not to invest. I could have been millionaire today, which is what I regret. At least I will invest in bitcoin now.”	Mixed-method interviews and survey on basis of regret theory.
Anticipated inaction regret	Bitcoin	(Mattke et al., 2021)	“I do not want to miss the chance now, or I will regret the decision in the future.” “Don’t want to feel the regret if the price increases, so I jump on the bandwagon.”	Mixed-method interviews and survey on basis of regret theory.
Utility				
Use tokens for their indented utility function.	ICO	(Fisch et al., 2021)	Governance. Transactions.	Survey ICO investment based on crowdfunding literature + factor analysis.
Use tokens for their indented utility function.	Cryptocurrencies	(Hardeveld Kleuver & Van der Boom, 2021)	As a means for purchasing other goods or services.	Survey among Dutch investors of 18+ ordered by the Dutch Authority of Financial Markets (AFM)
Demographic/Facilitating conditions				
Facilitating conditions	Cryptocurrencies (technology)	(Mahomed, 2017)	I have the resources necessary to use Cryptocurrencies. I have the knowledge necessary to use Cryptocurrencies. I can get help from others when I have difficulties using Cryptocurrencies and related services.	Survey data on cryptocurrency adoption using UTAUT.

Ease of acquisition	Bitcoin	(Mattke et al., 2021)	"I can invest even a small amount, that's what makes the investment attractive."	Mixed-method interviews and survey on basis of regret theory.
Perceived behavioural control	Equity	(Phan & Zhou, 2014)	The performance of behaviour is correlated with one's confidence in their ability to conduct the behaviour.	SEM analysis on survey among investors in Vietnamese stock market (theory of planned beh.).
Stock affordability	Equity	(Ngahu, 2017)	Stock price, trend in stock price, dividend pay-out.	Survey of investors on the Nairobi stock exchange.
Investment skills	Bitcoin (demographic)	(Mattke et al., 2021)	"I have a good feeling for investments, and I mostly know where to invest. So, I will invest in bitcoin."	Mixed-method interviews and survey on basis of regret theory.
Risk affinity	Bitcoin (demographic)	(Mattke et al., 2021)	"I am willing to take the risk on investments, so that is definitely why I invest. I think taking risk is normal for such an investment."	Mixed-method interviews and survey on basis of regret theory.
Trust	Cryptocurrencies (technology)	(Mahomed, 2017)	I believe that Cryptocurrencies is trustworthy. I have trust in Cryptocurrencies. I do not doubt the honesty of Cryptocurrencies their systems and related services.	Survey data on cryptocurrency adoption using UTAUT.

10.5 Appendix 5. Expert suggestions investor motivations.

Expert suggestions	Accommodating motivator
Make money.	Financial gains
Be part of and participate in a new economy.	Ideology and technology
Be your own bank (BYOB). Be in control of your own assets.	Ideology and technology Utility Shared thoughts, values and beliefs
The volatility of the market provides opportunities.	Financial gains Utility
Immature market. A lot of space for growth.	Financial gains
Surroundings/friends already active in cryptocurrencies and you don't want to lag behind.	Third party influence Regret
Anonymous features of bitcoin. Wanting to understand why and how it works.	Ideology and technology Utility
Macroeconomic developments.	Macroeconomic environment
Currency depreciation/Inflation.	Macroeconomic environment Utility
COVID shows that nothing is certain, including financial institutions such as banks.	Macroeconomic environment Ideology and technology

10.6 Appendix 6. Survey overview.

Thank you for participating in this survey!

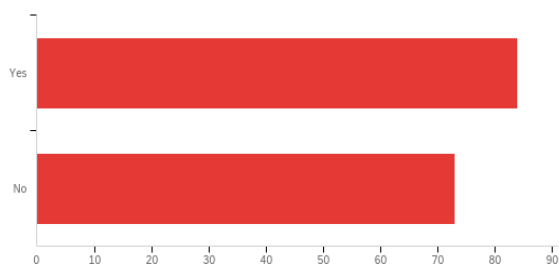
Hi, my name is Danique and I am currently writing my master thesis for the Master of Business Administration at the University of Twente. I am conducting a research towards understanding what the motivations of young adults in the Netherlands are for investing in cryptocurrencies.

This survey takes approximately 5-10 minutes to complete. Survey responses are strictly confidential and will only be used for the purpose of conducting research. Participation in this study is completely voluntary.

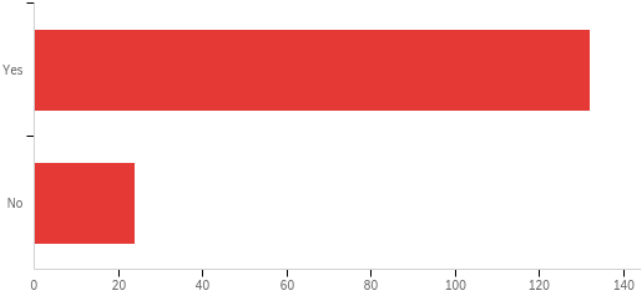
It is advised to participate in this survey via a laptop or other large screen instead of a mobile phone, due to layout issues. The preferred language can be set at the top right.

If you have any questions, you can get in contact via d.pos@student.utwente.nl. If you would like to receive a copy of the results of this research, you can ask for it by sending an email.

Have you ever invested in cryptocurrencies?

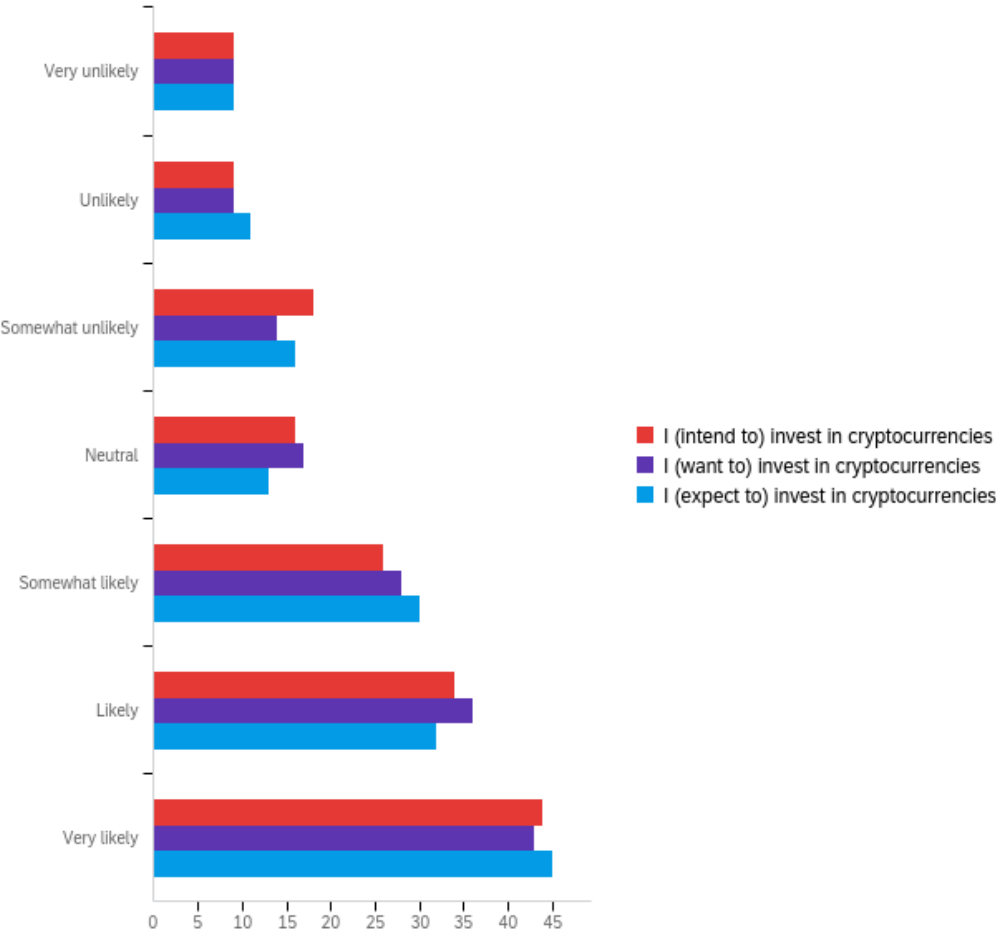


Would you consider investing in cryptocurrencies? (if the above question was yes, please also state yes here)

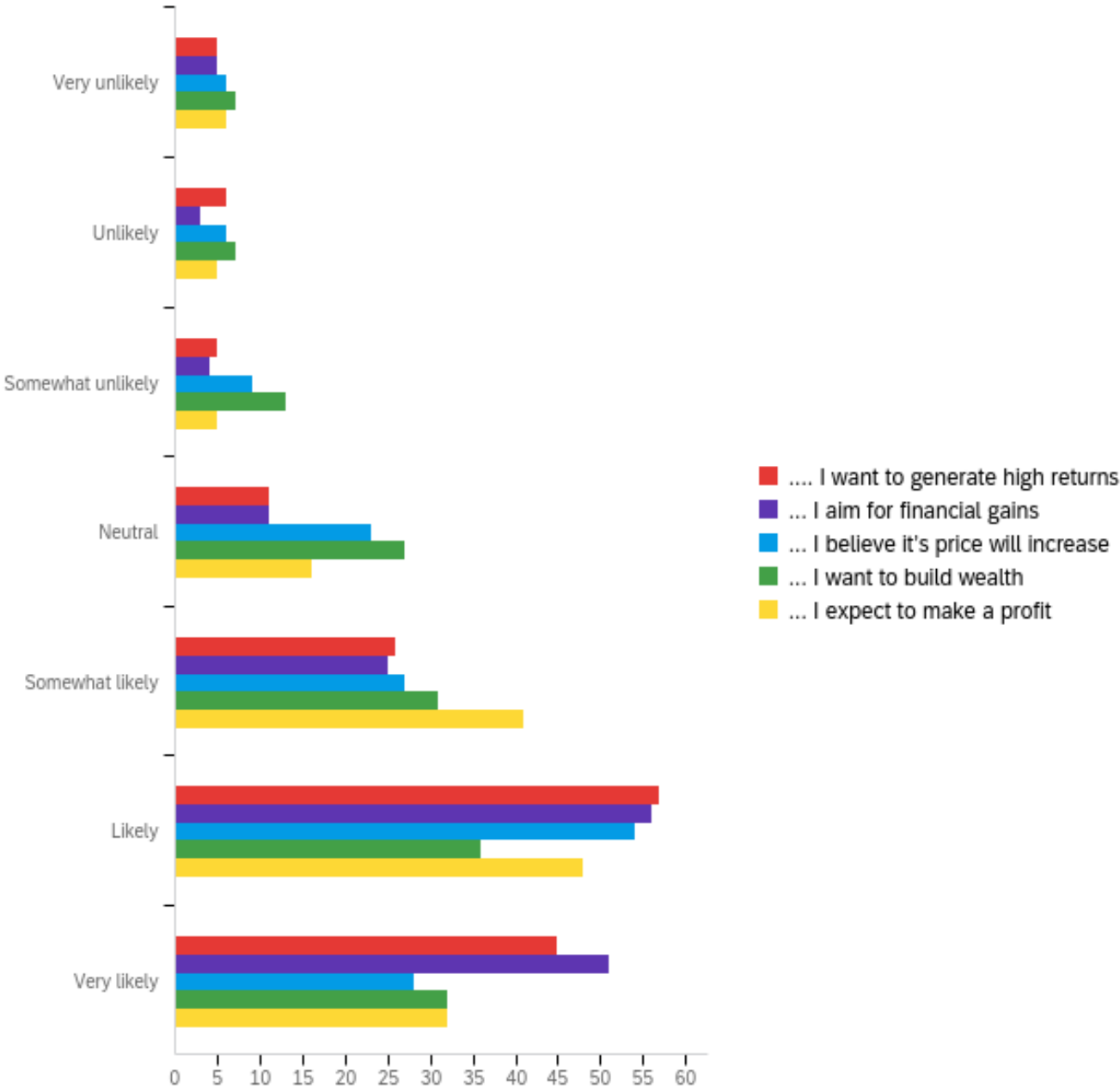


The following questions intend to measure your motivation to invest in cryptocurrencies. Please rate how likely you are to invest in cryptocurrencies because you are motivated by the described behaviours.

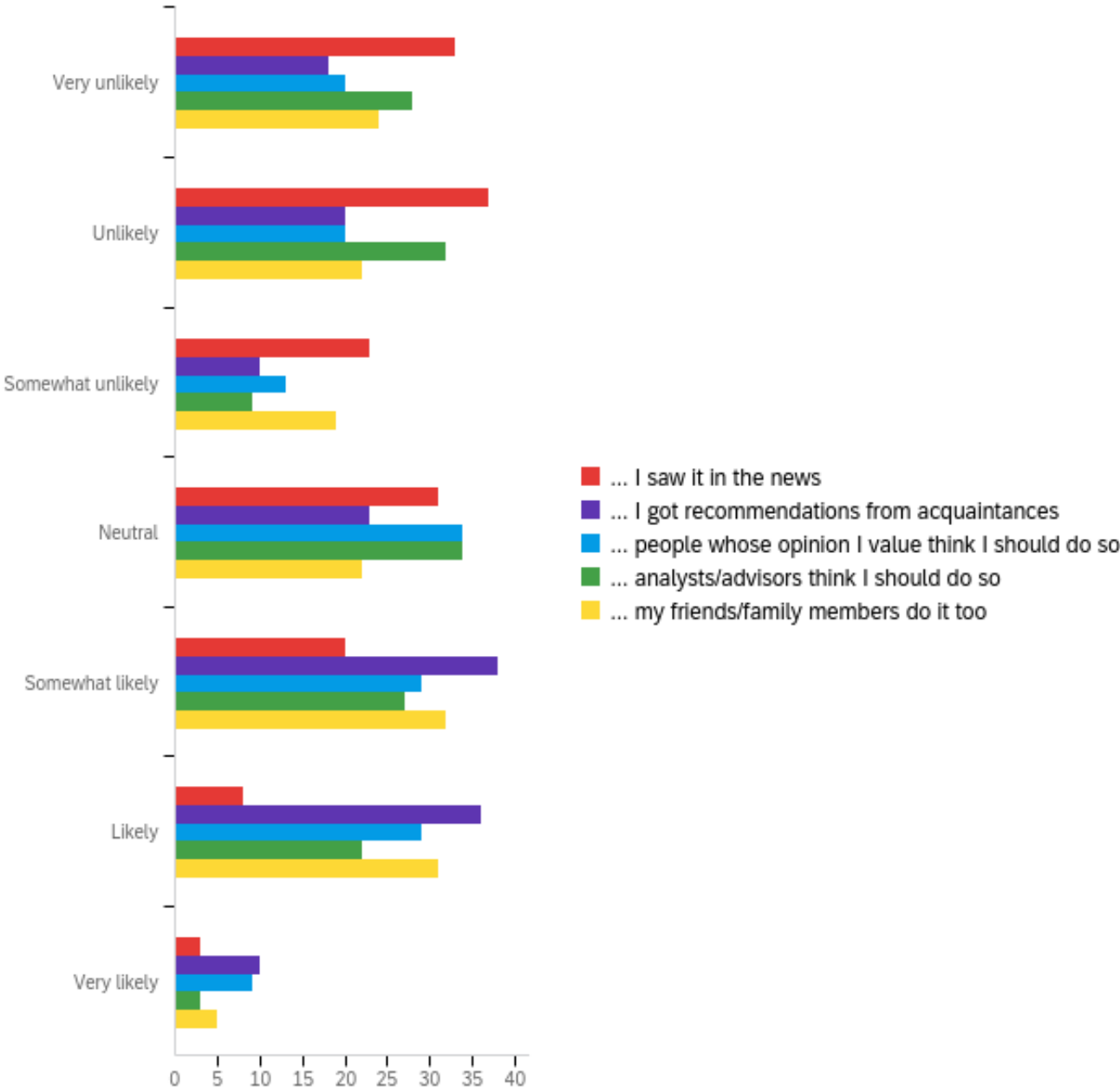
I would invest in cryptocurrencies because...



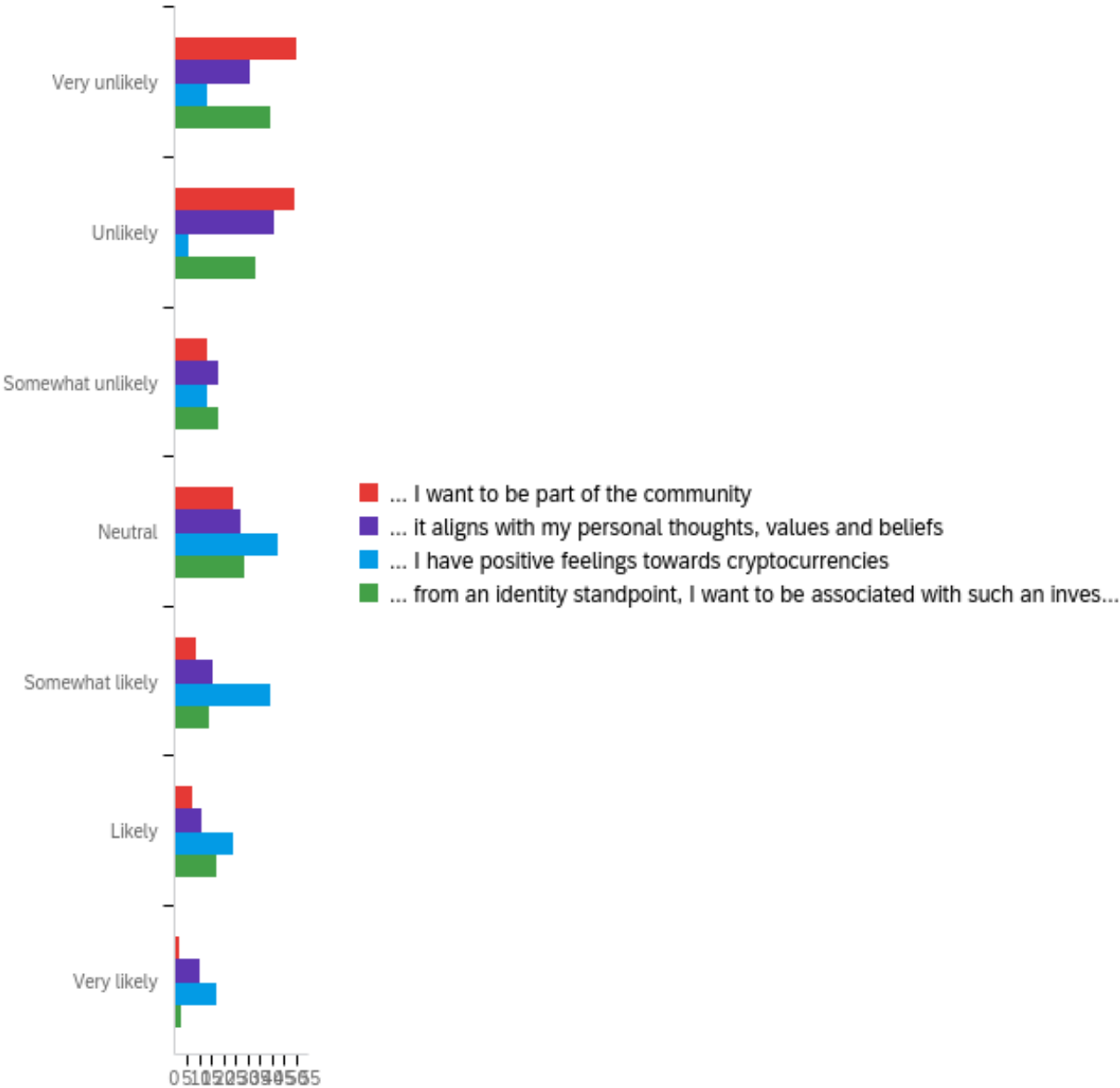
I would invest in cryptocurrencies because...



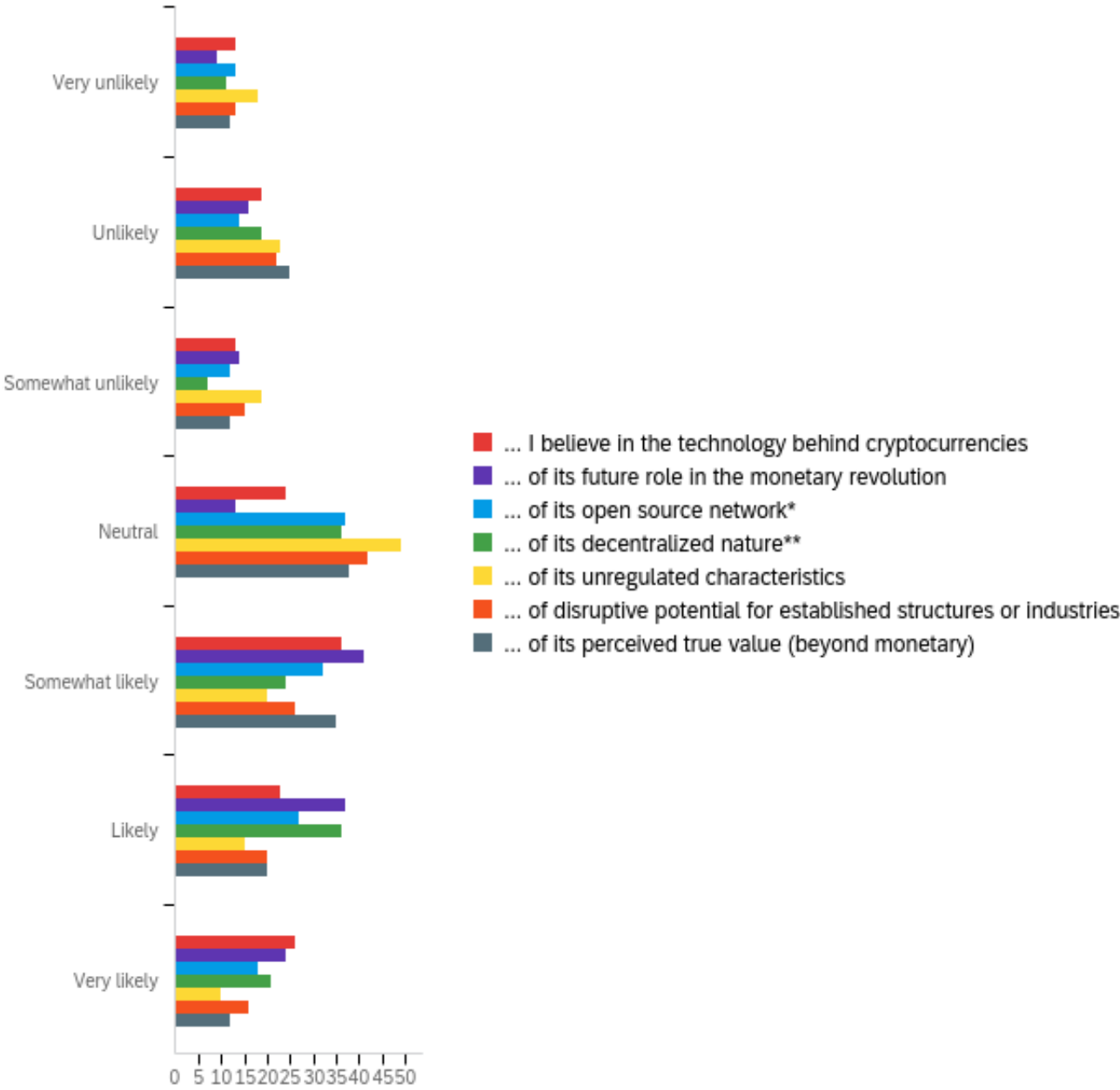
I would invest in cryptocurrencies because...



I would invest in cryptocurrencies because...



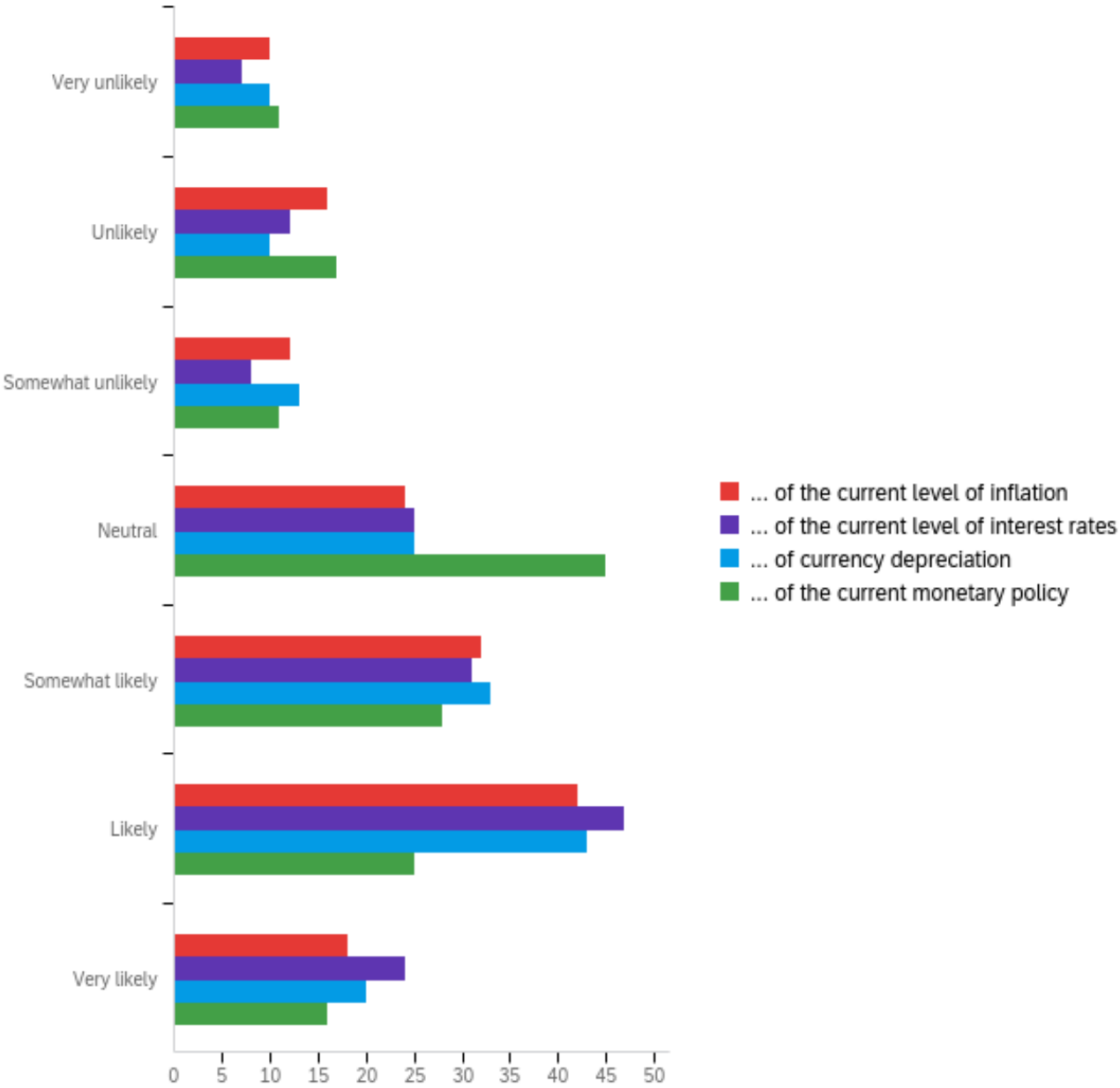
I would invest in cryptocurrencies because...



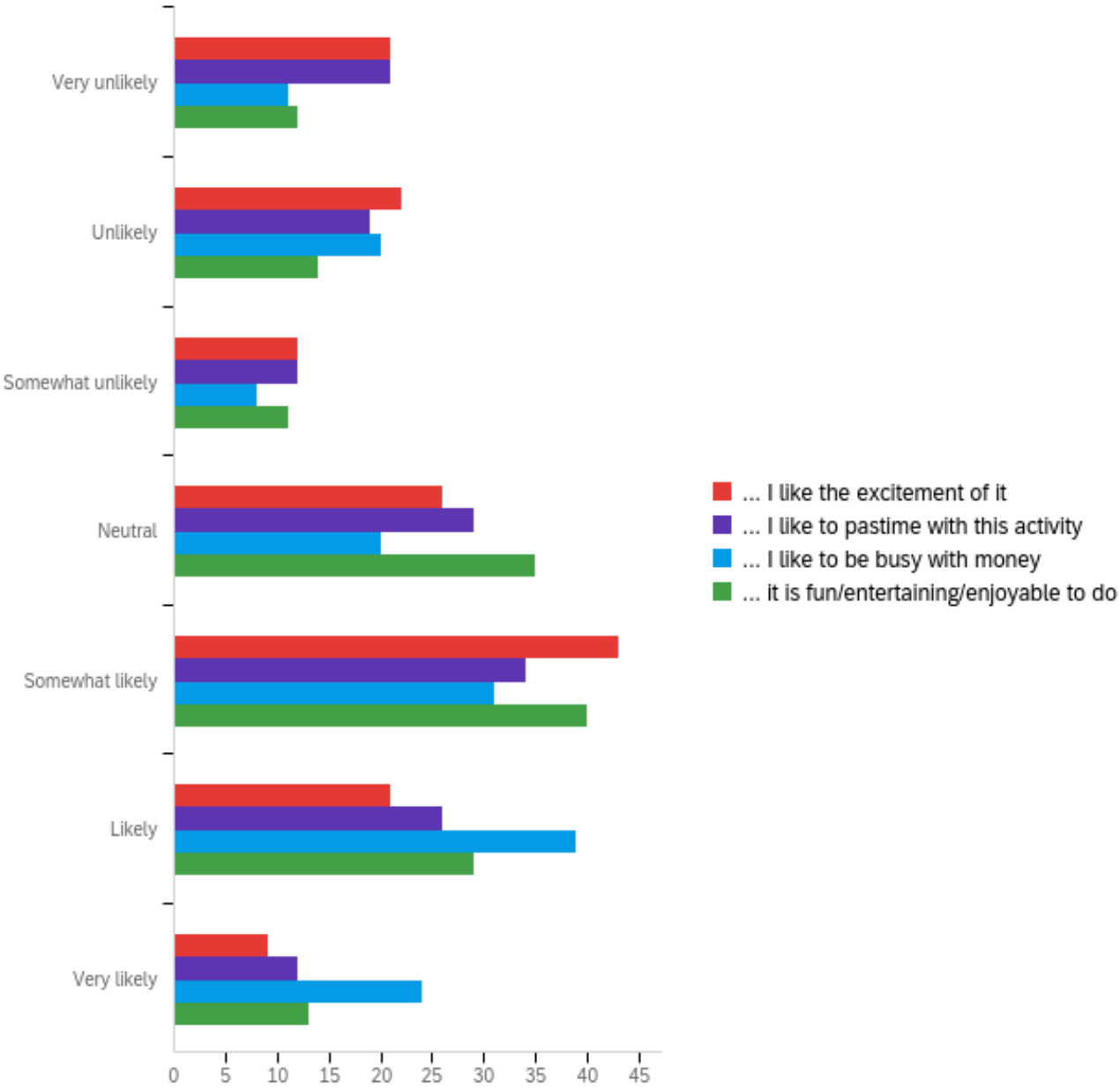
* open source means that every (transaction) record has visibility and auditability, meaning that anyone has access it.

** decentralized means that no single person or group has control - rather, all users collectively retain control.

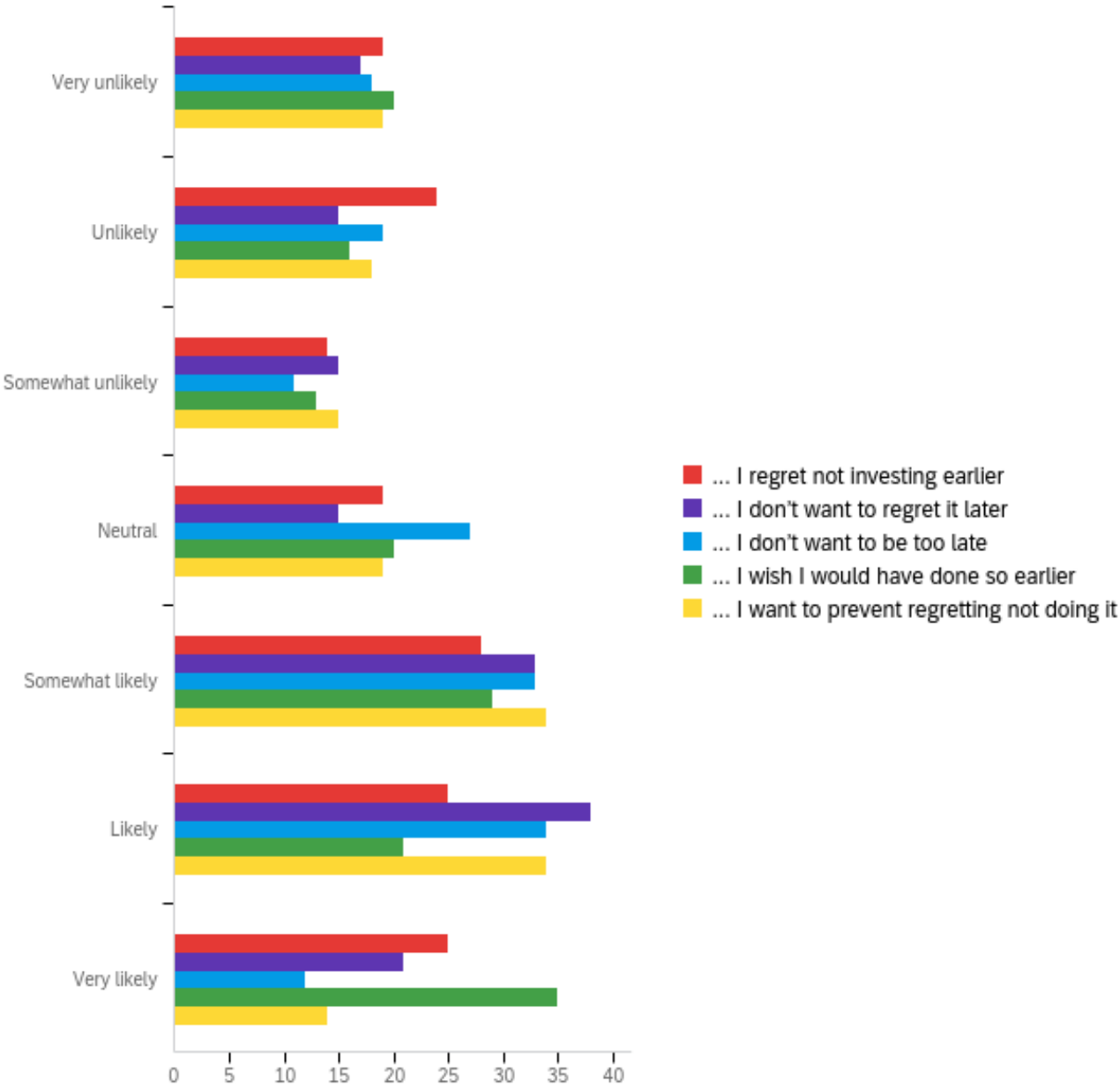
I would invest in cryptocurrencies because...



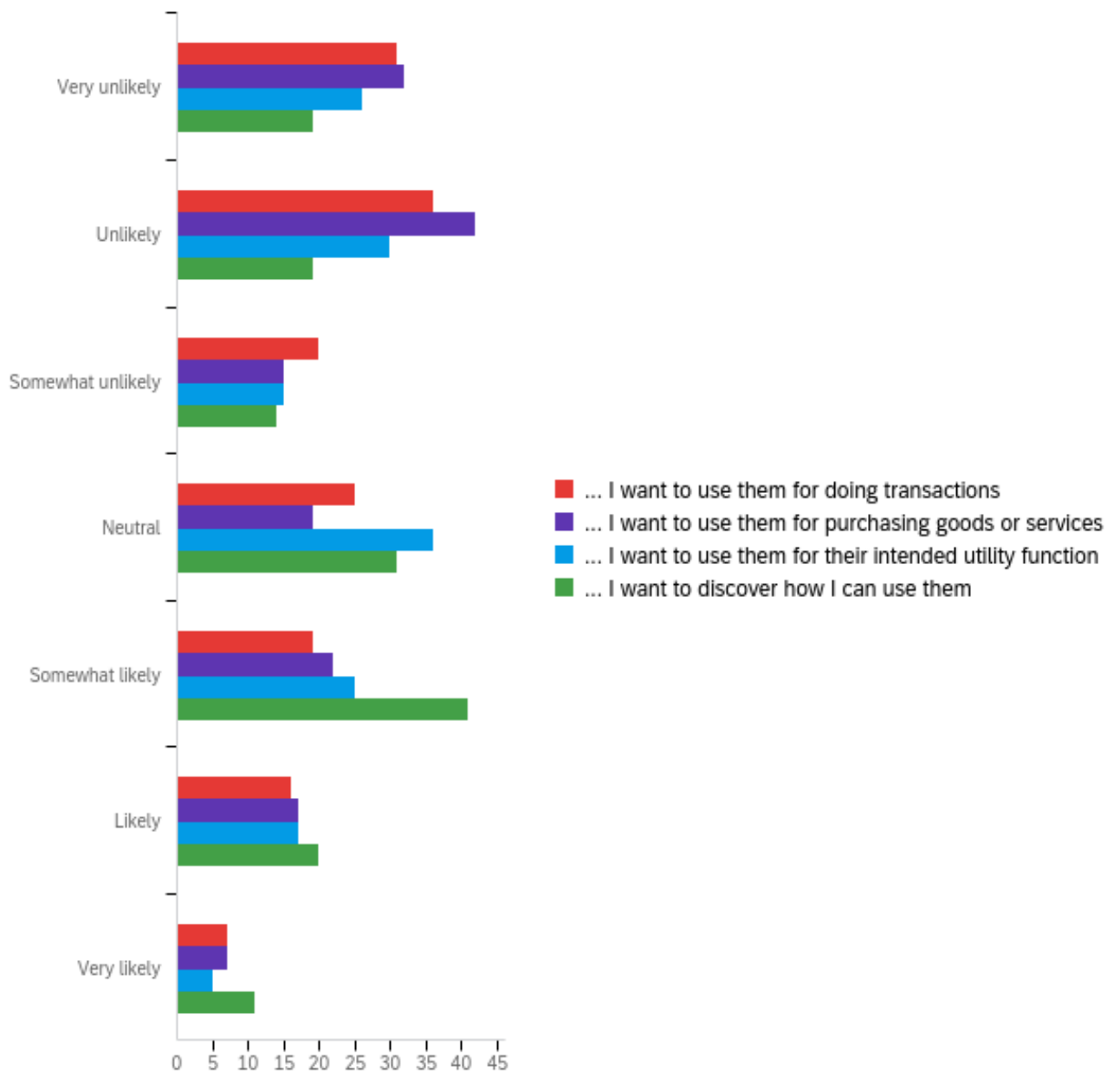
I would invest in cryptocurrencies because...



I would invest in cryptocurrencies because...



I would invest in cryptocurrencies because...



Are there, to you, any other motivations for investing in cryptocurrencies not previously mentioned in this survey?

What is your age?
 - Open field

In what country do you live?
 - The Netherlands
 - Other

What is your gender?
 - Male
 - Female
 - Prefer not to say

What is your highest completed level of education?

- Primary school, lower/general secondary education (LBO, VMBO (basis/kader/GL/TL), MAVO)
- Vocational education (MBO), Pre-university education (HAVO/VWO)
- HBO/University Bachelor Degree, Master Degree, PhD, or higher
- Prefer not to say

What is your income level? (in euros)

- Below 36.500, - per year
- 36.500 - 43.500, - per year
- Above 43.500, - per year
- Prefer not to say

Is either of the below fields of study or occupation applicable to you?

- Technology
- Finance
- Neither

How many years of investment experience do you have in the cryptocurrency market?

- Open field

Thank you for participating in this survey!

Your response has been noted and is appreciated.

10.7 Appendix 7. Frequency descriptives.

	<i>I intend to invest in cryptocurrencies</i>	<i>I want to invest in cryptocurrencies</i>	<i>I expect to invest in cryptocurrencies</i>
<i>N</i>	116	116	116
<i>Mean</i>	5.55	5.61	5.54
<i>St. Deviation</i>	1.37	1.32	1.42
<i>Median</i>	6.0	6.0	6.0
<i>Min</i>	1	2	2
<i>Max</i>	7	7	7

	<i>... I want to generate high returns</i>	<i>... I aim for financial gains</i>	<i>... I believe it's price will increase</i>	<i>... I want to build wealth</i>	<i>... I expect to make a profit</i>
<i>N</i>	116	116	116	116	116
<i>Mean</i>	5.88	5.97	5.54	5.23	5.61
<i>St. Deviation</i>	1.04	0.97	1.16	1.47	1.16
<i>Median</i>	6.0	6.0	6.0	5.5	6.0
<i>Min</i>	3	3	2	1	1
<i>Max</i>	7	7	7	7	7

	<i>... I saw it in the news</i>	<i>... I got recommendations from acquaintances</i>	<i>... people whose opinion I value think I should do so</i>	<i>... analysts/advisors think I should do so</i>	<i>... my friends/family members do it too</i>
<i>N</i>	116	116	116	116	116
<i>Mean</i>	3.06	4.42	4.17	3.59	3.96
<i>St. Deviation</i>	1.54	1.81	1.80	1.78	1.91
<i>Median</i>	3.0	5.0	4.0	4.0	4.0
<i>Min</i>	1	1	1	1	1
<i>Max</i>	7	7	7	7	7

	<i>... I want to be part of the community</i>	<i>... it aligns with my personal thoughts, values and beliefs</i>	<i>... I have positive feelings towards cryptocurrencies</i>	<i>... from an identity standpoint, I want to be associated with such an investment</i>
<i>N</i>	116	116	116	116
<i>Mean</i>	2.53	3.35	4.84	3.16
<i>St. Deviation</i>	1.47	1.84	1.41	1.66
<i>Median</i>	2.0	3.0	5.0	3.0
<i>Min</i>	1	1	1	1
<i>Max</i>	7	7	7	7

	<i>... I believe in the technology behind cryptocurrencies</i>	<i>... of its future role in the monetary revolution</i>	<i>... of its open source network</i>	<i>... of its decentralized nature</i>	<i>... of its unregulated characteristics</i>	<i>... of its disruptive potential for established structures or industries</i>	<i>... of its perceived true value (beyond monetary)</i>
<i>N</i>	116	116	116	116	116	116	116
<i>Mean</i>	4.83	5.12	4.75	4.87	3.98	4.37	4.28
<i>St. Deviation</i>	1.68	1.53	1.59	1.64	1.67	1.63	1.60
<i>Median</i>	5.0	5.0	5.0	5.0	4.0	4.0	4.0
<i>Min</i>	1	1	1	1	1	1	1
<i>Max</i>	7	7	7	7	7	7	7

	<i>... of the current level of inflation</i>	<i>... of the current level of interest rates</i>	<i>... of currency depreciation</i>	<i>... of the current monetary policy</i>
<i>N</i>	116	116	116	116
<i>Mean</i>	4.78	5.16	5.01	4.61
<i>St. Deviation</i>	1.66	1.48	1.55	1.59
<i>Median</i>	5.0	5.5	5.0	4.0
<i>Min</i>	1	1	1	1
<i>Max</i>	7	7	7	7

	<i>... I like the excitement of it</i>	<i>... I like to pastime with this activity</i>	<i>... I like to be busy with money</i>	<i>... its fun/entertaining/enjoyable to do</i>
<i>N</i>	116	116	116	116
<i>Mean</i>	4.13	4.40	4.95	4.64
<i>St. Deviation</i>	1.77	1.70	1.67	1.45
<i>Median</i>	4.0	5.0	5.0	5.0
<i>Min</i>	1	1	1	1
<i>Max</i>	7	7	7	7

	<i>... I regret not investing earlier</i>	<i>... I don't want to regret it later</i>	<i>... I don't want to be too late</i>	<i>... I wish I would have done so earlier</i>	<i>... I want to prevent regretting not doing it</i>
<i>N</i>	116	116	116	116	116
<i>Mean</i>	4.45	4.78	4.47	4.76	4.53
<i>St. Deviation</i>	1.94	1.78	1.77	1.96	1.77
<i>Median</i>	5.0	5.0	5.0	5.0	5.0
<i>Min</i>	1	1	1	1	1
<i>Max</i>	7	7	7	7	7

	<i>... I want to use them for doing transactions</i>	<i>... I want to use them for purchasing goods or services</i>	<i>... I want to use them for their intended utility function</i>	<i>... I want to discover how I can use them</i>
<i>N</i>	116	116	116	116
<i>Mean</i>	3.44	3.33	3.67	4.07
<i>St. Deviation</i>	1.80	1.81	1.67	1.62
<i>Median</i>	3.0	3.0	4.0	4.0
<i>Min</i>	1	1	1	1
<i>Max</i>	7	7	7	7

10.8 Appendix 8. Model assessment measures.

Steps	Type of construct	Description	Assessment criterion	Decision criterion	Interpretation
Testing the adequacy of reflective measurement and composite models	Latent and emergent variable	Evaluate the overall fit of the model with a saturated structural model by investigating discrepancy between empirical and model-implied indicator variance-covariance matrix	SRMR d_{ULS} d_G	SRMR < 0.080 SRMR < HI_{95} d_{ULS} < HI_{95} d_G < HI_{95}	A SRMR value smaller than 0.080 indicates an acceptable model fit [22]; however, these thresholds are preliminary and need to be investigated in more detail The null hypothesis that the population indicator variance-covariance matrix equals the model-implied counterpart is not rejected. Hence, empirical evidence for the model is given when the value of the discrepancy measure is below the 95% quantile of its corresponding reference distribution
Evaluating content validity	Latent and emergent variable	How the corresponding theoretical concepts have been operationalized (measured or built) in prior research	Flexibility in the case of artifacts represented by an emergent variable (bread and beer analogy)		
Evaluating reliability of construct scores	Latent variable	Evaluating whether the construct scores reliably represent the underlying construct	ρ_A	$\rho_A > 0.707$	More than 50% of the variance in the construct scores can be explained by the underlying latent variable
Evaluating indicator reliability		Evaluating whether indicators are reliable	Factor loading estimates Factor loading significance AVE	Factor loading estimates > 0.707 Significant at 5% significance level AVE > 0.5	More than 50% of the indicator's variance is explained by the latent variable
Evaluating convergent validity	Latent variable	Evaluating the share of variance in the indicators that is explained by the underlying latent variable			More than 50% of indicators' variance is explained by the underlying latent variable
Evaluating discriminant validity	Latent variable	Evaluating whether two latent variables are statistically different	HTMT	HTMT < 0.85 (or whether the HTMT is significantly smaller than 1)	Factors are statistically different and thus have discriminant validity
Multicollinearity	Emergent variable (estimated by Mode B)	Evaluating how the standard errors of the weight estimates are affected by the correlations of the indicators	VIF	VIF < 5	If the estimates suffer from multicollinearity, weights obtained by Mode A or predetermined weights can be used
Weights	Emergent variable	Evaluating relative contribution of an indicator to its construct	Weights' value and significance	Significant at 5% significance level	Each indicator contributes significantly to the emergent variable
Loadings	Emergent variable	Evaluating absolute contribution of an indicator to its construct	Loading significance	Significant at 5% significance level	Each indicator contributes to the emergent variable in a statistically significant way

10.9 Appendix 9. Overview Rstudio coding.

```
finaldata2 <- readxl::read_excel("finaldata2.xlsx")
```

```
psych::describe(finaldata2)
```

```
colnames(finaldata2)
```

```

model <- "
# Structural model
# MOTIVATION ~ PROF + THIRD + ALIGN + IDEO + MACRO + HEDON + REGRET + UTILITY

# Reflective measurement model
MOTIVATION =~ DEP1 + DEP2 + DEP3
PROF =~ PROF1 + PROF2 + PROF4
THIRD =~ THIRD2 + THIRD3 + THIRD5
ALIGN =~ ALIGN2 + ALIGN3 + ALIGN4
IDEO =~ IDEO1 + IDEO2 + IDEO3 + IDEO4 + IDEO6 + IDEO7
MACRO =~ MACRO1 + MACRO3 + MACRO4
HEDON =~ HEDON2 + HEDON3 + HEDON4
REGRET =~ REGRET2 + REGRET3 + REGRET5
UTILITY =~ UTILITY1 + UTILITY2 + UTILITY3
"

library(lavaan)

out=cfa(model=model, data = finaldata2)

summary(out, standardize=T)

fitmeasures(out)

A=resid(out,type="cor")
A

round(A$cov,2)

semTools::compRelSEM(out, tau.eq = FALSE)

semTools::compRelSEM(out,tau.eq = TRUE)

semTools::AVE(object = out)

?semTools::compRelSEM

semTools::htmt(model = model, data=finaldata2)

model2 <- "
# Structural model
MOTIVATION ~ PROF + THIRD + ALIGN + IDEO + MACRO + HEDON + REGRET + UTILITY + MALE +
YEARS+ EDU1 + EDU2 + INCOME1 + INCOME2 + STUDYOCC1 + STUDYOCC3

# Reflective measurement model
# Reflective measurement model
MOTIVATION =~ DEP1 + DEP2 + DEP3
PROF =~ PROF1 + PROF2 + PROF4
THIRD =~ THIRD2 + THIRD3 + THIRD5
ALIGN =~ ALIGN2 + ALIGN3 + ALIGN4
IDEO =~ IDEO1 + IDEO2 + IDEO3 + IDEO4 + IDEO6 + IDEO7

```



```

MACRO =~ MACRO1 + MACRO3 + MACRO4
HEDON =~ HEDON2 + HEDON3 + HEDON4
REGRET =~ REGRET2 + REGRET3 + REGRET5
UTILITY =~ UTILITY1 + UTILITY2 + UTILITY3
"
out1=sem(model2,finaldata)

summary(out1,standardize=T,fit.measures=TRUE)

out1=sem(model2,finaldata,estimator="MLR")

out2=sam(model2,finaldata2)

summary(out2,standardize=T)

fitmeasures(out2)

```

10.10 Appendix 10. Qualitative responses.

Respondent motivations	Accommodating motivator
Daytrading.	Financial gains and hedonic motivation
To build wealth. Invest savings.	Financial gains
I use crypto for long term profit, and then purely to earn on it, not as a means of payment.	Financial gains
Collecting high APR on stablecoins.	Financial gains and macroeconomic environment
Just the interest rates and a lot of money on the market.	Macroeconomic environment
Portfolio component, spreading risk.	Diversification
Portfolio diversification.	Diversification
Diversification.	Diversification
Diversification beyond stocks or commodities such as gold.	Diversification
Storage of assets because inflation is predetermined.	Diversification and macroeconomic environment
The technology behind it and its countless possibilities.	Ideology and technology
I think it will soon be impossible to imagine society without it, just like people now pay with the debit card.	Ideology and technology
Proof-of-Work mechanism and because a mathematical monetary policymaking is applied instead of human. This has never happened in human history since 2009.	Ideology and technology
So I am not in need of a bank account when I'm in a foreign country. Can take my money everywhere with me.	Ideology and technology
Expect it to play a major role in the future. Think there will come a time when banks are slow/unwieldy/obsolete and fail to meet flexible customer demand. In addition, I think that people are starting to realize that the financial world can be organized more efficiently (cheaper/faster), partly by means of (by then) proven services of crypto. However, I think that at the moment the masses are not ready to start using crypto on a daily basis and so far it is mainly "hype" that drives prices.	Ideology and technology

Interesting way of investing.	Hobbyist features
Mainly to follow the trends.	Third party influence
Motivation to hedge a portfolio.	Hedging
Cryptocurrencies offer opportunities in many different areas in the future. These components are individually named, but the total package of possibilities can also be a motivator. So, among other things, financial profit, means of payment, interest in the process of cryptocurrencies, etc.	Whole package of motivators, potential, ideology

10.11 Appendix 11. Qualitative responses respondents not considering to invest.

Respondents not considering to invest
I would invest in cryptocurrencies if my current investments are not yielding me enough. I would invest in cryptocurrencies if they can be used as a payment option for services within my interests.
I mostly wouldn't invest in them due to their environmental impact and misuse of power plants. It is not something I would want to associate myself with.
Their environmental impact- I believe that environmentally cautious people would not invest due to their large negative impact on their environment.
To save money by using this exterior resources.