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Assessing Factors Influencing the Adoption of Cryptocurrency in the Netherlands – A Behavioral Reasoning Theory Perspective

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Table of Contents

Executive Summary	3
1 Introduction	5
1.1 Introduction to the topic.....	5
1.2 Cryptocurrency	6
1.3 The Netherlands.....	7
1.4 Problem statement.....	7
1.5 Central research question and sub-questions.....	8
1.6 Relevance.....	9
1.7 Ethical issues and limitations.....	10
1.8 Structure.....	10
2 Literature review	11
2.1 Theoretical Framework.....	11
2.2 Consumer attitudes on intentions.....	12
2.3 Reasons “for” and “against”	13
2.3.1 Reasons on attitude	13
2.3.2 Reasons on intentions	13
2.4 Value of openness to change (VOC)	14
2.4.1 VOC on reasons	14
2.4.2 VOC on attitude	15
3 Research Methodology	16
3.1 Reasons extraction.....	16
3.2 Qualitative and Quantitative Research	18
3.3 Data Collection Method.....	18
3.4 Survey	19
3.5 Research participants	19
3.6 Data analysis.....	20
4 Research Outcomes	22
4.1 Demographic breakdown.....	22
4.2 Descriptive statistics	24

4.3 Reliability.....	25
4.4 Validity	26
4.5 Hypothesis testing.....	28
4.5.1 Consumer attitudes on intentions.....	29
4.5.2 Reasons on attitude	29
4.5.3 Reasons on adoption intention.....	30
4.5.4 Value of openness to change on reasons.....	30
4.5.5 Value of openness to change on attitude.....	31
4.6 Key research outcomes	31
5 Conclusion & Recommendations	32
5.1 Main findings of the literature	32
5.2 Main findings of the research	33
5.3 Comparing literature and research.....	34
5.4 Answering the research question	34
5.5 Recommendations for cryptocurrency marketeers	36
5.6 Limitations and recommendations for future research	37
6 Appendices.....	38
6.1 References.....	38
6.2 Survey questions	43
6.3 Tables and Figures	45
6.4 Raw Data.....	51

Executive Summary

In an era where digital assets are increasingly gaining traction, the adoption of cryptocurrency as a viable investment continues to generate both interest and skepticism globally. This thesis, titled "Assessing Factors Influencing the Adoption of Cryptocurrency in the Netherlands," employs the Behavioral Reasoning Theory (BRT) to explore the underlying factors that influence Dutch individuals' intentions to invest in cryptocurrencies. Therefore the central question is:

“What are the fundamental factors that influence the adoption of cryptocurrency as an investment amongst people who reside in the Netherlands?”

To answer this question five theoretical sub-questions were formulated:

1. Which theoretical framework can be used to explain and measure the adoption intention of new financial technologies?
2. What is the relationship between consumer attitudes on intentions?
3. How do the reasons for and against adoption influence consumer’s attitudes and intentions?
4. How does the value of openness to change influence consumer’s attitudes and their “reasons for” and “against” adoption?
5. What factors are identified as key enablers and barriers to cryptocurrency adoption?

Four empirical sub-questions were also formulated:

1. Which demographic factors most strongly correlate with the intention to adopt cryptocurrency as an investment amongst people who reside in the Netherlands?
2. To what extent do perceived barriers deter potential users from adopting cryptocurrencies as an investment among people who reside in the Netherlands?
3. To what extent do perceived enablers encourage potential users to adopt cryptocurrencies as an investment amongst people who reside in the Netherlands?
4. What strategies can be employed by marketers to enhance the acceptance and adoption rates of cryptocurrencies among investors who reside in the Netherlands?

This study uses the Behavioral Reasoning Model (BRT) to delve into which factors shape adoption intentions toward cryptocurrencies. It looks at how “reasons for” and “reasons against” cryptocurrency adoption, along with the impact of the value of openness to change (VOC), shape consumer attitudes and adoption intentions towards cryptocurrencies. The literature identified performance expectancy, effort

expectancy, social influence, and facilitating conditions, as the primary "reasons for" cryptocurrency adoption. Conversely, perceived risk, image barriers, and value barriers were highlighted as significant "reasons against," and were used as latent constructs in this thesis.

Utilizing a quantitative research approach, a survey was distributed across various social media platforms to gather data from people residing in the Netherlands. The survey included questions related to demographic information, as well as statements designed to measure each construct. Respondents indicated their level of agreement with these statements by selecting one of five options on a Likert scale, ranging from "strongly disagree" to "strongly agree." The final sample comprised 211 respondents, providing a foundation for robust statistical analysis using Partial Least Squares Structural Equation Modeling (PLS-SEM).

The findings showed that positive attitudes towards cryptocurrency significantly enhance its adoption intention. Additionally, "reasons for" positively influence both the attitude and the intention to adopt cryptocurrencies. In contrast, "reasons against" negatively impact attitudes and adoption intention. Surprisingly, although the value of openness to change showed a direct influence on "reasons for" and "reasons against," it did not significantly affect the attitudes towards cryptocurrency adoption. This indicates that while openness to change drives the reasoning process regarding cryptocurrency adoption, this value does not directly translate into more favorable attitudes.

These insights are particularly valuable for marketers within the cryptocurrency space. Understanding the factors that drive or deter the adoption of cryptocurrency as an investment, can help in crafting more effective communication strategies that address consumer concerns and highlight the potential benefits of cryptocurrency investment. This study acknowledges limitations such as the non-probability sampling method and the potential non-response bias that may impact the generalizability of the findings. Future research could expand on this foundation by exploring other values that may influence cryptocurrency adoption, such as security consciousness or privacy concerns. Additionally, extending this research to other regions and demographic segments could provide a more comprehensive understanding of global attitudes towards cryptocurrency.

In conclusion, this thesis not only contributes to the academic literature by applying the BRT to the context of cryptocurrency adoption, but also offers practical insights that can assist in fostering a more informed and accepting cryptocurrency environment in the Netherlands.

1 Introduction

1.1 Introduction to the topic

Cryptocurrency has rapidly evolved from a digital novelty to a potential cornerstone of the global financial system. Many experts believe that cryptocurrency cannot be stopped, and it is inevitably going to become the new 'gold standard' (Deloitte, 2015). The recent increase in the crypto market highlights the growing interest and excitement about digital assets. From May 2015 to today, Bitcoin's price skyrocketed, with an increase of over 13,000% (Google Finance, 2024), and a compound annual growth rate of 106.84% (Curvo, 2024). The market cap of cryptocurrencies has surpassed \$2 Trillion, with a 24-hour trading volume of approximately \$71 Trillion, indicating the large and active trading within the market (CoinGecko, 2024).

The approval of Bitcoin Spot Exchange Traded Funds (ETFs) by governments, along with other big events like Britain allowing crypto-backed exchange-traded notes (cETNs), has given the market a big boost (Joshi, 2024). Such developments have not only brought a large interest and excitement about digital assets, but have also shone a light on the potential of cryptocurrencies to reshape investments around the world.

Despite this interest, a lot of skepticism continues to exist regarding the security and reliability of cryptocurrencies. According to a Pew Research Center survey (2023), 75% of Americans who have heard of cryptocurrencies are not confident in their safety and reliability. This highlights that the vast majority of people have concerns and are not yet willing to invest in the digital currency. Additionally, among a sample of a thousand U.S. non-owners of crypto, 44% were totally against purchasing cryptocurrencies, 41% claimed that they would consider it, and 15% intend to purchase it within the year 2024 (Blackstone, 2024).

Moreover, 28% of cryptocurrency holders sold their crypto for a profit, while a higher percentage, 38%, sold it for less than its initial value (Evans, 2023). This goes to show, that there is a great divide of opinions about cryptocurrency; some wish to adopt it while others absolutely reject it. This creates an interesting case to explore what causes people to form such strong positive and negative opinions about adopting cryptocurrencies in their investment portfolio.

1.2 Cryptocurrency

Cryptocurrency originated back in 2008 when Satoshi Nakamoto published the paper “Bitcoin: A Peer-to-Peer Electronic Cash System.” This paper, written by the pseudonymous creator of blockchain and of the cryptocurrency Bitcoin, suggested that “a purely peer-to-peer version of electronic cash would allow online payments to be sent directly from one party to another without going through a financial institution (Nakamoto, 2008).” Bitcoin was initially used by people as a token of appreciation in niche internet communities, with its first significant transaction taking place in 2010 to purchase two pizzas for 10,000 Bitcoins. This transaction truly shows the exponential growth in Bitcoin's value, from a few cents to tens of thousands of dollars per Bitcoin over the years, illustrating its volatile, but at the same time, upward trend in the market.

Cryptocurrency is a type of digital money created using blockchain technology, and the decentralized networks it is built on ensure that it cannot be counterfeited or fraudulently replicated. Blockchain is defined as “a digital, distributed transaction ledger, with identical copies maintained on multiple computer systems controlled by different entities (Schatsky, 2015).” Every information within these ledgers needs to be confirmed by a large network of nodes, ensuring that previous transaction records cannot possibly be tampered with or forged.

The creation of cryptocurrencies has given a great push for technological advancement. A notable example of this is Ethereum, one of the first cryptocurrencies that implemented smart contracts (Ethereum.org, 2024). Whilst both Bitcoin and Ethereum enable the use of digital money without the need for banks or payment providers, Ethereum also allows for the creation of decentralized applications on its network. The smart contracts that can be built on it can execute contract terms automatically, without the need for trusted intermediaries to ensure that obligations are met (Ethereum.org, 2024).

Cryptocurrencies do not only represent a revolutionary technology, but they also represent an exciting investment opportunity. A lot of the activity within cryptocurrency happens by investors trading for profit, which in return leads to very large fluctuations in prices driven by the behavior of those investors. For those willing to navigate its complexities and risks, cryptocurrencies offer unique advantages in terms of returns, diversification, and exposure to technological innovation.

1.3 The Netherlands

Much of the research on the adoption of cryptocurrency is based on U.S. citizens. In the Netherlands, a country known for its progressive approach to technology and finance, the adoption of cryptocurrency also presents an intriguing case of advanced technology meeting traditional financial practices. The Dutch financial sector is supported by a forward-thinking regulatory framework that encourages innovation and the adoption of financial technologies (The Hague Business Agency, 2022). The Netherlands is home to a thriving fintech ecosystem, recognized for its robust infrastructure and supportive policies aimed at fostering financial innovation (De Nederlandsche Bank, 2022).

Additionally, the Netherlands consistently ranks at the top in Europe for digital skills, with a significant portion of its population proficient in using the internet, computers, and software (Centraal Bureau Statistiek, 2023). This combination of digital literacy and a progressive regulatory environment makes the Netherlands a unique and insightful case study for understanding the factors influencing cryptocurrency adoption.

1.4 Problem statement

In today's investment landscape, cryptocurrencies are increasingly seen as viable alternative assets, yet their actual adoption varies significantly. According to a study conducted by the Cambridge Centre for Alternative Finance (2020), cryptocurrency adoption varies significantly across different user demographics. This could be explained by the various factors that influence individual investment decisions.

For instance, whilst some may perceive cryptocurrencies to offer high-performance expectancy, they may also feel troubled by the risks associated with them. Moreover, the social influence surrounding cryptocurrencies can vary dramatically across different demographic segments within the Netherlands. Younger investors may be more open to embracing these digital assets, influenced by social networks and peer behaviors, whereas older investors might be more reserved, prioritizing security and traditional investment stability over potential high returns from more volatile digital options. Therefore, this thesis will study the fundamental factors leading to the adoption of cryptocurrency as an investment among residents in the Netherlands.

1.5 Central research question and sub-questions

Since cryptocurrencies are seen as a good investment opportunity by some whilst not by others, the following research question evolves:

“What are the fundamental factors that influence the adoption of cryptocurrency as an investment amongst people who reside in the Netherlands?”

To answer this question, it is necessary to first answer the following theoretical and empirical sub-questions.

The theoretical sub-questions will be answered in the literature review and are:

1. Which theoretical framework can be used to explain and measure the adoption intention of new financial technologies?
2. What is the relationship between consumer attitudes on intentions?
3. How do the reasons for and against adoption influence consumer’s attitudes and intentions?
4. How does the value of openness to change influence consumer’s attitudes and their “reasons for” and “against” adoption?
5. What factors are identified as key enablers and barriers to cryptocurrency adoption?

The empirical sub-questions can be answered after having analyzed the data and interpreted the results. The empirical sub-questions are:

1. Which demographic factors most strongly correlate with the intention to adopt cryptocurrency as an investment amongst people who reside in the Netherlands?
2. To what extent do perceived barriers deter potential users from adopting cryptocurrencies as an investment among people who reside in the Netherlands?
3. To what extent do perceived enablers encourage potential users to adopt cryptocurrencies as an investment amongst people who reside in the Netherlands?
4. What strategies can be employed by marketers to enhance the acceptance and adoption rates of cryptocurrencies among investors who reside in the Netherlands?

1.6 Relevance

There is undoubtedly a split of opinions about cryptocurrencies; some are eager to explore this innovation while others firmly oppose its adoption. Therefore, understanding the views that the general public has on cryptocurrencies is crucial to approximate its potential success and adoption.

This research is relevant in several ways. Firstly, it is academically relevant because of the existing literature gaps. Cryptocurrency, as a field of study, is relatively new and rapidly evolving, leading to academic literature not having fully caught up with the pace of technological developments and market dynamics. There is limited literature focusing on the factors influencing the adoption of cryptocurrency as an investment, as opposed to its economic implications at a macro level. Furthermore, the specific focus on the Netherlands, adds a unique geographical perspective that is underrepresented in existing studies.

Secondly, it is socially relevant because it studies the social acceptance of cryptocurrencies and addresses societal questions about their role and impact on investment decisions. By exploring what drives or hinders the general population's acceptance of cryptocurrencies, policymakers, educators, and financial institutions can use this knowledge to develop strategies that promote more inclusive financial environments and protect consumers. Studying the social acceptance of cryptocurrencies can offer valuable lessons on public trust and technological transitions in finance.

Lastly, this research is also economically relevant, due to the current trends among central banks and the potential adoption of digital currencies. For instance, the De Nederlandsche Bank (DNB) is actively exploring the creation of a digital euro, as part of a broader investigation by the European central banks into the feasibility of integrating digital currencies alongside traditional cash (De Nederlandsche Bank, 2024). By studying the public's perception of cryptocurrencies, which are a key form of digital currency, this research can provide valuable insights into the potential concerns that might affect the adoption of a digital euro. Understanding how consumers view cryptocurrencies could guide central banks in developing strategies that enhance the public's trust and acceptance of centrally issued digital currencies. This research could thereby contribute directly to policymaking and the strategic planning of future central bank digital currencies.

1.7 Ethical issues and limitations

This thesis may encounter certain ethical issues and limitations. Concerning ethics, it is very important to ensure that the participant's privacy is whilst collecting and analyzing their responses (Artal & Rubinfeld, 2017). To ensure this, the author of this thesis will use the data collected solely for this study, and will delete all of it once the research comes to an end. Moreover, the participants will be given a privacy statement at the start of the survey, which will let them know that participation is voluntary and they are free to withdraw at any time without any repercussions.

The research faces several potential limitations that could impact the findings. One major concern is achieving a sufficient sample size, which is crucial for the reliability of the study. This potential challenge may lead to insufficient data and incomplete conclusions about the factors that influence cryptocurrency adoption amongst residents of the Netherlands.

Additionally, non-response bias is another possible limitation. If the individuals contacted for the study choose not to participate, it could skew the results, as the views and behaviors of non-participants might differ significantly from those of participants (Compton, Glass, & Fowler, 2019). Another limitation is if the sample does not adequately represent various demographics across the Netherlands, leading to selection bias (Compton, Glass, & Fowler, 2019). For example, it may be difficult to send out the survey to people from all provinces. Such a bias could decrease the reliability of the study, as it would not accurately reflect the diverse perspectives of the entire Dutch population.

Another limitation is the construction and validation of the survey. The phrasing of questions must be clear and unbiased to measure what they are intended to measure accurately. To ensure the survey's validity, it will undergo a review process by an expert and a pilot test with a small group of respondents. This step is essential to refine the survey, tackling any uncertainties or biases in the questions, which will in turn better the reliability of the data gathered.

1.8 Structure

This thesis is made up of five chapters. The first one is the *Introduction*, where the topic of this study is introduced. Moreover, the research question and sub-questions are formulated, and the possible ethical issues and limitations are discussed. The second chapter is the *Literature Review*, which discusses the theoretical framework, along with all the factors that are expected to influence the adoption intention of

cryptocurrency. This chapter answers the theoretical sub-questions and forms the hypotheses. The third chapter is the *Research Methodology*, which discusses the data collection and analysis methods used. The fourth chapter is the *Research Outcomes*, which discusses the results of the data analysis. The last chapter explains the *Conclusion & Recommendations* of this thesis, whilst answering the empirical sub-questions.

2 Literature review

2.1 Theoretical Framework

Investigating the intentions related to the adoption of cryptocurrency as an investment amongst people in the Netherlands, is a domain not fully explored. There are numerous theoretical frameworks that can be used to investigate this, such as the diffusion of innovation theory (DOI), the technology acceptance model (TAM), the theory of reasoned action (TRA), and the theory of planned behavior (TPB) (Claudy et al., 2015). These models are widely accepted and have been used to provide meaningful insights, particularly in the domain of technology adoption. However, these frameworks are criticized because they focus largely on the enablers of adoption, ignoring the barriers that hinder consumers (Claudy et al., 2015). This does not give a holistic picture of the barriers to adoption.

This thesis incorporates the Behavioral Reasoning Theory (BRT). BRT is a theoretical framework that allows an investigation into how both the “reasons for” adoption and “reasons against” adoption influence the intentions toward any innovation (Westaby, 2005b). What makes BRT unique from the other models, is that it also considers the “reasons against” adoption. According to Claudy et al. (2015), the “reasons against” resisting any innovation are not necessarily the opposite of the “reasons for” accepting that innovation, which is why it is important to take both into account. For example, the ease and potential of making high profits when investing in crypto could be “reasons for” adopting crypto. However, the high risks associated with this volatile currency can be a possible reason people tend to not invest in crypto.

Hence, to understand people’s intentions, it is important to examine both the “reasons for” and the “reasons against” adoption. BRT not only allows for this distinction between the “reasons for” and the “reasons against,” but it also presents important linkages between these reasons, values, attitudes, and behavioral intentions. These constructs identify determinants and assess the adoption intention of cryptocurrency as an investment in the Netherlands. The constructs and their relationship are represented in Figure 2.1 as a conceptual model.

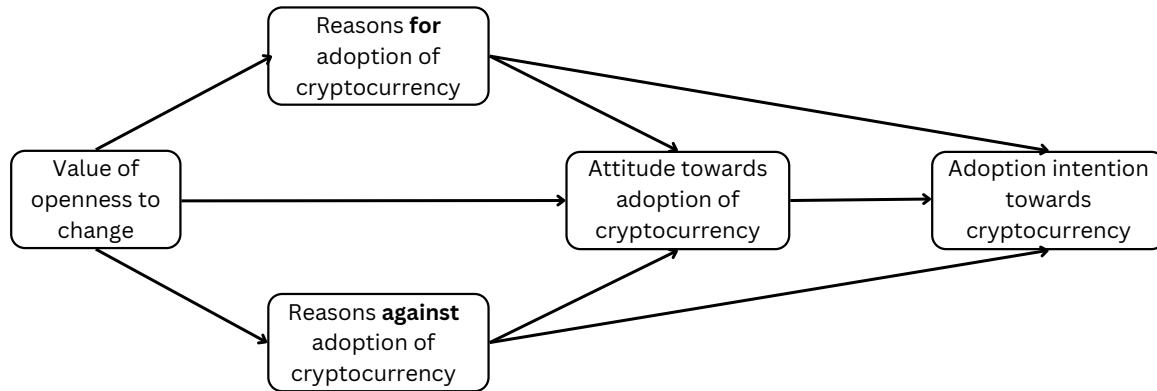


Figure 2.1: Proposed Model

2.2 Consumer attitudes on intentions

Attitude is generally understood as a person’s overall favorable or unfavorable evaluation of a specific entity (Westaby, 2005a). Established behavioral theories such as the Theory of Reasoned Action (TRA), Theory of Planned Behavior (TPB), and Technology Acceptance Model (TAM) suggest that attitude significantly influences an individual’s behavior. This is also supported by the Behavioral Reasoning Theory (BRT), which states that attitude is a key determinant of intentions because it can predict actions.

Studies have shown that intentions contribute to approximately 27% variance in behavior (Armitage & Conner, 2010) (Paschal & Sheeran, 2011). Attitude is defined as “a psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor” (Eagly, A. H., & Chaiken, S., 1993).

Research specifically related to the adoption of innovations in finance, like online banking and investing in socially responsible equity funds, indicates that favorable attitudes towards the innovation positively influence individual behavioral intention (Mobarak et al. 2022) (Mishra, Bansal, & Maurya, 2023). These findings also extend to research in the domain of cryptocurrencies, where existing literature suggests that consumers’ favorable attitudes have a positive influence on adoption intention (McMorrow, 2021). Therefore, it is essential to test the consumers’ favorable attitude toward cryptocurrency on behavioral intention. Hence, the following hypothesis is formulated:

H1: Consumer favorable attitudes toward cryptocurrency have a positive relationship with adoption intentions of cryptocurrency as an investment.

2.3 Reasons “for” and “against”

2.3.1 Reasons on attitude

Reasons are defined as “specific subjective factors people use to explain their anticipated behavior. (Westaby, 2005a)” The concept of reasons is often divided into two main categories by several psychological models: "reasons for" and "reasons against" doing a given behavior. “Reasons for” act as facilitators that create positive views among people about specific actions, whereas "reasons against" act as obstacles that may lead to negative views about those actions (Amandeep, 2021).

BRT suggests that reasons act as important connections between individuals’ values, attitudes, and intentions, and it hypothesizes that the relevant reasons influence the attitude toward the intentions (Amandeep, 2021). At the same time, Claudy et al. (2015) suggest that even when people hold a favorable attitude towards adoption, they may still choose not to adopt due to their “reasons against” adoption.

In the context of innovations in finance, Mobarak et al. (2022) found that people’s “reasons for” mobile payment adoption have a positive effect on their favorable attitude. On the contrast, “reasons against” have a negative effect on customers’ favorable attitude toward mobile banking adoption. A positive effect of “reasons for” on favorable attitude, and a negative effect of “reasons against” on favorable attitude was also found when socially responsible equity funds were studied (Mishra, Bansal, & Maurya, 2023).

Hence, it is deduced that relevant reasons “for” and “against” the adoption of cryptocurrency are expected to impact attitude formation. Therefore, this thesis formulates the following hypotheses:

H2a: Consumers’ “reasons for” have a positive relationship with their favorable attitude toward the adoption of cryptocurrencies.

H2b: Consumers’ “reasons against” have a negative relationship with their favorable attitude toward the adoption of cryptocurrencies.

2.3.2 Reasons on intentions

The literature on BRT suggests that there exists a relationship between reasons and a person’s behavioral intention. Westaby (2005b) stated that people feel more at ease to perform a certain action when they have enough reasons to justify doing it. According to the BRT, reasons explain intentions more than how attitudes explain those intentions, because reasons provide context-specific justifications.

For instance, one might have a favorable opinion about investing in cryptocurrency but might still decide not to adopt it due to the financial risks associated with it. In support of this, Mobarak et al. (2022) showed that there is truly a relationship between reasons and consumers' intentions to use mobile payment services. Hence, the following hypotheses are developed:

H3a: Consumers' "reasons for" positively influence the adoption intention of cryptocurrency.

H3b: Consumers' "reasons against" negatively influence the adoption intention of cryptocurrency.

2.4 Value of openness to change (VOC)

2.4.1 VOC on reasons

"Values are one important, and especially central component of our self and personality, distinct from attitudes, beliefs, norms, and traits" (Schwartz, 2012). Values are seen as a factor that influences motivation because they show the goals that an individual should pursue (Sivathanu, 2018). Consumers tend to adopt an innovation when they find that it matches their personal values (Claudy et al., 2015). This is why in the BRT model, values indirectly influence adoption intention through influencing the reasons for and against adoption.

This thesis will use openness to change as the value in the model of this thesis. The value of openness to change is characterized by an individual's ability to adapt their behavioral responses when encountering new circumstances or situations (Schwartz, 2012). Previous research has shown that there is a positive association between value (i.e., openness to change), and the "reasons for" adoption of m-banking (Gupta & Arora, 2017). Therefore, the following hypotheses are developed:

H4a: Consumers' VOC has a positive significant relationship with "reasons for" adoption of cryptocurrency.

H4b: Consumers' VOC has a negative significant relationship with "reasons against" the adoption of cryptocurrency.

2.4.2 VOC on attitude

According to BRT, the values of individuals influence their attitudes, because consumers can often be motivated by heuristics (Westaby, 2005b). In other words, individuals can form an attitude toward an entity depending on intuitive motives, without the need to explain their expected behavior. Values are expected to have direct effects on attitudes, without full mediation through reasons, because reasons may not be fully activated in some circumstances (Payne, et al., 1988). For example, some people may use their values to make decisions without fully thinking about the reasons that explain this anticipated behavior more deeply.

According to Schwartz (2012), values are critical motivators of attitudes, hence individuals with a high level of “openness to change” are more likely to try new technologies (Raajpoot & Sharma, 2006). Therefore, the following hypothesis is proposed:

H5: Consumers’ VOC has a positive influence on their favorable attitude formation toward cryptocurrency.

3 Research Methodology

3.1 Reasons extraction

In this thesis, the measures for the “reasons for” and “reasons against” investing in cryptocurrency were extracted with two methods. First, short interviews were conducted with three cryptocurrency experts to determine the enablers and barriers of the adoption decisions of digital coins. All three of these experts have many years of experience in cryptocurrency and work together in the same start-up which aims to help others invest in crypto. Therefore, it is clear that they all have a good knowledge of the subject and were able to provide their views and opinions regarding what makes them want to invest in crypto, and what they find to be the barriers of doing so.

Short interviews were also conducted with three people who know what cryptocurrency is but do not hold any. This allowed for a deeper dive into the reasons against cryptocurrency, which helped guide this thesis’ theoretical framework. This qualitative approach of face-to-face interviews using a semi-structured questionnaire allowed for a deep exploration into the reasons for and against cryptocurrency adoption, from the view of experts and novices.

The second way that the reasons were extracted is by studying existing literature to identify measures that overlapped with those suggested by the interview respondents. No studies could be found where the BRT model was used to explore the adoption intentions of cryptocurrency as an investment, therefore papers using other models were used. The reasons (for and against) in the BRT model largely resonate with the Unified Theory of Acceptance and Use of Technology (UTAUT) model. Therefore, papers that explored the adoption of cryptocurrency using the UTAUT model were used to extract the measures for the reasons in this thesis (McMorrow, 2021) (Ebizie, Nkamnebe, & Ojiaku, 2022) (Silinskyte, 2014) (Arias-Oliva, Pelegrín-Borondo, & Matías-Clavero, 2019).

Moreover, papers that explored the adoption of other innovations using the BRT model were also used to determine the measures of this thesis (Choudhary, Kaushik, Sivathanu, & Rana, 2024) (Gupta & Arora, 2017) (Mishra, Bansal, & Maurya, 2023). To elaborate, the measures used for the reasons (for and against) in this thesis are explained in Table 3.1. Now that the reasons have been derived, the full model used in this thesis can be seen in Figure 3.1.

Table 3.1: Operational definition of latent constructs

Latent construct	Definitions
Performance Expectancy (PE)	“It shows to what extent an individual believes that adopting this innovation will improve their ability to achieve goals.”
Effort Expectancy (EE)	“It shows how easy it will be for people adopt and use the innovation in question.”
Social Influence (SI)	“It shows the consumer’s view of what his/her friends, family, and other people they value think about adopting this innovation.”
Facilitating Conditions (FC)	“It shows how knowledgeable the user is in adopting this innovation, and how much support he/she can get if needed.”
Perceived Risk (PR)	“It is the unwillingness of consumers to adopt the innovation due to the negative consequences that come with it.”
Image Barrier (IB)	“It is a subjective dilemma that originates from stereotypical thinking and impedes the adoption and progress of the innovation.”
Value Barrier (VB)	“It represents the innovation’s value in terms of monetary value and efficacy.”

Notes: Definitions are derived from (Choudhary, Kaushik, Sivathanu, & Rana, 2024)

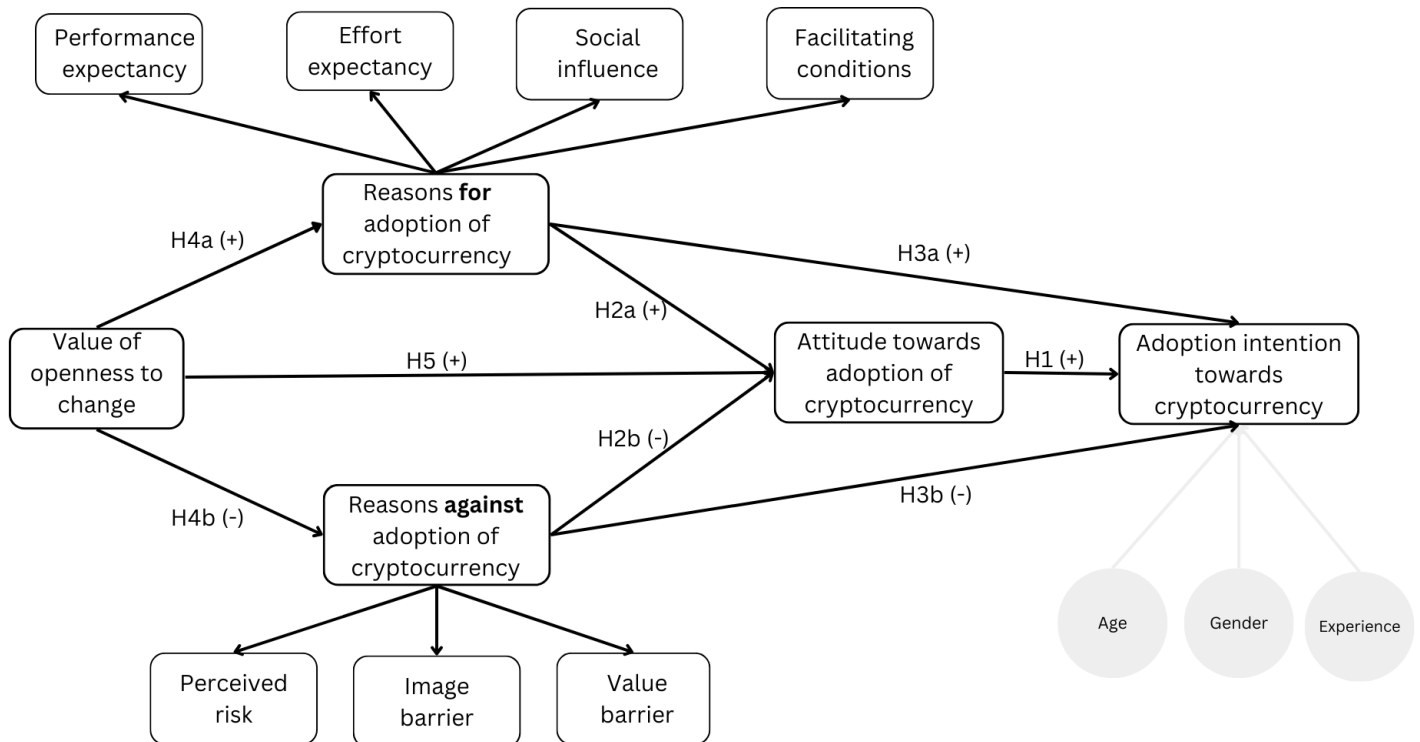


Figure 3.1: Full research model of this thesis

3.2 Qualitative and Quantitative Research

Within the scientific field, there are two types of research: quantitative and qualitative. According to Moser and Korstjens (2017), qualitative research focuses on gaining deep insights and understanding real-world issues. Usually, data is collected through discussions with others in a non-judgmental and open manner to discuss aspects of their behaviors, beliefs, and perceptions (Clark, 2009). Unlike quantitative research, it does not involve manipulating or measuring predefined variables through controlled treatments (Korstjens & Moser, 2017). A study by Aspers and Corte (2019) which aimed at defining qualitative research through an analysis of 89 sources, concluded that qualitative research is “an iterative process in which improved understanding to the scientific community is achieved by making new significant distinctions resulting from getting closer to the phenomenon studied.”

This thesis used quantitative research to explore the adoption intention of cryptocurrency because this is the research that would lead to determining whether the hypotheses formulated in the literature review would be rejected or not. Previous research has been done to measure the adoption intention of many innovations including cryptocurrency. Therefore, qualitative research was not necessary to determine how to measure adoption intention. By conducting quantitative research, it is possible to quantify and statistically analyze the variables that influence cryptocurrency adoption (Korstjens & Moser, 2017). This approach is suitable for testing theories and models that have already been supported through previous research. By employing a quantitative research methodology, this thesis aims to provide empirical evidence on factors impacting cryptocurrency adoption intentions, contributing to this sector with precise, data-driven insights.

3.3 Data Collection Method

The data collection methods of quantitative research produce results that are easy to summarize, compare, and generalize. This is achieved by fitting different experiences that people have into predetermined categories through different data-gathering strategies. Examples of such strategies are doing experiments, observing well-defined events and administering surveys with close-ended questions (Kabir, 2016).

The data collection method this thesis used is an online survey, because of several reasons. Firstly, surveys produce structured data that can be easily analyzed with statistical software. Secondly, online surveys can be distributed to many people in an easy manner for free, which is important for reaching people all over the Netherlands. Lastly, surveys allow for the standardization of questions because they ensure that all

participants respond to the same exact stimuli (Kabir, 2016). This is an important advantage of this data collection method, since this thesis aims to test hypotheses and examine relationships between variables on a larger scale. Hence, using an online survey as a data collection method in this research not only aligns with the quantitative nature of the study but is also an efficient way to collect large number of data easily.

The survey for this thesis was created on Qualtrics, an online tool that allows for the creation and distribution of surveys, and data collection of responses. The survey was first checked by two experts, one being the thesis supervisor, and the other being the founder of a start-up that focuses on giving guidance on crypto investments. The experts provided feedback on the survey and indicated that some questions were not clear and could be misinterpreted. After the feedback, the author adjusted these questions to ensure that they were detailed enough so that they can be understood correctly by everyone.

3.4 Survey

The survey is structured as follows; first, respondents were asked whether they had heard of the term “cryptocurrency” before. An ‘if function’ was used in Qualtrics to ensure that anyone who indicated that they never heard of that term before would not be asked any further questions in the survey. This is important because people who are not aware of what cryptocurrency is would not be suitable subjects to investigate its adoption. Subsequently, respondents were asked about age, gender, which province they live in, and how many years of experience they have investing in crypto. These variables were used to check whether the sample is representative of the population. Furthermore, these variables were used as control variables.

The next section of the survey consisted of several statements. Around three to four statements were used to measure each construct (VOC, ATT, AI,) and the constructs to measure RF (PI, SI, FC, EE) and RA (PR, VB, IB). For each of the statements, the participants could choose from (1) strongly disagree to (5) strongly agree, based on a five-point Likert scale. See Appendix 6.2 for a list of all the questions that were asked in the survey.

3.5 Research participants

Since this thesis has a specific target group, there are a few requirements that the participants needed to meet. The target group of this research is residents of the Netherlands, which is why one of the first questions

of the survey confirms this by asking which province they live in. The goal was to collect a sample that reflects the diversity of the Dutch population across all age groups. Surveys are very advantageous for this because they can be shared online to different places in the Netherlands, allowing people in all provinces to answer the survey on their own time. Generally, a larger sample size increases the representativeness of the results.

In the end, the sample was made up of 251 individuals. 32 of those individuals did not answer all of the questions asked in the survey, so they were removed from the sample. Also, 8 participants gave the wrong response to the control question, which tested whether they were truly reading the questions and answering them carefully. Their incorrect response shows that these people did not provide reliable answers, therefore they too were removed from the study. As a result, the final sample included 211 respondents. See Appendix 6.4 for the raw data collected from the survey.

The research used convenience and snowball sampling methods, which are both types of non-probability sampling (Valerio, et al., 2016). Convenience sampling took place when the author sent out the survey to individuals that she knows. Additionally, snowball sampling took place because the author asked those participants to send the survey to other people they knew who resided in the Netherlands too. The survey was sent out using different social media platforms, including WhatsApp, Instagram, LinkedIn, and Facebook, and data collection occurred from June 7, 2024, to June 15, 2024.

3.6 Data analysis

To prepare the data further than removing missing values and incorrect responders, dummy variables needed to be created for the control variables (age, gender, and experience). These dummy variables were made in Excel using if functions (see Appendix 6.3.3).

Firstly, the Cramer-von Mises test was employed to ensure the normality of the dataset. The data distribution was found to be non-normal because the p-values were all equal to zero (see Appendix 6.3.2). Because of this, the Partial Least Squares Structural Equation Modeling (PLS-SEM) was opted for as it provides robust results against non-normal distribution, in comparison to covariance-based SEM (Gaskin & Lowry, 2014).

PLS-SEM was chosen for this research, instead of regressions, because this method allows for a simultaneous comparison between the different relationships. According to Ramli et al., (2018) their research showed that when detecting mediation effects, PLS-SEM analyses provide less contradictory

results in comparison to regression analyses. The data for this thesis was therefore analyzed using the software SMART-PLS 4. The analysis was conducted in two phases: firstly, the reliability and validity of the constructs were examined, and then a path analysis was conducted to check the relationship between constructs.

The Cronbach's alpha test was performed to check the reliability of the survey. More specifically, it was employed to determine the composite reliability of the latent constructs (Vaske, Beaman, & Sponarski, 2016). The Cronbach's alpha was used because this test can measure if the Likert scale that has been used for each statement is reliable. To determine the validity of the constructs, the Average Variance Extracted (AVE) was computed. This was used because AVE helps in assessing the amount of variance that a latent construct captures from its indicators, in relation to the amount of variance due to measurement error (Shrestha, 2021). This step ensures that the constructs are both reliable and valid, thus providing a good foundation for further analysis to test the proposed hypotheses.

To test the proposed hypotheses, a path analysis was employed. Path analyses are used to estimate a system of equations where all variables are observed. Unlike regression models, path models can include multiple dependent variables (SMART PLS Editors, 2024). In SMART-PLS, there are two options for path analyses that can be used. This thesis will use the consistent PLS algorithm because the constructs used are reflective. Reflective constructs are ones where latent constructs cause the latent measure, and errors occur because of the inability to explain this measure fully (SMART PLS Editors, 2024). The consistent PLS algorithm is the correct option to use for the analysis in this thesis because it "performs a correction of reflective constructs' correlations to make results consistent with a factor-model (SMART PLS Editors, 2024)."

4 Research Outcomes

4.1 Demographic breakdown

The survey was fully completed, with the correct answer to the control question, by 211 respondents. Table 4.1 presents a demographic breakdown comparing the survey respondents with the general Dutch population in terms of age, gender, and province. From this comparison, certain demographic discrepancies are evident between the survey sample and the overall population. Experience with investing in cryptocurrency is another variable present in this table, but data could not be found to compare the survey results with the general Dutch population.

Table 4.1: Demographic Breakdown

Variable	Category	Survey respondents N=211		Dutch Population N ₂₀₂₄ =17,951,000 (year 2024) N ₂₀₂₃ =17,811,000 (year 2023)	
		Frequency	Percentage	Frequency	Percentage
Age	18-27	114	54,03%	2,319,000	24.51%
	28-43	54	25,59%	3,371,000	35.62%
	44-59	43	20,38%	3,773,000	39.87%
Gender	Male	112	53,08%	8,850,286	49.69%
	Female	99	46,92%	8,960,714	50.31%
Province	South-Holland	112	53,08%	3,804,906	21.36%
	North-Holland	60	28,43%	2,952,622	16.57%
	Utrecht	20	9,48%	1,387,643	7.79%
	Other	19	9,00%	9,665,829	45.72%
Experience	none	108	51,18%		
	less than 1	44	20,85%		
	between 1 and 4	24	11,37%		
	more than 4	35	16,59%		

Notes: The frequency and percentage of the Age variable for the Dutch population is calculated using the 2024 data, whereas the Gender and Province variables use the 2023 data for the Netherlands. (CBS, 2024) (World Bank, 2023) (Statista Research Department, 2024)

In terms of gender distribution, the sample is fairly balanced, with males taking up a bit more of the total respondents. This closely mirrors gender proportions in the broader Dutch population, although there are a bit more females there. The gender distribution of the sample in this thesis is very representative of that of the broader Dutch population.

Another variable is age, which was categorized by generations (Gen Z, Millennials, Gen X). For the purpose of this thesis, only people who are 18 years old and above were considered because this is the minimum age from which people can invest in cryptocurrencies themselves. The age distribution within the sample is heavily skewed towards younger age groups, with 54.03% of respondents falling within the 18-27 age category, which is notably higher than the 24.51% representation within the general population. This overrepresentation of younger individuals might affect the generalizability of the findings, as younger individuals could have different perceptions and attitudes towards cryptocurrency, in comparison to older age groups.

Another demographic factor that was asked for in the survey was the province that the respondent lives in. This not only ensured that the respondents live in the Netherlands, but it also worked as a way to check how representative of the whole Dutch population the data is. It turns out that most respondents reside in South-Holland, and that responses were not collected from each of the twelve Dutch provinces. Similarly to the age variable, the sample exhibits an imbalance in geographic distribution. A majority of respondents live in South-Holland, making up 53.08% of the sample compared to only 21.36% of the province's share in the Dutch population. This geographic concentration could introduce biases related to regional economic conditions or cultural attitudes towards technology and investment that are not representative of other regions.

The experience that the respondents have with cryptocurrency investments was another factor that was asked of them in the survey. This was categorized into four groups: none (51.18%), less than one year (20.85%), between one and four years (11.37%), and more than four years (16.59%). The distribution of people who have experience in crypto and those who have none is quite balanced, which captures both the viewpoints of seasoned investors and newcomers.

Based on the demographic breakdown, it can be concluded that the average respondent is from South-Holland between 18 and 28 years old. The gender and whether they have experience with crypto or not is quite equally balanced. This profile is the average because the survey was spread among the author's acquaintances, therefore they have the same age and live in the same province as the author. The findings are thus best interpreted as indicative of trends among young people who primarily reside in South-Holland, rather than the Dutch population as a whole.

4.2 Descriptive statistics

Table 4.2 presents the descriptive statistics for each construct. It shows that every construct has a minimum of one and a maximum of five just like the Likert scale used, except for the first indicator of perceived risk (PR1) which has a minimum of 2. This is because none of the 211 people who answered, strongly disagreed with the statement that investing in cryptocurrency is risky. The table also shows the median for each of the indicators. As previously established by the Cramer-von Mises p-value, the data collected is non-normal, therefore this plays a role in which descriptive statistics can be interpreted. Means can be misleading for non-normal data because they can be highly influenced by extreme values (Sainani, 2012). This makes the median a better summary measure for this type of data, therefore only the median will be interpreted.

Most constructs have medians around 3, which shows that around half the participants agree and the other half disagree with the statements. However, when looking at perceived risk, the medians of PR1 and PR2 are 4, and the median of PR3 is 5. This shows that the majority of the respondents perceive cryptocurrencies to be a highly risky investment option because they agree with the statements.

Table 4.2: Descriptive Statistics (see Appendix 6. 3.2 for the full descriptive statistics)

Construct	Indicator	Median	Observed min	Observed max
Performance expectancy	PE1	3.000	1.000	5.000
	PE2	3.000	1.000	5.000
	PE3	4.000	1.000	5.000
Social Influence	SI1	3.000	1.000	5.000
	SI2	3.000	1.000	5.000
	SI3	4.000	1.000	5.000
	SI4	3.000	1.000	5.000
Facilitating Conditions	FC1	3.000	1.000	5.000
	FC2	4.000	1.000	5.000
	FC3	4.000	1.000	5.000
Effort expectancy	EE1	4.000	1.000	5.000
	EE2	4.000	1.000	5.000
	EE3	3.000	1.000	5.000
Perceived Risk	PR1	4.000	2.000	5.000
	PR2	4.000	1.000	5.000
	PR3	5.000	1.000	5.000

	VB1	3.000	1.000	5.000
Value Barrier	VB2	3.000	1.000	5.000
	VB3	3.000	1.000	5.000
	IB1	2.000	1.000	5.000
Image Barrier	IB2	3.000	1.000	5.000
	IB3	3.000	1.000	5.000
	VOC1	4.000	1.000	5.000
Value of Openness to Change	VOC2	4.000	1.000	5.000
	VOC3	4.000	1.000	5.000
	ATT1	4.000	1.000	5.000
Attitude	ATT2	3.000	1.000	5.000
	ATT3	3.000	1.000	5.000
	AI1	4.000	1.000	5.000
Adoption Intention	AI2	3.000	1.000	5.000
	AI3	3.000	1.000	5.000

4.3 Reliability

The answers collected from the respondents of the survey must be internally consistent and reliable to draw accurate conclusions. Since each construct was measured using several indicators, it is important to ensure that they all measure the same thing and correlate with one another. To determine this, the Cronbach's Alpha test was done (see Table 4.3). In this test, an alpha of 0.65 is considered sufficient, but an alpha of 0.8 is recommended as good (Vaske, Beaman, & Sponarski, 2016). As shown in Table 4.3, all of the constructs have an alpha greater than 0.8, which shows that the statements that measure the same construct correlate with each other and are reliable.

A more accurate way of measuring reliability in SEM is the Composite Reliability (ρ_c). According to Hair et al. (2022), this test produces more rigorous estimates, taking into account the number of indicators and the variance extracted. It is often considered to be a more accurate measure in comparison to Cronbach's Alpha because it accounts for the different factor loadings of the indicators. In this test, a ρ_c greater than 0.7 is generally considered to be good reliability (Hair et al., 2022). As shown in Table 4.3, all constructs have a ρ_c greater than 0.7, which shows that the constructs used to measure each construct are once again, highly reliable.

The Outer Loadings (OL) were also calculated to determine the reliability of all indicators. Looking at Table 4.3, the OL values showed adequate indicator reliability for all constructs as the values of most of the indicators surpassed 0.70 (Hair, 2022). However, within the “reasons against” (RA) construct, the three measures of Perceived Risk (PR) did not fulfill the criteria, as their values are lower than 0.7. Due to this, the author of this thesis decided to remove the PR measures from the model and run the PLS SEM analysis again, to determine whether the alpha and CR improve. It was found that none of the two numbers improved, and since they are already well above their respective thresholds, it was decided to keep the PR indicators.

4.4 Validity

It is also important to check the validity of the answers given in the survey (see Table 4.3). Valid results mean that the data accurately reflects the respondents' true opinions, related to the questions, and they help ensure that the conclusions drawn from the research are based on accurate and relevant information, making it crucial to have (Shrestha, 2021). This thesis will check convergent validity and discriminant validity.

Convergent validity is used to measure the level of correlation of many indicators of the same construct that agree (Chin & Yao, 2021). To check this validity, the Average Variance Extracted (AVE) test was done. AVE is a measure of how much variance in the indicators is explained by the constructs in relation to the variance due to measurement error. A value larger than 0.5 is considered to be good validity (Shrestha, 2021). As shown in Table 4.3, the constructs AI, ATT, and VOC have AVE values of 0.899, 0.922, and 0.837 respectively, which are all well above the threshold of 0.5. This suggests that a large proportion of the variance in these constructs is due to the constructs themselves rather than measurement error, confirming strong convergent validity. On the contrary, RA and RF with AVE of 0.587 and 0.672, although above 0.5, indicate moderate validity, suggesting they might be affected by some measurement error.

Discriminant validity was also checked. This validity is used to show that measures that should not be related, are in reality, not related (Hamid, Sami, & Sidek, 2017). There are several ways to check this in SMART PLS4, but the Heterotrait-Monotrait ratio of correlations (HTMT) was chosen. This is because Henseler et al. (2014) proved through a simulation study that the other approaches to determine discriminant validity (Fornell-Larcker criterion and the analysis of cross-loadings) do not reliably detect it due to their low sensitivity. Therefore, they proposed the HTMT as an alternative approach to assess discriminant validity. Gold and Malhotra (2001) showed that the required threshold for this test is that the HTMT values are below 0.9. Based on the results in Table 4.3, half of the values exceed this threshold, suggesting that there might be significant overlap among the constructs. This could indicate issues with discriminant

validity, meaning that these constructs (AI&ATT, AI&RA, AI&RF, ATT&RF, ATT&RA) may not be as distinct from each other as required for a robust analysis.

Table 4.3 Reliability and Validity results (see Appendix 6.3.4 for SMART-PLS output)

Constructs	Loading	OL	alpha	CR	AVE	Discriminant Validity (HTMT)				
						AI	ATT	RA	RF	VOC
Adoption Intention (AI)	AI1	0.960	0.944	0.964	0.899	0.994				
	AI2	0.962								
	AI3	0.921								
Attitude (ATT)	ATT1	0.963	0.958	0.973	0.922	0.994				
	ATT2	0.952								
	ATT3	0.966								
Reasons For (RF)	EE1	0.794	0.894	0.917	0.587	0.920	0.922			
	EE2	0.828								
	EE3	0.748								
	FC1	0.880								
	FC2	0.752								
	FC3	0.811								
	PE1	0.837								
	PE2	0.831								
	PE3	0.811								
	SI1	0.860								
	SI2	0.847								
	SI3	0.787								
SI4	0.862									
Reasons Against (RA)	IB1	0.901	0.959	0.964	0.672	0.957	0.922	0.885		
	IB2	0.938								
	IB3	0.747								
	PR1	0.419								
	PR2	0.494								
	PR3	0.136								
Value of Oppeness to Change (VOC)	VB1	0.910	0.903	0.939	0.837	0.824	0.785	0.702	0.853	
	VB2	0.941								
	VB3	0.936								
Value of Oppeness to Change (VOC)	VOC1	0.887	0.903	0.939	0.837	0.824	0.785	0.702	0.853	
	VOC2	0.933								
	VOC3	0.924								

4.5 Hypothesis testing

The findings from earlier sections show that the data collected is a good fit for the model created for this thesis. This means that it is good enough for further analyses such as hypothesis testing. Hypothesis testing is a way to evaluate relationships between variables. The assessment of these relationships was done using PLS-SEM path analysis.

The structural model, in addition to the hypotheses explained in the literature review, also included several control variables that may influence the AI of crypto. Age, gender, and crypto investment experience are the control variables that were also examined to illustrate their relationship with AI. The results in Appendix 6.3.6 reveal that all three control variables were insignificant, suggesting that neither gender, age nor experience have a significant influence on the adoption intention of cryptocurrency as an investment.

The R-squared values, which show the overall effect size measure for the structural model, were also calculated for each of the exogenous constructs. According to Hair et al. (2022), the R-Square values of adoption intention (AI) and attitude (ATT) are substantial, whilst for “reasons for” (RF) it is moderate, and for “reasons against” (RA) it is weak (see appendix 6.3.7). This is based on the thresholds of R² values of 0.75, 0.50, or 0.25 which can be respectively described as substantial, moderate, or weak (Hair et al., 2022). A weak R-squared for RA means that the model in this thesis does not include all constructs that are associated with the outcome. This shows that there is area for improvement, however, studies that attempt to predict human behavior generally have R-squared values less than 50%, because people are hard to predict (Frost, 2018). Since a low R-squared value does not affect the interpretation of associations between constructs, hypothesis testing can be conducted (Frost, 2018).

Table 4.4 shows the hypothesis testing and effect size of each of the eight hypotheses (see Appendix 6.3.7 for the full SMART-PLS output). More specifically, it shows the f-squared (f^2) values of each path, which measure the change in R-squared (R^2) when the variable is removed from the model. The f^2 helps measure the size of a specific effect, and according to Cohen (1988), an f^2 larger than 0.02, 0.15, and 0.35 shows an effect size of small, medium, and large respectively. Hypothesis testing was performed on SMART-PLS4 by calculating the standardized path coefficients of the relationship in each hypothesis. The significance of these relationships was determined by assessing the p-values, where a p-value below 0.05 is considered significant.

Table 4.4: Hypothesis tests and effect sizes

Hypothesis	Path	f^2	Effect size	Path coefficient (β)	Results
H1	ATT -> AI	0.560	Large	0.563***	Supported
H2a	RF -> ATT	0.122	Small	0.317***	Supported
H2b	RA -> ATT	0.571	Large	-0.566***	Supported
H3a	RF -> AI	0.240	Medium	0.316***	Supported
H3b	RA -> AI	0.025	Small	-0.112*	Supported
H4a	VOC -> RF	1.691	Large	0.793***	Supported
H4b	VOC -> RA	0.834	Large	-0.674***	Supported
H5	VOC -> ATT	0.028	Small	0.099	Not supported

Note: f^2 : 0.02, small; 0.15, medium; 0.35, large

Significance level where, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

4.5.1 Consumer attitudes on intentions

Hypothesis 1 states that consumers' favorable attitudes toward cryptocurrency have a positive relationship with the adoption intention towards cryptocurrency as an investment. Looking at Table 4.4, this hypothesis holds because its path coefficient of 0.563 is positive and significant at the 0.1% level. This means that the adoption intention of cryptocurrency increases by 0.563 on average when the consumer's favorable attitude towards cryptocurrency increases by 1 point on the Likert Scale. Additionally, the f-squared value indicates that the effect of attitude on adoption intention is large since its value of 0.560 exceeds the 0.35 threshold.

4.5.2 Reasons on attitude

Hypothesis 2a states that consumers' "reasons for" cryptocurrency adoption have a positive relationship with their favorable attitude toward cryptocurrency adoption. This hypothesis is supported because the path coefficient ($\beta=0.317$) and the p-value ($p<0.001$) show a positive a significant relationship. The f-squared ($f^2=0.122$) shows that the effect of "reasons for" on attitude is quite small since it does not exceed 0.15. Therefore, it can be concluded that the "reasons for" adoption of cryptocurrency (performance expectancy, effort expectancy social influence, facilitating conditions), have a small and positive relationship with a favorable attitude towards the adoption of cryptocurrency, hence hypothesis 2a is supported.

Looking now at hypothesis 2b, it states that consumers' "reasons against" have a negative relationship with their favorable attitude toward the adoption of cryptocurrencies. The results in Table 4.4 support this hypothesis as they show a p-value smaller than 0.001, and a negative path coefficient of -0.566. This means that there is a negative and statistically significant relationship between the "reasons against" (perceived risk, image barrier, value barrier) and favorable attitude, hence hypothesis 2b is supported. Moreover, the relationship has a large effect size, as indicated by the f-squared of 0.571.

4.5.3 Reasons on adoption intention

Hypothesis 3a states that consumers' "reasons for" have a positive relationship with the adoption intention of cryptocurrency. After performing the hypothesis testing, it was found that this hypothesis is in fact accepted in this thesis. This is due to the results in Table 4.4 which show a positive and statistically significant path coefficient of 0.316 between "reasons for" and adoption intention towards cryptocurrency. Moreover, the relationship has a medium effect size, as indicated by the f-squared of 0.240.

Hypothesis 3b which states that consumer's "reasons against" have a negative relationship with the adoption intention of cryptocurrency, is also supported. A negative path coefficient of -0.112 resulted from the hypothesis testing, and the p-value of this path is below 0.05. Therefore, "reasons against" and adoption intention have a statistically significant relationship at the 5% level, and hypothesis 3b is supported.

4.5.4 Value of openness to change (VOC) on reasons

Hypothesis 4a states that consumers' VOC has a positive significant relationship with "reasons for" adoption of cryptocurrency. Looking at Table 4.4, this hypothesis is accepted because its path coefficient of 0.793 is positive and significant at the 0.1% level. This means that the "reasons for" adoption of cryptocurrency increase by 0.793 when the consumer's VOC increases by 1 point on the five-point Likert Scale. Additionally, the f-squared indicates that the effect of VOC on the "reasons for" is large, since its value of 1.691 greatly exceeds the 0.35 threshold.

Hypothesis 4b states that consumers' VOC has a negative significant relationship with "reasons against" the adoption of cryptocurrency. After performing the hypothesis testing, it was found that this hypothesis is in fact accepted. This is due to the results in Table 4.4 which show a negative and statistically significant path coefficient of -0.674 between VOC and "reasons against" adoption of cryptocurrency. Moreover, this relationship has a large effect size, as indicated by the f-squared of 0.834.

4.5.5 Value of openness (VOC) to change on attitude

The last hypothesis (5) states that consumers' VOC has a positive effect on their favorable attitude formation toward cryptocurrency. Although a positive path coefficient of 0.099 resulted from the hypothesis testing, the p-value of this path is not below 0.05, it is 0.064 (see appendix 6.3.6). Therefore, VOC and favorable attitudes towards cryptocurrency adoption don't have a statistically significant relationship at the 5% level, and hypothesis 5 cannot be supported.

4.6 Key research outcomes

The results of this thesis show that the BRT was, to a large extent, a good model to explore the adoption intention of cryptocurrency as an investment amongst citizens of the Netherlands. This is because seven of the eight hypotheses derived from this model were supported in this thesis. More specifically, the main results showed that adoption intention towards cryptocurrency as an investment is influenced positively by favorable attitudes towards cryptocurrency (H1) and "reasons for" adoption of cryptocurrency (H3a), and is influenced negatively by "reasons against" cryptocurrency adoption (H3b). Additionally, "reasons for" have a positive influence on the favorable attitude towards the adoption of cryptocurrency (H2a), and "reasons against" have a negative effect (H2b) on the attitude towards the adoption of cryptocurrency. This shows that reasons "for" and "against" have an indirect effect of 0.179 and -0.319 on adoption intention, through attitude (see Appendix 6.3.10).

This thesis also explored whether adoption intention towards cryptocurrency is influenced by the value of openness to change (VOC). The hypothesis testing revealed that VOC has a positive influence on "reasons for" (H4a) and a negative influence on "reasons against" (H4b). This shows that VOC has an indirect effect on adoption intention towards cryptocurrency, through reasons "for" and "against" adoption intention of cryptocurrency (see appendix 6.3.10). Literature suggests that VOC affects adoption intention indirectly, because VOC influences favorable attitudes towards adoption (H5). However, the hypothesis test performed in this study resulted in a statistically insignificant relationship between VOC and attitude, hence H5 was not supported. Therefore, the results bring us to the conclusion that while VOC impacts adoption intentions indirectly through reasons (for and against), it does not impact the adoption intention of cryptocurrency through favorable attitudes.

5 Conclusion & Recommendations

5.1 Main findings of the literature

Examining consumers' adoption intention towards cryptocurrency as an investment is an area with much yet to be uncovered. Studies have shown that "intentions contribute to approximately 27% of the variance in behavior", making intentions important to study to understand some parts of behaviors (Armitage & Conner, 2010) (Paschal & Sheeran, 2011).

Various theoretical frameworks have been traditionally used to understand the adoption intentions of different innovations and technologies, but the BRT is the one that does not overlook how potential barriers (reasons against) can also affect such adoption. The BRT model has not yet been used to examine the adoption intention of cryptocurrency as an investment. Therefore, this thesis incorporated BRT, which addresses both the "reasons for" and "reasons against" adopting an innovation, as well as values, and attitudes, as factors that may influence the adoption intention of cryptocurrencies as an investment amongst the Dutch population.

People's adoption intentions can be influenced by many factors, one being a person's attitude toward that innovation. Numerous behavioral theories including the BRT, suggest that consumers' favorable attitudes towards an innovation have a positive influence on their adoption intention. In the context of cryptocurrencies, this was found to be true by McMorrow (2021) who used the UTAUT model and discovered that consumers' favorable attitudes towards cryptocurrency do in fact have a positive influence on adoption intention.

Another factor that the BRT suggests can influence the adoption intention of innovations is the reasons people have for and against adopting that innovation. According to Westaby (2005a), "reasons for" influence attitude and adoption intention positively, whilst "reasons against" have a negative influence on attitude and adoption intention. In support of this, Mobarak et al. (2022) used the BRT in their study and found that people's "reasons for" mobile payment adoption have a positive effect on their favorable attitude as well as their adoption intention. Additionally, that study's results also showed that "reasons against" have a negative effect on customers' favorable attitude and their adoption intention toward mobile banking adoption.

Lastly, people's values are another factor that the BRT suggests may affect the adoption intention of cryptocurrency as an investment. Values are regarded as a source of motivation because consumers tend to

adopt an innovation when they find it to be compatible with their personal values (Claudy et al., 2015). A study by Gupta & Arora (2017) found that people's value of openness to change influences "reasons for" adoption of m-banking positively, "reasons against" adoption of m-banking negatively, and favorable attitudes towards the adoption of m-banking positively.

Therefore, it can be concluded from the literature that people's favorable attitudes toward an innovation, their reasons (for and against) adopting that innovation, and their value of openness to change, all influence their adoption intention. More specifically, the literature found that people's "reasons for" adoption of cryptocurrency can be comprised of their performance expectancy, effort expectancy, social influence, and facilitating conditions. On the other hand, their "reasons against" adoption of cryptocurrency can be comprised of perceived risk, image barrier, and value barrier.

5.2 Main findings of the research

The main findings of this research emerged from the PLS-SEM that was performed on the data collected through the survey. The first hypothesis stated that consumers' favorable attitudes towards cryptocurrency have a positive influence on their intentions to adopt it as an investment. The results of the PLS-SEM revealed a positive and significant path coefficient, and a large effect size of attitude on adoption intentions, which confirmed the first hypothesis.

Hypothesis 2 was split into two hypotheses, 2a and 2b. Hypothesis 2a stated that consumers' "reasons for" adopting cryptocurrency positively influence their favorable attitudes towards its adoption, and on the contrary, hypothesis 2b stated that "reasons against" adopting cryptocurrency negatively influence their favorable attitudes towards its adoption. The findings showed that both hypotheses were supported with significant positive and negative path coefficients respectively.

Hypothesis 3 was also split into two hypotheses, 3a and 3b. Hypothesis 3a stated that consumers' "reasons for" adopting cryptocurrency positively influence their adoption intention towards cryptocurrency, and hypothesis 2b stated that "reasons against" adopting cryptocurrency negatively influence their adoption intention towards cryptocurrency. The findings showed that both hypotheses were supported with significant positive and negative path coefficients respectively.

The fourth hypothesis, split in 4a and 4b, stated that the value of openness to change influences "reasons for" and "reasons against" positively and negatively respectively. Both hypotheses were accepted in this

research since the path coefficients resulting from the PLS-SEM were significant and in the correct direction.

The last hypothesis (H5) which stated that VOC positively influences favorable attitudes toward cryptocurrency was not supported. Despite expectations, the relationship was not statistically significant, indicating that being open to change does not directly translate into more favorable attitudes toward cryptocurrency. This result suggests that other values may mediate or override the impact of openness to change on attitudes toward cryptocurrency.

5.3 Comparing literature and research

The existing literature and the results of this research show differences and similarities. The difference between the results of this study and the literature concerns the impact of openness to change on attitudes toward cryptocurrency adoption. Gupta & Arora (2017) found that the value of openness to change has a positive influence on consumers' favorable attitude towards adopting new technologies, and by affecting attitude, they derived that it indirectly influences adoption intention as well. Therefore the fifth hypothesis was formulated, and it stated that consumers' VOC has a positive relationship with attitude formation toward cryptocurrency. However, the results of this hypothesis were insignificant, and therefore the hypothesis could not be accepted.

Besides the differences, there are also many similarities between the literature and this research. This thesis showed that people's favorable attitudes toward an innovation, and their reasons (for and against) adopting that innovation, are all factors that influence their adoption intention directly. These results correspond to the literature findings, leading to the hypotheses being supported. The value of openness to change was only found to influence adoption intention indirectly, through influencing "reasons for" positively, and "reasons against" negatively.

5.4 Answering the research question

Table 5.1 shows an overview of which hypotheses have been supported and which have not been supported. After doing this, the research question "*What are the fundamental factors that influence the adoption intention towards cryptocurrency as an investment in the Netherlands?*" can be answered. The results showed that adoption intention towards cryptocurrency as an investment is influenced by several factors.

One's favorable attitude towards cryptocurrency directly influences its adoption intention positively. The "reasons for" the adoption of cryptocurrency (performance expectancy, effort expectancy, social influence, facilitating conditions) have a direct and positive effect on adoption intention towards cryptocurrency. As expected, the "reasons against" (perceived risk, image barrier, value barrier) have a direct and negative influence on the adoption intention towards cryptocurrency. Similarly, the reasons "for" and "against" also influence adoption intention indirectly, because they affect people's favorable attitudes positively and negatively respectively.

Moreover, the value of openness to change has an indirect effect on adoption intention towards cryptocurrency. This indirect effect can be confirmed in this research because it was found that the value of openness to change influences the "reasons for" positively, and the "reasons against" negatively. However, unlike what previous studies have shown, the value of openness to change did not have a significant effect on people's attitudes toward the adoption of cryptocurrency. Therefore, it cannot be inferred that value of openness to change positively affects adoption intention towards cryptocurrency through affecting people's attitudes, but rather through influencing their reasons for and against cryptocurrency adoption.

Table 5.1 Hypotheses Supported/Not Supported

Hypothesis		Results
H1	Consumer attitudes towards cryptocurrency have a positive relationship with adoption intentions of cryptocurrency as an investment.	Supported
H2a	Consumers' "reasons for" have a positive relationship with their favorable attitude toward adoption of cryptocurrencies.	Supported
H2b	Consumers' "reasons against" have a negative relationship with their favorable attitude toward adoption of cryptocurrencies.	Supported
H3a	Consumers' "reasons for" have a positive relationship with the adoption intention of cryptocurrency.	Supported
H3b	Consumers' "reasons against" have a negative relationship with the adoption intention of cryptocurrency.	Supported
H4a	Consumers' VOC has a positive significant relationship with "reasons for" adoption of cryptocurrency.	Supported
H4b	Consumers' VOC have a negative significant relationship with "reasons against" adoption of cryptocurrency.	Supported
H5	Consumers' VOC has a positive relationship with favorable attitude formation toward cryptocurrency.	Not supported

5.5 Recommendations for cryptocurrency marketers

The findings of this study can offer valuable insights to help cryptocurrency marketers market virtual currencies effectively. The results can help them focus on the factors that drive people's intentions to invest in cryptocurrency when marketing cryptocurrencies to the mass population.

Firstly, since this study found that “reasons for” cryptocurrency adoption have a positive influence on people’s adoption intentions and attitudes, those can be addressed. It is recommended that cryptocurrency marketers appeal to people’s performance expectancy (PE) by highlighting how investing in cryptocurrencies can be a successful way to achieve financial goals more efficiently. Additionally, they can leverage the effect that social influence (SI) has on adoption intention, and put more effort into collaborating with prominent figures in the finance industry. This study also recommends that cryptocurrency marketers reduce the effort expected (EE) by people to invest in cryptocurrencies by marketing the digital assets as easy to invest in. This will also help people feel that they have the facilitating conditions (FC) to invest in cryptocurrency.

This study also found that the “reasons against” adopting cryptocurrency have a negative influence on people’s adoption intentions. Therefore, it would benefit cryptocurrency marketers to address those reasons by appealing to the concerns related to perceived risk (PR), value barrier (VB), and image barrier (IB). For instance, they can clearly address the demystifying aspects of investing in cryptocurrency. Additionally, they can address misconceptions about cryptocurrencies in order to enhance their image and further appeal to investors who are hesitant to adopt them.

Since the results showed that people’s reasons for and against cryptocurrency adoption are influenced by their value of openness to change, marketers could also appeal to this value in an effort to drive their intention to invest in cryptocurrency. They can do this by showcasing the innovative aspects of blockchain technology and emphasizing how embracing such innovations can lead to significant financial and technological advancements. Promotional efforts might include educational campaigns that explain how cryptocurrencies work and highlight their potential for long-term investment growth and stability, aligning with the progressive values of those open to new technologies and investment approaches.

5.6 Limitations and recommendations for future research

This study has provided significant insights into the factors influencing cryptocurrency adoption in the Netherlands. However, several limitations must be acknowledged. The sample size of this study is small relative to the actual population of the Netherlands. This limits the generalizability of the findings. With a total of 211 respondents, the study provides initial insights but may not capture the full diversity of opinions and behaviors present in the broader population. Furthermore, the sample's representativeness is questionable as it primarily includes younger individuals from South-Holland, potentially skewing results toward the attitudes and experiences of younger people in this region. Future studies should aim for a larger and more diverse sample that better represents the demographics of the entire country. This would help understand regional differences and the impact of various demographic factors on cryptocurrency adoption.

Another limitation is that the sampling method used in this study was non-probability sampling. This is because the survey was mostly distributed among the author's own family and friends. This might introduce bias as it does not give all individuals in the target population, the Netherlands, an equal chance of answering the survey. This can affect the external validity of the findings, making it difficult to generalize the results to the entire population of the Netherlands. Non-response bias is another potential limitation, as the views of those who chose not to participate might differ significantly from those who did. This bias can impact the conclusions drawn about the overall perceptions and attitudes towards cryptocurrency.

Another limitation is that the results in this thesis showed potential issues with discriminant validity. The HTMT results showed that the constructs (AI&ATT, AI&RA, AI&RF, ATT&RF, ATT&RA) may not be as distinct from each other as required for a robust analysis. To solve this problem, future studies should explore additional constructs, so that the ones that are not satisfying the discriminant validity can be removed without hindering the whole model.

It is also recommended that future research explores additional latent constructs for "reasons for" and "reasons against." This is especially important for the "reasons against" because this construct had a low R-squared value, meaning that the model in this thesis does not include all constructs that are associated with the outcome. Additionally, future researchers should add more control variables in their model such as personal financial status, as this may impact people's views towards cryptocurrency adoption. Moreover, while openness to change was the value examined in this study, other values such as security consciousness, privacy concerns, or tech-savviness could significantly impact cryptocurrency adoption. Future research could explore how these other values may too influence adoption intentions towards cryptocurrency by influencing their reasons and attitudes toward adoption.

6 Appendices

6.1 References

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6.2 Survey questions

What is your gender?

- Male
- Female
- Non-binary/third gender
- Prefer not to say

What is your age?

Which province do you live in?

- Groningen
- Friesland
- Drenthe
- Overijssel
- Gelderland
- North-Holland
- South-Holland
- Utrecht
- Noord-Brabant
- Zeeland
- Flevoland
- Limburg

Have you heard of the term "cryptocurrency" before?

- Yes
- No

How many years of experience do you have investing in cryptocurrencies? (even if you only bought a very small amount)

- None
- Less than 1 year
- More than 1 year, but less than 4
- 4 years or more

Please indicate to what extent you agree or disagree with each of the following statements.

Construct	Items
Reasons for (FA)	Performance Investing in cryptocurrencies will increase opportunities to achieve important goals for me
	expectancy (PI) Investing in cryptocurrencies will help me achieve my goals more quickly
	Investing in cryptocurrencies will increase my standard of living

Social Influence (SI)	My family and friends think that I should invest in cryptocurrencies The people who influence me will think that I should invest in cryptocurrencies People whose opinions I value would like me to invest in cryptocurrencies
Facilitating conditions (FC)	I have the necessary resources to invest in cryptocurrencies I have the necessary knowledge to invest in cryptocurrencies I can get help if I have difficulty investing in cryptocurrencies It is (will be) easy for me to learn how to invest in cryptocurrencies
Effort Expectancy (EE)	Investing in cryptocurrencies is (will be) clear and understandable for me It is (will be) easy for me to invest in cryptocurrencies It is (will be) easy for me to become an expert in cryptocurrency investments

Reasons against (RA)

Perceived risk (PR)	Investing in cryptocurrencies is risky There is too much uncertainty associated with investing in cryptocurrencies Compared with other investments, cryptocurrencies are riskier
Value Barrier (VB)	Investing in cryptocurrencies does not provide enough benefits to me The costs and risks of investing in cryptocurrencies outweigh the potential gains Investing in cryptocurrencies is not worthwhile opportunity for me, given the potential benefits and risks involved.
Image Barrier (IB)	I do not think positively of cryptocurrencies I have a negative image of cryptocurrencies, in comparison to other financial assets. The image of cryptocurrencies in my mind is complex

Value of Openness to Change (VOC)

I always look for new investment opportunities.
 I am open to experimenting with new methods of investing.
 I am ready for new experiences in investing.

Attitude (ATT)

I am interested in investing in cryptocurrencies.
 I feel good about investing in cryptocurrencies.
 Overall, my attitude toward cryptocurrency is favourable.

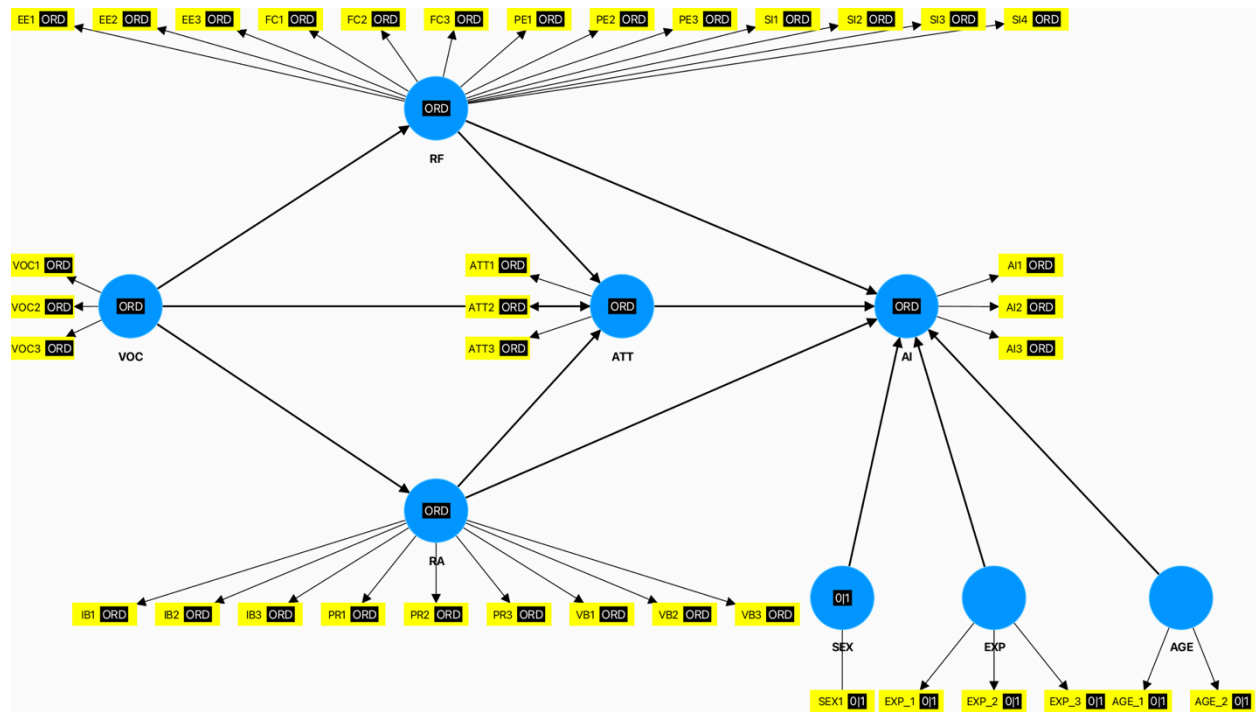
Adoption Intention (AI)

I intend to invest in cryptocurrencies.
 I will recommend using cryptocurrencies to my friends and family.
 I will keep myself updated with the latest cryptocurrency news and advancements.

Notes: All items were measured on a 5-point Likert scale

6.3 Tables and Figures

Appendix 6.3.1: Full model



Appendix 6.3.2: Descriptive Statistics and Cramér-von Mises test

Name	No.	Type	Missings	Mean	Median	Scale min	Scale max	Observed min	Observed max	Standard deviation	Excess kurtosis	Skewness	Cramér-von Mises p value
SEX1	1	0 1	0	0.469	0.000	0.000	1.000	0.000	1.000	0.499	-2.004	0.124	0.000
AGE_1	2	0 1	0	0.540	1.000	0.000	1.000	0.000	1.000	0.498	-1.992	-0.163	0.000
AGE_2	3	0 1	0	0.256	0.000	0.000	1.000	0.000	1.000	0.436	-0.738	1.127	0.000
AGE_3	4	0 1	0	0.199	0.000	0.000	1.000	0.000	1.000	0.399	0.308	1.518	0.000
AGE	5	MET	0	31.209	25.000	18.000	70.000	18.000	59.000	12.243	-0.614	0.876	0.000
PROVINCE	6	CAT	0	1.735	1.000	1.000	4.000	1.000	4.000	0.947	0.329	1.162	0.000
EXP_1	7	0 1	0	0.512	1.000	0.000	1.000	0.000	1.000	0.500	-2.017	-0.048	0.000
EXP_2	8	0 1	0	0.209	0.000	0.000	1.000	0.000	1.000	0.406	0.089	1.445	0.000
EXP_3	9	0 1	0	0.114	0.000	0.000	1.000	0.000	1.000	0.318	4.043	2.451	0.000
EXP_4	10	0 1	0	0.166	0.000	0.000	1.000	0.000	1.000	0.372	1.286	1.809	0.000
EXPERIENCE	11	CAT	0	1.934	1.000	1.000	4.000	1.000	4.000	1.133	-0.834	0.820	0.000
PE1	12	ORD	0	3.118	3.000	1.000	5.000	1.000	5.000	1.262	-1.077	-0.225	0.000
PE2	13	ORD	0	3.213	3.000	1.000	5.000	1.000	5.000	1.341	-1.144	-0.241	0.000
PE3	14	ORD	0	3.213	4.000	1.000	5.000	1.000	5.000	1.312	-1.086	-0.324	0.000
SI1	15	ORD	0	3.118	3.000	1.000	5.000	1.000	5.000	1.527	-1.486	-0.121	0.000
SI2	16	ORD	0	3.204	3.000	1.000	5.000	1.000	5.000	1.454	-1.324	-0.238	0.000
SI3	17	ORD	0	3.673	4.000	1.000	5.000	1.000	5.000	1.343	-0.742	-0.734	0.000
SI4	18	ORD	0	3.166	3.000	1.000	5.000	1.000	5.000	1.498	-1.385	-0.227	0.000
FC1	19	ORD	0	2.962	3.000	1.000	5.000	1.000	5.000	1.584	-1.605	-0.009	0.000
FC2	20	ORD	0	3.763	4.000	1.000	5.000	1.000	5.000	1.277	-0.705	-0.730	0.000
FC3	21	ORD	0	3.626	4.000	1.000	5.000	1.000	5.000	1.238	-0.865	-0.495	0.000
EE1	22	ORD	0	3.531	4.000	1.000	5.000	1.000	5.000	1.285	-1.069	-0.420	0.000
EE2	23	ORD	0	3.493	4.000	1.000	5.000	1.000	5.000	1.278	-1.004	-0.423	0.000
EE3	24	ORD	0	2.858	3.000	1.000	5.000	1.000	5.000	1.309	-1.140	0.100	0.000
PR1	25	ORD	0	4.370	4.000	1.000	5.000	2.000	5.000	0.613	0.789	-0.674	0.000
PR2	26	ORD	0	4.085	4.000	1.000	5.000	1.000	5.000	1.013	2.369	-1.523	0.000
PR3	27	ORD	0	4.227	5.000	1.000	5.000	1.000	5.000	1.060	2.067	-1.548	0.000
VB1	28	ORD	0	2.716	3.000	1.000	5.000	1.000	5.000	1.412	-1.356	0.159	0.000
VB2	29	ORD	0	2.763	3.000	1.000	5.000	1.000	5.000	1.448	-1.362	0.128	0.000
VB3	30	ORD	0	2.825	3.000	1.000	5.000	1.000	5.000	1.522	-1.476	0.129	0.000
IB1	31	ORD	0	2.540	2.000	1.000	5.000	1.000	5.000	1.360	-1.093	0.364	0.000
IB2	32	ORD	0	2.820	3.000	1.000	5.000	1.000	5.000	1.419	-1.411	-0.008	0.000
IB3	33	ORD	0	2.915	3.000	1.000	5.000	1.000	5.000	1.493	-1.495	0.027	0.000
VOC1	34	ORD	0	3.327	4.000	1.000	5.000	1.000	5.000	1.248	-0.988	-0.316	0.000
VOC2	35	ORD	0	3.773	4.000	1.000	5.000	1.000	5.000	1.218	-0.573	-0.713	0.000
VOC3	36	ORD	0	3.844	4.000	1.000	5.000	1.000	5.000	1.204	-0.737	-0.680	0.000
ATT1	37	ORD	0	3.403	4.000	1.000	5.000	1.000	5.000	1.497	-1.427	-0.328	0.000
ATT2	38	ORD	0	3.227	3.000	1.000	5.000	1.000	5.000	1.456	-1.363	-0.142	0.000
ATT3	39	ORD	0	3.360	3.000	1.000	5.000	1.000	5.000	1.419	-1.402	-0.185	0.000
AI1	40	ORD	0	3.313	4.000	1.000	5.000	1.000	5.000	1.507	-1.465	-0.251	0.000
AI2	41	ORD	0	3.047	3.000	1.000	5.000	1.000	5.000	1.637	-1.642	-0.024	0.000
AI3	42	ORD	0	3.308	3.000	1.000	5.000	1.000	5.000	1.504	-1.415	-0.250	0.000

Appendix 6.3.3: Recoded control variables into dummy variables (0,1)

SEX	SEX	AGE_1	AGE_2	AGE_3	AGE	EXP_1	EXP_2	EXP_3	EXP_4	EXPERIENCE
1=male	What is	18-27	28-43	44-59	What is	none	<1	1<x<4	>4	How many
1	2	0	0	1	53	0	0	0	1	4
0	1	0	1	0	43	0	0	1	0	3
1	2	0	1	0	35	0	0	0	1	4
0	1	0	1	0	32	0	0	1	0	3
0	1	1	0	0	21	1	0	0	0	1
1	2	1	0	0	23	1	0	0	0	1
0	1	0	1	0	36	0	0	0	1	4
1	2	1	0	0	20	1	0	0	0	1
1	2	0	0	1	59	0	0	0	1	4
0	1	1	0	0	22	0	1	0	0	2
1	2	0	1	0	37	0	0	0	1	4
1	2	0	1	0	34	1	0	0	0	1
1	2	1	0	0	20	0	1	0	0	2
1	2	0	1	0	38	1	0	0	0	1
0	1	0	0	1	45	0	0	0	1	4
0	1	0	1	0	38	0	0	0	1	4
1	2	0	1	0	35	0	1	0	0	2
1	2	1	0	0	21	1	0	0	0	1
0	1	1	0	0	22	1	0	0	0	1
0	1	0	1	0	33	0	1	0	0	2
1	2	1	0	0	22	1	0	0	0	1
0	1	0	0	1	58	1	0	0	0	1

Appendix 6.3.4 Reliability and validity of constructs

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
AI	0.944	0.947	0.964	0.899
ATT	0.958	0.958	0.973	0.922
RA	0.894	0.958	0.917	0.587
RF	0.959	0.961	0.964	0.672
VOC	0.903	0.906	0.939	0.837

Discriminant validity - Heterotrait-monotrait ratio (HTMT) - Matrix					
	AI	ATT	RA	RF	VOC
AI					
ATT	0.994				
RA	0.920	0.922			
RF	0.957	0.922	0.885		
VOC	0.824	0.785	0.702	0.853	

Appendix 6.3.5 Hypothesis testing with control variables

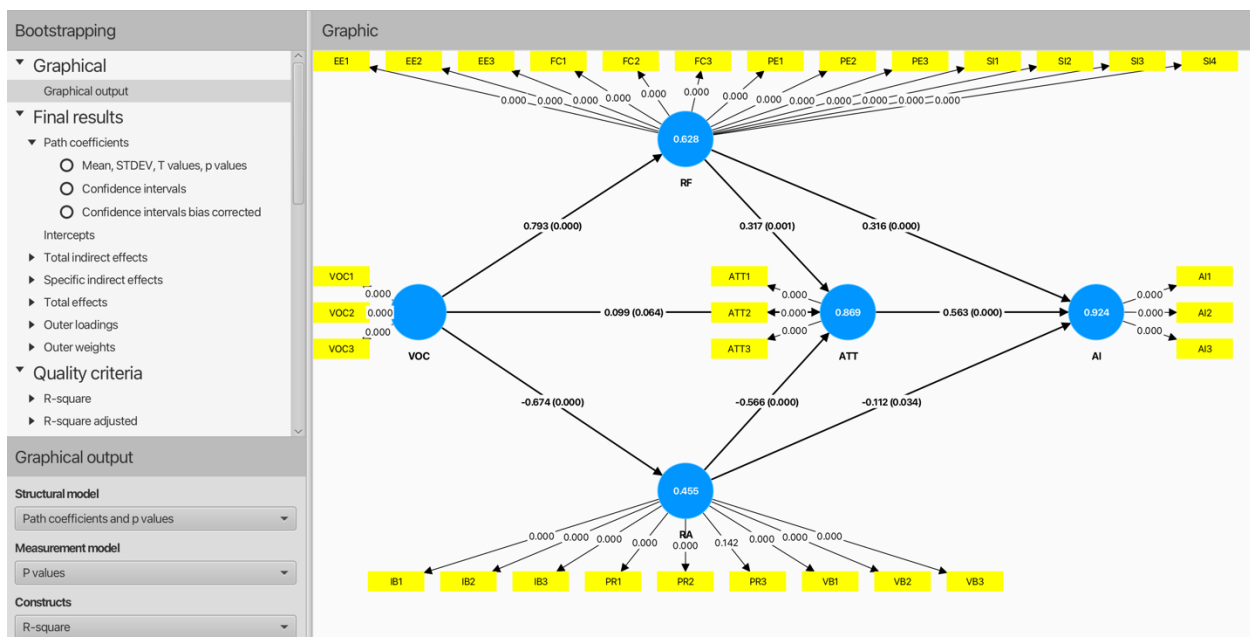
	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values
AGE -> AI	0.071	0.048	0.066	1.088	0.277
ATT -> AI	0.572	0.567	0.064	8.907	0.000
EXP -> AI	0.028	0.024	0.064	0.432	0.666
RA -> AI	-0.098	-0.099	0.056	1.761	0.078
RA -> ATT	-0.566	-0.570	0.073	7.746	0.000
RF -> AI	0.318	0.321	0.064	4.934	0.000
RF -> ATT	0.317	0.313	0.098	3.226	0.001
VOC -> ATT	0.099	0.098	0.053	1.851	0.064
VOC -> RA	-0.674	-0.677	0.040	16.926	0.000
VOC -> RF	0.793	0.794	0.026	29.956	0.000
SEX -> AI	0.028	0.030	0.044	0.650	0.516

Appendix 6.3.6 R-squared without control variables

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values
AI	0.925	0.927	0.010	90.843	0.000
ATT	0.869	0.872	0.020	44.519	0.000
RA	0.455	0.459	0.054	8.477	0.000
RF	0.628	0.631	0.042	15.031	0.000

Appendix 6.3.7 Hypothesis testing without control variables

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values
ATT -> AI	0.563	0.559	0.064	8.778	0.000
RA -> AI	-0.112	-0.114	0.053	2.118	0.034
RA -> ATT	-0.566	-0.570	0.073	7.746	0.000
RF -> AI	0.316	0.318	0.065	4.898	0.000
RF -> ATT	0.317	0.313	0.098	3.226	0.001
VOC -> ATT	0.099	0.098	0.053	1.851	0.064
VOC -> RA	-0.674	-0.677	0.040	16.926	0.000
VOC -> RF	0.793	0.794	0.026	29.956	0.000



Appendix 6.3.8 F-squared without control variables

	f-square
ATT -> AI	0.560
RA -> AI	0.025
RA -> ATT	0.571
RF -> AI	0.240
RF -> ATT	0.122
VOC -> ATT	0.028
VOC -> RA	0.834
VOC -> RF	1.691

Appendix 6.3.9 Total indirect effects

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values
RA -> AI	-0.319	-0.319	0.057	5.577	0.000
RF -> AI	0.179	0.174	0.055	3.271	0.001
VOC -> AI	0.738	0.740	0.031	24.192	0.000
VOC -> ATT	0.633	0.634	0.047	13.408	0.000

Appendix 6.3.10 Specific indirect effects

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values
RA -> ATT -> AI	-0.319	-0.319	0.057	5.577	0.000
VOC -> RF -> AI	0.251	0.253	0.053	4.760	0.000
VOC -> RF -> ATT -> AI	0.142	0.138	0.044	3.217	0.001
RF -> ATT -> AI	0.179	0.174	0.055	3.271	0.001
VOC -> RA -> AI	0.076	0.077	0.037	2.046	0.041
VOC -> RA -> ATT -> AI	0.215	0.216	0.041	5.247	0.000
VOC -> RF -> ATT	0.251	0.249	0.079	3.162	0.002
VOC -> ATT -> AI	0.056	0.056	0.033	1.701	0.089
VOC -> RA -> ATT	0.381	0.386	0.054	7.011	0.000

