Radboud University

Master thesis
Master specialization: Innovation and Entrepreneurship 2018-2019

The Adoption of Cryptocurrencies as Speculative Investment by Users from Netherlands

The influence of perceived innovation characteristics on the actual usage behavior of cryptocurrency as speculative investment by users from the Netherlands

---

Author

Name	Thijs Hoens
Student number	S4639367

Supervisor:	Dr. Maurice de Rochemont
Second examiner:	Prof. Yvonne van Rossenberg

June 17, 2019

Statement of Originality

This content of this document is my own work. I declare to take full responsibility for the contents of this document. Neither this document nor the contents have ever been previously submitted for any degree or diploma.

I hereby declare to the best of my knowledge and believes that the content presented in this document is fully original and that no sources other than those acknowledged in the text and its references have been used in creating it.

Thijs Hoens

Acknowledgements

First, I would like to address that I am grateful for the opportunity that I am in the position to even write a Master Thesis. I perceived the whole process of creating this thesis as intensive and informative process. Periods of being upset when things did not turn out the way as expected were interchanged with periods of relief when I finally found a solution for difficulties. Afterall, I enjoyed the process and it made me a better educated person. In particular, the constant critical reflection encouraged me to constantly try to improve. This research taught me a lot and provided new insights.

Second, I would like to acknowledge the support of my supervisors. I would like to thank my first thesis supervisor Dr. Maurice de Rochemont. Whenever I ran into trouble, he was always there for me anytime of the day. He also stimulated me during the whole process providing critical feedback. He allowed me to work on my own terms, but he steered me when necessary. I would also like to acknowledge Prof. Yvonne van Rossenberg as the second supervisor of this thesis, and I am grateful for the valuable and detailed feedback on this thesis.

Third, I would like to thank all persons who took the time and effort to answer my questionnaire. Without their participation and input, this research could not have been successfully conducted.

Finally, I must express my very deep gratitude to my parents and to my partner. With all their patience and inexhaustible support and encouragement throughout the whole process of writing this thesis, they provided me a stable environment. This accomplishment would not have been possible without them. Thank you.

Abstract

Cryptocurrencies have received lots of attention. Speculating about their worth is increasing and very popular matter in today's society. This research is centered around the adoption of cryptocurrency as speculative investment in the Netherlands. It is not clear yet why cryptocurrencies are adopted as speculative investment by users in the Netherlands. This research used Diffusion of Innovations Theory as a basis to determine the factors that possibly could influence the adoption of cryptocurrencies as speculative investment by users in the Netherlands. The five perceived innovation characteristics were chosen as possible influencing factors: relative advantage, compatibility, complexity, trialability, and observability. Adoption was measured in form of actual usage behaviour using self-reported measurement scales. From all five perceived innovation characteristics only trialability has significant influence on the actual usage behaviour users who use of cryptocurrencies as speculative investment in the Netherlands. Relative advantage, compatibility, complexity, and observability did not have any significant influence on the adoption of cryptocurrencies as speculative investment by users in the Netherlands.

Keywords cryptocurrency; speculative investment; adoption; diffusion of innovations; Netherlands; relative advantage; compatibility; complexity; trialability; observability

Table of Contents

1. Introduction

Cryptocurrencies have received a huge amount of publicity in a variety of ways (Bierer, 2016). Speculating how much different cryptocurrencies will be worth tomorrow is a very popular matter covered by the press (Walton, 2014). The growing publicity increased the awareness of cryptocurrencies and their current and potential uses (Bierer, 2016; Walton, 2014). Cryptocurrencies are defined as "digital assets designed to work as media of exchange using cryptography to secure the transactions and to control the creation of additional units of the currency" (Chu, Chan, Nadarajah and Osterrieder, 2017, p. 1). While cryptocurrencies have received a lot of publicity and press coverage, they have been under-exposed academically (Cheah and Fry, 2015). However, in recent years there is a surge of academic interest in cryptocurrencies and their technology and thus academic exposure increased (Boyen, Carr and Haines, 2016; Phillip, Chan and Peiris, 2017).

Cryptocurrencies are digital alternatives to traditional fiat monies issued by governments (Cheah and Fry, 2015). They are a radical innovation as they theoretically could eliminate the use of traditional banks and other financial intermediaries (Cusumano, 2014). However, they are highly volatile compared to traditional currencies, which gives them a speculative and risky character (Chu et al., 2017; Yermack, 2013). Cryptocurrencies can be used as means of payment and as speculative investment. Cryptocurrencies in general are rather speculative and are commonly used for speculative investment purposes (Cheah and Fry, 2015; Smith and Kumar, 2018). The majority of the users consider cryptocurrencies rather as alternative speculative investment assets than as means of payment (Glaser, Haferkorn, Siering, Weber and Zimmermann, 2014). In the Netherlands more than half a million people make use of cryptocurrency. The majority does not use them to make purchases, but use them as speculative investment (AFM, 2018). The focus of this study is on cryptocurrencies as speculative investment in order to get more insight in their adoption among users in the Netherlands.

The behavior of people is a critical component in the use of cryptocurrencies and their preferences will decide its future (Shahzad, Xiu, Wang and Shahbaz, 2018). Adoption is important for an innovation to be successful (Plouff, Vandenbosch and Hulland, 2001). Understanding the aspects that influence the adoption of cryptocurrencies is important for both consumers and businesses (Jonker, 2018).

The majority of the studies assessing the adoption of cryptocurrencies focused on their use as payment method (Darlington, 2014; Presthus and O'Malley 2017; Shahzad et al., 2018). In addition, most studies were actually focused on the best-known cryptocurrency Bitcoin (Baur, Bühler, Bick, and Bonorden, 2015; Shahzad et al., 2018; Silinskyte, 2014). There exists little work about cryptocurrency adoption in general. Since interest in cryptocurrencies is increasing, there is a need to acknowledge cryptocurrencies in general instead of looking at Bitcoin only (Chu et al., 2017). Only a handful of studies have examined user adoption of cryptocurrency in general (Göbert, 2018; Smith and Kumar, 2018; Spenkelink, 2014). Göbert (2018) did a multi-national research to end-user adoption of cryptocurrencies in general. He found that perceived usefulness has a positive effect on the intention to use cryptocurrencies. Intention to use has a positive effect on the actual use of cryptocurrencies. Spenkelink (2014) argues that ease of use, price stability, and governance are the three most important factors for future global cryptocurrency mass adoption. The aforementioned works covered some factors influencing the adoption of cryptocurrencies, but are these also the most important factors for adoption of cryptocurrencies as a speculative investment in the Netherlands?

In the Netherlands inhabitants seem highly interested in cryptocurrencies (AFM, 2018). In the Netherlands the crucial limiting factor in the adoption of cryptocurrencies by retailers is low consumer demand (Jonker, 2018). Users from the Netherlands who invest in cryptocurrency are different than the ones who make traditional investments in the Netherlands (AFM, 2018). A lot of people adopted cryptocurrency, because they wanted to earn money. AFM discovered that among the Dutch investors there was a strong awareness risk caused by the volatility of the market. AFM also discovered that cryptocurrencies are rather used as a speculative investment than an actual investment (AFM, 2018). This is confirming what other international researchers found in their related research in different nations (Cheah and Fry, 2015; Glaser et al., 2014; Göbert, 2018; Yermack, 2013).

Despite prior research findings indicating speculative investment as the most important use of cryptocurrencies, the use of cryptocurrencies as speculative investment has not yet been studied individually in the context of adoption. Moreover, it remains unclear what influences the adoption of cryptocurrency as speculative investment in the Netherlands. Therefore, the following research question has been

formulated to gather more insight in the adoption of cryptocurrencies as speculative investment by users in the Netherlands:

Which factors influence the adoption of cryptocurrencies as speculative investment by users in the Netherlands?

The aim of this study is to extend on previous research and to provide insights into the factors that can influence the adoption of cryptocurrencies as speculative investment in the Netherlands. The potential factors influencing adoption are determined by using the Diffusion of Innovations literature.

This research offers three substantive contributions to literature. First, by limiting the research to users in the Netherlands only we gain more specific knowledge applicable to the Netherlands in the domain of cryptocurrencies. Second, focusing on cryptocurrencies as speculative investment individually in the context of adoption extends our current knowledge on the mass use of cryptocurrencies. Third, by examining other key variables of innovation adoption that directly influence adoption – derived from the Rogers framework – than previous studies did, this study offers new insights.

The remainder of this research is organized as follows: in chapter 2 related studies and the proposed research model and corresponding hypotheses are discussed, in chapter 3 the methodology for the study is elaborated on, in chapter 4 the empirical findings are described, in chapter 5 the study is concluded followed by a discussion. Finally, practical implications and recommendations are given in chapter 6.

2. Literature review and development of model

2.1 Cryptocurrencies as speculative investment innovation

Several authors claim that cryptocurrencies are an innovation. They are a radical innovation in the field of assets designed to work as media of exchange and can be used as means of payment and for speculative investment purposes (Cheah and Fry, 2015; Cusumano, 2014; Smith and Kumar, 2018). They are also innovative in the way in which transactions are processed, since they can exist as a decentralized entity (Cusumano, 2014; Luther, 2016; Smith and Kumar, 2018).

There are different definitions of innovation. According to Thompson (1965, p. 2) an innovation can be explained as “the generation, acceptance, and implementation of new ideas, processes, products or services”. Although cryptocurrencies are not new

this definition is applicable to cryptocurrencies. Since the creation of the first and to date best known cryptocurrency called Bitcoin in 2008 many other new cryptocurrencies have been generated (Kuo Chuen, Guo, and Wang, 2017; Göbert, 2018; Hileman and Rauchs, 2017). Nowadays hundreds of cryptocurrencies with market value are accepted and being implemented as trading goods. These new cryptocurrencies differ in level of innovation. Most only offer incremental improvements over the other, while others offer substantive differences (Kuo Chuen et al., 2017; Hileman and Rauchs, 2017).

According to Nord and Tucker (1987) an innovation is a product related to new technology. Cryptocurrencies are related to distributed ledger technology which secures transactions and makes it possible for cryptocurrencies to exist decentralized (Boyen, Carr and Haines, 2016).

Van de Ven (1986, p. 592) argued that "as long as the idea is perceived as new to the people involved it is an 'innovation' even though it may appear to others to be an 'imitation' of something that exists elsewhere". In the end of 2017 cryptocurrencies were discovered by the general public and large groups of users started buying cryptocurrencies as investment (AFM, 2018). This indicates that cryptocurrencies are still very new to the general public. In the Netherlands there are more than half a million cryptocurrency investors (AFM, 2018). This seems much but it also implies that the vast majority of inhabitants in the Netherlands does not invest in cryptocurrency yet. Thus, a lot of potential users in the Netherlands who do not invest in cryptocurrencies could perceive cryptocurrencies as new potential investment vehicle.

In general cryptocurrencies are a potential candidate as a new investment vehicle (Kuo Chuen et al., 2018). Cryptocurrencies can be a good alternative to diversify investment portfolio risks. Correlations between traditional investment assets and cryptocurrencies are low. The potential daily return of most cryptocurrencies is larger than the return of traditional investment assets (Kuo Chuen et al., 2018). Unlike real assets the fundamental value of digital assets is harder to understand. Kuo Chuen et al. argue that the cryptocurrency market is mainly driven by sentiment of investors, resulting in high volatility. Speculations can influence the price fluctuations to become greater, thus causing higher volatility (Kaldor, 1976). High volatility gives cryptocurrencies a speculative and risky character (Yermack, 2013). Cryptocurrencies in general are rather speculative and are mainly used as speculative investment (AFM,

2018, Cheah and Fry, 2015; Glaser et al., 2014; Smith and Kumar, 2018, Yermack, 2013).

Speculation can be explained as “the purchase (or sale) of goods with a view to re-sale (re-purchase) at a later date, where the motive behind such action is the expectation of a change in the relevant prices relatively to the ruling price and not a gain accruing through their use, or any kind of transformation effected in them or their transfer between different markets” (Kaldor, 1976, p. 111). This implies that speculative investments differ from other kinds of investments in the motive of purchasing and selling them is solely the looming expectation of change of current market price. Kaldor (1976) argued that the amount of goods held differ when acquired as speculative investments in contrast to other investments or uses. The amount that can be considered as speculative investment is “the difference between the amount actually held and the amount that would be held if, other things being the same, the price of that thing were expected to remain unchanged” (Kaldor, 1976, p. 111). Thus, in the context of cryptocurrencies speculative investment can be described as buying and selling of cryptocurrencies in an attempt to achieve profit, where the sole motive behind such action is the expectation of current market price changes; the acquisition of cryptocurrencies is not aimed for other purposes such as a payment method. In this work cryptocurrency is considered as an innovation in the field of speculative investments.

2.2 Adoption of cryptocurrencies as speculative investment

In innovation adoption literature the concepts of adoption intention and adoption behavior are used interchangeably to reflect innovation adoption (Arts, Frambach and Bijmolt, 2011). In this work I try to explain the concept of adoption behavior in the light of cryptocurrencies as speculative investment by users in the Netherlands. To get a clearer understanding of the difference between these two concepts both concepts will be defined and explained.

Ajzen and Fishbein (1980) described behavioral intention as the likelihood of a person getting involved in a given behavior. They are signs of how much of an effort people are willing to make, in order to perform the behavior (Ajzen, 1991). Arts et al. (2011) described adoption intention as “a consumer's expressed desire to purchase a new product in the near future” (p.135). In the case of cryptocurrencies as speculative investment cryptocurrencies can be identified as the new product. Someone using

cryptocurrencies as speculative investment can be seen as the given behavior. In the context of cryptocurrencies as speculative investment adoption intention is defined as the likelihood to purchase cryptocurrencies and use them as speculative investment.

According to Rogers (2003), adoption is a decision of "full use of an innovation as the best course of action available" and rejection is a decision "not to adopt an innovation" (p. 177). This definition means the consumer's purchase behavior (Arts et al., 2011). Adoption behavior refers to the (trial) purchase of an innovation (Rogers, 2003). Adoption behavior can be seen as a person getting involved in a given behavior (Ajzen and Fishbein, 1980). In the context of cryptocurrencies as speculative investment this implies obtaining cryptocurrencies and use them as speculative investment. In the context of the adoption of cryptocurrencies as speculative investment by users in the Netherlands, adoption can be described as the purchase of cryptocurrencies and use them as speculative investment.

Studies about cryptocurrencies are relatively scare as they have been under-exposed academically (Cheah and Fry, 2015). However, in recent years several studies have been conducted on adoption of cryptocurrencies. The problem is that the majority of these studies either focused on the use of cryptocurrencies as payment method or focused on Bitcoin (Baur et al., 2015; Darlington, 2014; Presthus and O'Malley 2017; Shahzad et al., 2018; Silinskyte, 2014).

Baur et al. (2015) particularly focused on Bitcoin as payment method because of its relative importance. They discovered that the use was perceived as complex and that Bitcoin is perceived as useful to a select group. Darlington (2014) argued that the adoption of Bitcoin could be beneficial for countries with a tumultuous and unfortunate economic history. Shahzad et al. (2018) concluded in their study on the adoption of cryptocurrencies in China that awareness, perceived ease of use, perceived usefulness and perceived trustworthiness have a significant positive influence on intention to use Bitcoin as payment method. Presthus and O'Malley (2017) researched end-user adoption of Bitcoin as digital currency using innovation diffusion theory as a basis. They did an explorative study on non-users and users of Bitcoin. They concluded that users were motivated by technological curiosity instead of making profit. Non-users were not very interested, and they questioned the benefits and security of Bitcoin. Shahzad et al. (2018) concluded in their study to the adoption of cryptocurrencies in China that awareness, perceived ease of use, perceived usefulness and perceived trustworthiness have a significant positive influence on intention to use Bitcoin as

payment method. Silinskyte (2014) made a distinction between use as investment and as payment method in measuring the intention to use Bitcoin. However, Silinskyte did not analyze this distinction. Silinskyte performed a multi-national research to Bitcoin adoption using the UTAUT model. He found that performance expectancy, effort expectancy, facilitating conditions, and behavioral intention all positively influenced the use of Bitcoin.

Research focusing solely on the user adoption of cryptocurrencies as speculative investment is to my best knowledge nonexistent. There are some scare studies on the user adoption of cryptocurrencies in general (Göbert, 2018; Smith and Kumar, 2018; Spenkelink, 2014). Multi-national research to end-user adoption of cryptocurrencies found that perceived usefulness has a positive effect on intention to use cryptocurrencies while intention to use has a positive effect on the actual use of cryptocurrencies (Göbert, 2018). Wide-scale adoption of cryptocurrencies is dependent on the competition of alternative transaction technologies (Smith and Kumar, 2018). Perceptions of anonymity influenced the adoption of cryptocurrencies to be used in illegal transactions. Most cryptocurrency transactions are adopted and used only for gambling or speculative purposes (Smith and Kumar, 2018). Ease of use, price stability, and governance are the three most important factors for future global cryptocurrency mass adoption (Spenkelink, 2014).

The research that is most related to the context of adoption of cryptocurrencies as speculative investment by users in the Netherlands is from AFM (2018). However, AFM did not use an existing model to examine the influence on the usage behavior of cryptocurrencies as speculative investments in the Netherlands. AFM researched investing in cryptocurrencies in the Netherlands. AFM discovered that the most influential reasons for investing in cryptocurrencies in the Netherlands are earning money, curiosity, low interest on savings and taking a gamble. Friends are most influential in choosing a specific cryptocurrency to invest in. Among the Dutch investors there is a strong awareness of risk caused by the volatility of the market. In the Netherlands, users who invest in cryptocurrency are different than the ones who make traditional investments in the Netherlands; cryptocurrencies are rather used as a speculative investment than an actual investment (AFM, 2018).

2.3 Theoretical framework

In this work cryptocurrencies are seen as an innovation in the field of speculative investments. Therefore, innovation adoption literature is relevant. In innovation adoption literature, there are many theoretical frameworks which attempted to build theories to explain the factors influencing the adoption of innovations or new technologies. Each theoretical framework has a different focus and is tested within a different context (Rao and Troshani, 2007). There are research streams that focus on the adopters of innovations at an individual level, while other streams focus on organizational level adoption (Wisdom, Chor, Hoagwood and Horwitz, 2014). All these theoretical frameworks provide factors that explain how and why innovations are adopted or rejected by individuals or organizations.

In order to determine which framework has the best fit with the purpose of this study, several frameworks and some of their derivatives that have been best cited in innovation adoption literature have been evaluated. These frameworks are Theory of Reasoned Action (TRA), Theory of Planned Behavior (TPB), Decomposed Theory of Planned Behavior (DTPB), Technology Acceptance model(TAM), UTAUT model and Diffusion of Innovations (Ajzen, 1985, 1991; Davis, Bagozzi and Warshaw 1989; Fishbein and Ajzen, 1975; Rogers, 2003; Taylor and Todd, 1995; Venkatesh, Morris, Davis and Davis, 2003). Lots of studies have been conducted using these frameworks to explain end-user's innovation adoption behavior (Rao and Troshani, 2007). A brief overview, summarization, and discussion of these frameworks is provided in Table 1 in Appendix A (Bogozzi, 2007; Elliot and Loebbecke, 2000; Hyvönen, Repo and Walden, 2005; Khechine, Lakhal and Ndjambou, 2016; King, Gurbaxani, Kraemer, McFarlan, and Raman, 1994; Krueger and Carsrud, 1993; Lyyntinen and Damsgaard, 2001; Mathieson, 1991; Pavlou and Fygenson, 2006; Rao and Troshani, 2007; Sheppard, Hartwick and Warshaw., 1988; Tao and Fan, 2017; Teo and Pok, 2003).

The framework that will be used in this study is the Diffusion of Innovations framework of Rogers (2003). The main aspect that differentiates Diffusion of Innovations from the other models is that Diffusion of Innovations uses a considerably larger number of direct predictors that explain adoption behavior than TRA, TPB, DTPB, TAM and UTAUT. Rogers uses five perceived innovation characteristics that could possibly influence adoption (Rogers, 2003). The other models mainly use intention as the only predictor of adoption behavior (Ajzen, 1985, 1991; Davis et al.,1989; Fishbein and Ajzen, 1975; Taylor and Todd, 1995. In these intention models

there are only two more predicting factors for adoption behavior, namely Perceived Behavioral Control (TPB, DTPB) and Facilitating Conditions (UTAUT). Taylor and Todd (1995) argue that research has consistently shown that behavioral intention is the strongest predictor of actual use. However, adoption intention is poor predictor of adoption behavior (Arts et al., 2011).

According to Rogers (2003), innovations differ from each other; that is why some new products do succeed and the other new products do not. By means of a process, Rogers tries to explain how the population receives innovations. In the diffusion process a distinction is made between two key processes: the diffusion and the adoption process. The key difference between these processes is that diffusion is a macro process where the innovation is diffused within a group, community or country over time. Adoption is a process at an individual level whether accepting or rejecting the innovation (Elliot and Loebbecke, 2000; Rao and Troshani, 2007; Rogers, 2003). In the adoption process Rogers (2003) allocates differences between innovations by assigning five perceived innovation characteristics to innovation: relative advantage, compatibility, complexity, trialability and observability. All perceived characteristics are expected to influence adoption positively except complexity. These perceived characteristics are direct predictors of an individual's adoption decision. These characteristics are often central factors in studies on innovation adoption (Kapoor, Dwivedi, and Williams, 2014).

The five perceived innovation characteristics can be used to study both adoption and adoption intention (Arts et al, 2011). Determinants of innovation adoption frameworks have a different effect on adoption intention and behavior. Studies that focus on adoption behavior commonly examine the perceptions and characteristics of users who have already purchased the innovation relative to users who have not (Arts et al., 2011). The category of users who have not purchased the innovation may include non-adopters who even lack awareness of the innovation.

Using Diffusion of Innovations to explain user adoption will substantively contribute to literature since no related study included all five perceived innovation characteristics to directly explain the adoption of cryptocurrencies or the adoption of cryptocurrencies as speculative investment.

There are some studies that used Diffusion of Innovation Theory in attempt to expose factors that influence cryptocurrency adoption or adoption intention. An overview of these studies and some other comparable studies are displayed in appendix

B. Presthus and O'Malley (2017) used innovation diffusion theory as a basis. However, they did focus on Bitcoin and they used both the diffusion and the adoption process. Lee (2015) also used the full process in his research to Bitcoin adoption by merchants. Roussou and Stiakakis (2019) used both TAM and Diffusion of Innovation Theory to investigate the adoption of digital currencies by companies in the European Union. Plouffe, Vandenbosch, and Hulland (2001) used the innovation characteristics to explain the adoption intention toward a new electronic payment system. Kapoor et al. (2013) used the five innovation characteristics to explain the adoption intention for the Interbank Mobile Payment service. However, the studies of Plouffe et al. (2001) and Kapoor et al. (2013) are less related. Other related studies used intention-based models (Göbert, 2018; Shahzad et al., 2018; Silinskyte, 2014; Spenkelink, 2014).

The proposed model to explain adoption of cryptocurrencies as speculative investment by users from the Netherlands is displayed in Figure 1 below.

2.4 Conceptual model

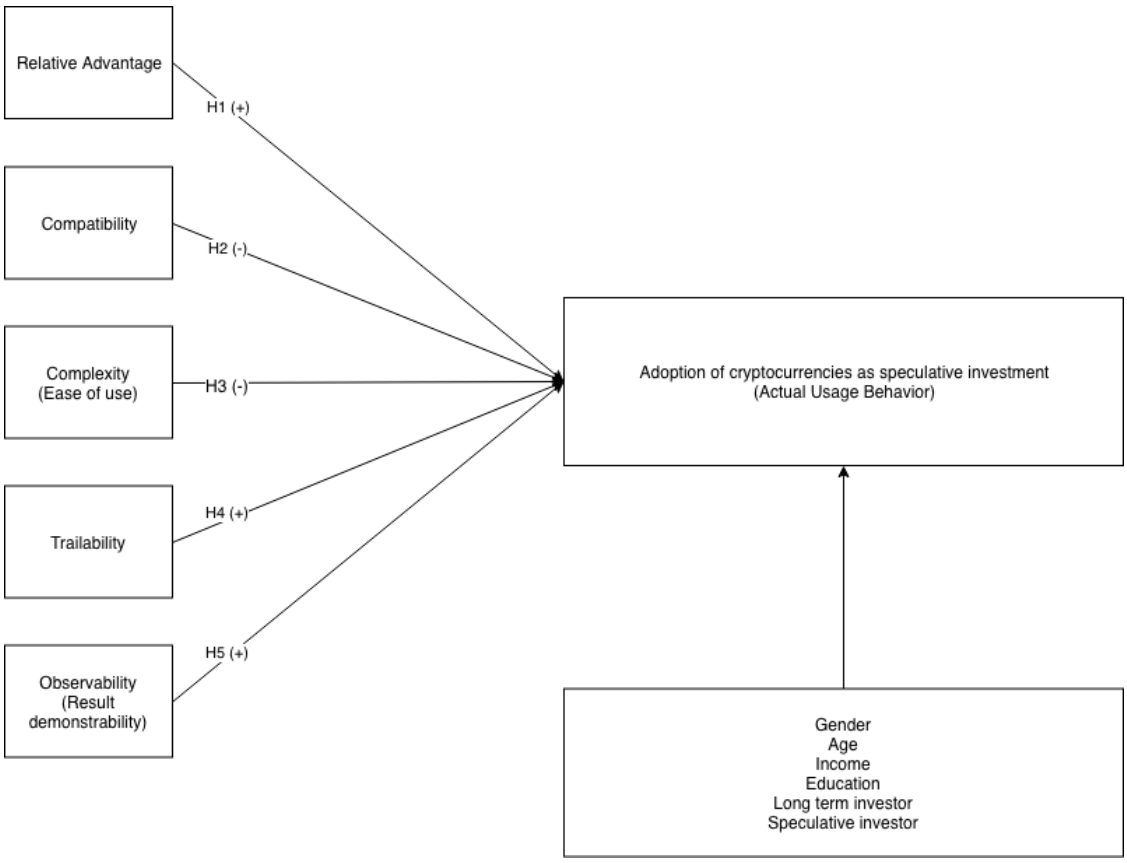


Figure 1. Proposed model adoption of cryptocurrencies as speculative investment by users from the Netherlands.

2.5 Explanation of variables in model and hypotheses

Relative Advantage

Relative advantage is defined as "*the degree to which an innovation is perceived as being better than the idea it supersedes*" (Rogers, 2003, p. 229). Relative advantage is often measured as economical advantage or prestigious advantage. The greater the relative advantage the faster the adoption of an innovation. Therefore, relative advantage is positively correlated with adoption (Tornatzky and Klein, 1982; Rogers, 2003). Rogers states that from all innovation characteristics relative advantage is the innovation characteristic that is most influential on adoption. According to Arts et al. (2011) relative advantage indeed has the largest influence on adoption behavior. The influence on adoption behavior is a significant positive effect. In context of adoption of cryptocurrencies as speculative investment by Dutch users, the following hypothesis has been formulated:

H1: *Relative advantage will positively influence the adoption of cryptocurrencies as speculative investment by users from the Netherlands.*

Compatibility

The independent variable compatibility is positively correlated with adoption (Tornatzky and Klein, 1982; Rogers, 2003). Rogers (2003) described that "*compatibility is the degree to which an innovation is perceived as consistent with the existing values, past experiences, and needs of potential adopters*" (p. 15). Compatibility has a positive effect on adoption. In the meta-analysis of Arts et al. (2011) found that the effect indeed is significantly positive. In the context of cryptocurrencies Spenkelink (2014) stated that there are signs that cryptocurrencies are compatible with the values and norms of early adopters, however this might not be the case for the average user. Spenkelink concluded that cryptocurrencies fit the paradigm of digitalization very well and therefore cryptocurrencies could be consistent with the existing values, past experiences, and needs of potential adopters. Questionable is to what extent cryptocurrencies are comparable to other speculative investment instruments. In context of cryptocurrency adoption as speculative investment by users in the Netherlands, the subsequent hypothesis has been formulated:

H2: *Compatibility will positively influence the adoption of cryptocurrencies as speculative investment by users from the Netherlands.*

Complexity (Ease of Use)

Complexity is defined as "*the degree to which an innovation is perceived as relatively difficult to understand and use*" (Rogers, 2003, p. 15). Rogers stated that complexity is an important obstacle for innovation adoption. Therefore, complexity is negatively correlated with adoption. An innovation that is simple and easy to use will be rather be adopted than a complex innovation. According to the meta-analysis of Arts et al. (2011) their results surprisingly show that complexity has a positive effect on adoption intention, but the effect on actual adoption is negative. Ease of use can be used to measure complexity; however, it needs to be reverse coded (Arts et al., 2011). Thus, ease of use facilitates adoption and complexity hinders adoption. Related studies confirmed the positive effect on adoption intention. Shahzad et al. (2018) found that perceived ease of use has a significant positive effect on adoption intention of Bitcoin in China. Göbert (2018) also found that perceived ease of use has a positive effect on intention to use. Cryptocurrencies are quite complex and difficult to use (Spenkelink, 2014). However, the effect of complexity on actual adoption behavior is still unknown. In context of adoption of cryptocurrencies as speculative investment by Dutch users, the following hypothesis has been formulated:

H3: *Complexity negatively influences the adoption of cryptocurrencies as speculative investment by users from the Netherlands.*

Trialability

The independent variable trialability is defined as "*the degree to which an innovation may be experimented with on a limited basis*" (Rogers, 2003, p. 16). Trialability is dependent on the type of innovation. In case of cryptocurrencies trialability appears to be high (Spenkelink, 2014). Trialability is expected to be positively correlated with adoption (Rogers, 2003). Arts et al. (2011) conclude in their meta-analysis that trialability has a small significant effect on adoption. The negative effect they discovered on adoption behavior the opposite of the expected effect of Rogers. Trialability may facilitate the potential adopter to more effectively approach the benefits of the innovation (Rogers, 2003). Thus, in case of first experimental attempts to use cryptocurrencies as speculative investment with a negative outcome, it could possible hinder the further use of cryptocurrencies as speculative investment. However, since the trialability appears to be high it should not hinder (first) actual use. Therefore, the original expected positive effect of Rogers (2003) has been retained and

used in the formation of the hypothesis. In the Dutch context of cryptocurrency adoption as speculative investment, the contiguous hypothesis has been formulated:

H4: *Trialability will positively influence the adoption of cryptocurrencies as speculative investment by users from the Netherlands.*

Observability

Observability is defined as "*the degree to which the results of an innovation are visible to others*" (Rogers, 2003, p. 16). Observability is expected to have a positive effect on adoption (Rogers, 2003). Moore and Benbasat (1991) argue that observability consist of result demonstrability and visibility. Spenkelink (2014) argued that the result demonstrability of cryptocurrencies is low. There are no tangible results of using cryptocurrencies and therefore usage observability of cryptocurrencies is low. In case of using cryptocurrencies as speculative investment results are visible to others. Profits and prices can be shown to others by using an online price tracker like CoinMarketCap (Wiedmer, 2018). In Dutch context of cryptocurrency adoption as speculative investment, the contiguous hypothesis has been formulated:

H5: *Observability will positively influence the adoption of cryptocurrencies as speculative investment by users from the Netherlands.*

3. Methodology

3.1 Research approach

The objective of this research is to expose factors that influence the adoption of cryptocurrencies as speculative investment by users in the Netherlands. To research these factors several research methods have been considered. This research rather suited to the positivist epistemology. Therefore, I used a deductive research approach to determine the hypotheses. In order to test the formed hypotheses I used qualitative data collection and research methods.

Knowledge can be viewed from an epistemological perspective or an ontological perspective. These standpoints can be conflicting and no generally consensus has been accepted yet of what constitutes knowledge (Grant, 1996; Spender, 1996). The knowledge gained from this research is rather viewed from an epistemological perspective than from an ontological perspective. The epistemological perspectives range from positivist and rationalist epistemology to the relativist

epistemology (Mäkelä, 2006). The positivist and rationalist epistemology view knowledge as justified true belief, which means that objective knowledge and the holder of this knowledge can be separated. The relativist epistemology views knowledge as socially constructed.

In management research two major research philosophies are distinguished (Easterby-Smith, Thorpe, and Lowe, 2002). They made a distinction between positivism and social constructionism. The positivist epistemology argues that what happens in the social world can be explained and predicted by searching for patterns and relationships (Ramanathan, 2008). The social constructionism view argues that knowledge is created and not found by humans (Schwandt, 1994). Positivists believe that research progresses through forming and testing of hypotheses. To test hypotheses and derive knowledge, theoretical concepts need to be operationalized in order to be able to be measured. The positivist view relies on experimental or quantitative methods to test and verify hypotheses (Ramanathan, 2008).

Since the aim of the research is to explain factors that influence the adoption of cryptocurrencies as speculative investment by users in the Netherlands, the positivist epistemology is better suited to this research. The factors that possibly explain adoption can be explained by searching for relationships. These factors from this research were discussed in the theoretical framework. Thus, a deductive research approach was used in the determination of which factors can have influence on the adoption of cryptocurrencies as speculative investment in the Netherlands.

In attempt to gain knowledge about the adoption of cryptocurrencies as speculative investment in the Netherlands, factors were deducted from Diffusion of Innovations (Rogers, 2003). These factors are often central to studies on innovation adoption and are direct predictors of an individual's adoption decision (Kapoor et al., 2014). Afterwards, hypotheses were formed in the context of cryptocurrency adoption as speculative investment in the Netherlands. These hypotheses were falsifiable and were tested using multiple regression analysis. Thereafter, these hypotheses were accepted or rejected.

In case of this research quantitative methods were used to collect and analyze data. Quantitative methods are appropriate for examining who has participated in a behavior; in this research the behavior is actual usage behavior (Given, 2008). Quantitative research methods make it possible to investigate a larger group of people (Saunders, Lewis and Thornhill, 2009). Qualitative research is preferred when the

emphasis is on explaining relationships between variables. On the other hand, quantitative research is better suited to explain in depth reasons influencing the variables. Therefore, in the context of cryptocurrency adoption as speculative investment by users in the Netherlands quantitative research methodology was used in attempt to retrieve a large generalizable sample to explain the relationship between the five innovation attributes and cryptocurrency adoption in the Netherlands. An online survey was used to collect a relatively big data sample. The data collection was analyzed using various statistical methods. Afterwards results were generated, and the hypotheses were accepted or rejected.

3.1 Sample population

The targeted population for this research were inhabitants from the Netherlands who use cryptocurrencies as speculative investment. The most important aspect of a sample is that it represents the targeted population (Saunders et al., 2009). The likelihood that the sample reflects the whole population increases as the sample size grows (Field, 2009; Hair, Black, Babin and Anderson, 2014). In order to collect the data sample, the questions were processed in Qualtrics. A control question was added to maximize the chance that only inhabitants from the Netherlands were part of the sample. Groups, fora and networks were entered in which cryptocurrency speculators from the Netherlands are active in order to reach actual users. The online questionnaire was distributed via online social networks, fora, personal network, and the networks from my surroundings. The reason why it was distributed via these networks was in order to attempt to get a representative sample containing both actual users and non-users, different age groups, and both genders. Thus, the two sampling techniques were used; judgement sampling and snowball sampling were used (Marshall, 1996). The actual questionnaire and actual distribution are further discussed in Chapter 3.4.1.

The aim of the sample size was minimally five times the number of items (Field, 2009; Hair et al., 2014). Thus, the aim for the number of respondents was minimally 130, because the number of items was 26. The data was checked for outliers and missing values (Hair et al., 2014). The data was also checked for other data errors, which included contradict and inconsistent data (Henry, Sharma, Lapenu and Zeller, 2003). Qualtrics displayed a total response of 339, which included preview data. An actual number of 327 responses were collected, of which, 300 responses were deemed to be valid. 24 responses were deleted because of contradicting and inconsistent data.

Respondents who answered “never” on both ADO2 and ADO3 were considered as can be considered as non-users of cryptocurrency as speculative investment. Respondents who answered anything but “never” on both ADO2 and ADO3, thus answered that they use cryptocurrency as speculative investment can be considered as users of cryptocurrency as speculative investment (see Table 3). However, a respondent cannot have contradicting answers on questions ADO2 and ADO3; indicating the use of cryptocurrencies as speculative investment in one question and indicating no use (“never”) in the remaining question. A response was deemed invalid when a respondent had a contradicting response to questions ADO2 and ADO3. Furthermore, 3 responses were deleted because of duplicate entry. Also, one respondent made a mistake when selecting gender. This has been corrected and the e-mail is added anonymized in Figure C1.

The sample contained no outliers or missing values. The total sample contained more males than females, but the distribution of males and females was not very uneven. The age group of 20-29 was very prominent. Monthly net income was dominated by a net income of <1000 per month. In the level of education university education was prominent. Almost half of the sample indicated that they use long-term investments, while a third indicated that they use some kind of speculative investments.

The sample was also divided in two to check the difference in age and gender between general cryptocurrency users and non-users. A respondent was deemed a non-user when the answer on ADO1 was never. A respondent was considered as general cryptocurrency user when the answer on ADO1 was not never. The decision to split the sample in two and differentiate between general cryptocurrency users and non-users was based on the fact that no studies or data provide exact numbers of users that use cryptocurrency speculative investment. Thus, in that case there would be no comparable data to check the representativity of the sample. Splitting the total sample resulted in 99 users and 201 non-users. An overview of all relevant sample data is displayed in Table 1.

In order to assess the representativity of the sample the sample data was compared to demographic data. First, the data of cryptocurrency users was compared to available age and gender demographics of cryptocurrency users. Second, the data of non-users and the total sample was compared to age and gender demographics of the Netherlands.

AFM (2018) argued that from the cryptocurrency investors who entered the market before 2017, 15% are women. In 2018 this percentage increased; 32% of the cryptocurrency investors who entered the market were female. The percentage of female cryptocurrency users in this sample is 15.2%, which is comparable to the numbers of AFM before 2017. In 2018 these numbers increased, but it is difficult to determine an exact gender ratio of cryptocurrency users in the Netherlands. However, the sample of Presthus and O'Malley (2017) contained only male users. Thus, a bias toward more male than female cryptocurrency users seems not uncommon. According to AFM (2018) the average age of cryptocurrency investors is 38. In the sample of Presthus and O'Malley (2017) the average age of Bitcoin users was 32, which is lower than the number from AFM. However, in this sample the users have an even lower average age of 29. This sample is slightly biased towards a younger age. Finally, according to comparison with the available demographic profiles the sample seems to be fairly representative.

In Figures C2 and C3 can be seen that in Netherlands the average age is 42 and the gender distribution is approximately equal (Statista, 2019a; Statista 2019b). The split sample of non-users demonstrates an average age of 32, while the total sample displays an average age of 31. This indicates that the sample is biased with a lower average age. In case of gender distribution, the split sample of non-users shows an approximately equal gender distribution with slight bias towards females. The total sample also demonstrates a gender distribution with bias towards females, although the distribution is not very uneven. Thus, according to the demographic profiles these two samples are considered to be moderately representative. In general, this sample is quite representative, but there is an overall bias towards younger age.

Table 1. *Sample data*

Variables	**N**	**%**
Gender - total sample		
Male	174	58.0
Female	126	42.0
Other	0	0.0
Total	300	100.0

Gender - cryptocurrency user		
Male	84	84.8
Female	15	15.2
Total	99	100.0
Gender - cryptocurrency non-user		
Male	90	44.8
Female	111	55.2
Total	201	100.0
Age - total sample		
<20	6	2.0
20-29	209	69.7
30-39	29	9.7
40-49	13	4.3
50-59	22	7.3
>59	21	7.0
Total	300	100.0
Mean - age in years	31	
Age - cryptocurrency user		
Total	99	
Mean - age in years	29	
Age - cryptocurrency non-user		
Total	201	
Mean - age in years	32	
Living in the Netherlands - total sample		
Yes	300	100.0
No	0	0.0
	300	100.0
Monthly net income in euros - total sample		

<1000	135	45.0
1000-1999	56	18.7
2000-2999	35	11.7
3000-3999	27	9.0
4000-4999	11	3.7
5000-5999	5	1.7
>5999	18	6.0
Prefer not to disclose	13	4.3
Total	300	100.0
Level of education - total sample		
Secondary Education (VMBO, HAVO, VWO)	8	2.7
Secondary vocational education (MBO)	13	4.3
Higher professional education (HBO)	69	23.0
University education (WO)	210	70.0
None of the above	0	0.0
Total	300	100.0
Long-term investor - total sample		
Yes	136	45.3
No	164	54.7
Total	300	100.0
Speculative investor - total sample		
Yes	96	32.0
No	204	68.0
Total	300	100.0

Note. The data is based on Tables C1-C14.

3.2 Instrument

3.2.1 Operationalization

The constructs are based on Diffusion of Innovations Theory. While selecting the items, the Cronbach's alpha was taken into account to promote internal consistency of their measurements (Field, 2009). The textual representation of the constructs, items, abbreviations and sources is displayed in Table 2 below.

Table 2. *Operationalization*

Construct	Original item	Items		Source
Compatibility: the degree to which an innovation is perceived as consistent with the existing values, past experiences, and needs of potential adopters (p. 15).	Using a PWS is compatible with all aspects of my work (CPA1).	CPA1	Trading in cryptocurrencies is compatible with my view on speculative investments.	Moore and Bensabat (1991)
	Using a PWS is completely compatible with my current situation (CPA2).	CPA2	Trading in cryptocurrencies fits completely with my current view on speculative investments.	
	I think that using a PWS fits well with the way I like to work (CPA3).	CPA3	I think that trading in cryptocurrencies fits well with the way I like to use other speculative investments.	
	Using a PWS fits into my work style (CPA4).	CPA4	Trading in cryptocurrencies could fit with my speculative investment style.	
Relative advantage: the degree to which an innovation is perceived as being better than the idea it supersedes" (Rogers, 2003, p. 229).	Using a PWS improves the quality of work I do (REA1).	REA1	Trading in cryptocurrencies could improve the quality of my speculative investment returns.	Moore and Bensabat (1991)
	Using a PWS gives me greater control over my work (REA2).	REA2	Trading in cryptocurrencies could give me a greater control over speculative investments overall.	
	Using a PWS enables me to accomplish tasks more quickly (REA3).	REA3	Trading in cryptocurrencies could enable me to make quicker speculative investments.	
	Using a PWS enhances my effectiveness on the job (REA4).	REA4	Trading in cryptocurrencies could enhance my speculative investment effectiveness.	
	Using a PWS makes it easier to do my job (REA5).	REA5	Trading in cryptocurrencies could make speculative investing easier for me.	
Trialability: the degree to which an innovation may	I've had a great deal of opportunity to try various PWS applications (TRA1,2).	TRA1	I've had a great deal of opportunity to try various cryptocurrencies as speculative investment.	Moore and Bensabat (1991)

be experimented with on a limited basis (Rogers, 2003, p. 16).		TRA2	I've had a great deal of opportunity to try one cryptocurrency as speculative investment.	
	I know where I can go to satisfactorily try out various uses of a PWS (TRA3).	TRA3	I know what to do to satisfactorily use cryptocurrencies as speculative investment.	
	Before deciding whether to use any PWS applications, I was able to properly try them out (TRA4).	TRA4	Before deciding whether to use any cryptocurrency as speculative investment, I would be able to properly try them out.	
Complexity (ease of use): the degree to which an innovation is perceived as relatively difficult to understand and use" (Rogers, 2003, p. 15).	I believe that a PWS is cumbersome to use (CPL1).	CPL1	I believe that cryptocurrencies as speculative investment are difficult to use.	Moore and Bensabat (1991)
	My using a PWS requires a lot of mental effort (CPL2).	CPL2*	The use of cryptocurrencies as speculative investment would require a lot of mental effort.	
	Using a PWS is often frustrating (CPL3).	CPL3*	Using cryptocurrencies as speculative investment could be frustrating.	
	I believe that it is easy to get a PWS to do what I want it to do (CPL4).	CPL4	I believe that it is easy to use cryptocurrencies as speculative investment for what I want it to use it for. (R)	
	Overall, I believe that a PWS is easy to use (CPL5).	CPL5	Overall, I believe that cryptocurrencies as speculative investment are easy to use. (R)	
	Learning to operate a PWS is easy for me (CPL6).	CPL6	Learning how to use cryptocurrencies as speculative investment is easy for me. (R)	
Observability: the degree to which the results of an innovation are visible to others (Rogers, 2003, p. 16).	I have no difficulty telling others about the results of using a PWS (OBS1).	OBS1	I have no difficulty telling others about the results that can be achieved from using cryptocurrencies as speculative investment.	Moore and Bensabat (1991)
	I believe I could communicate to others	OBS2	I believe I could communicate the consequences of using	

	the consequences of using a PWS (OBS2).		cryptocurrencies as speculative investment to others.	
	The results of using a PWS are apparent to me (OBS3).	OBS3	The results of using cryptocurrencies as speculative investment are apparent to me.	
	I would have difficulty explaining why using a PWS may or may not be beneficial (OBS4). (R)	OBS4	I would have difficulty explaining why using cryptocurrencies as speculative investment may or may not be beneficial (R).	
Actual usage behavior: a person getting involved in a given behavior (Ajzen and Fishbein, 1980)	How long have you been using/having Bitcoin (ADO1, ADO2)?	ADO1	Since when have you been owning cryptocurrencies?	Silinskyte (2014, p.55)
	On a monthly basis, how many times do you review Bitcoin related data (ADO3).	ADO2	How long have you been using cryptocurrencies as speculative investment?	
		ADO3	How often do you use cryptocurrencies as speculative investment?	

Note. Deleted items using reliability- and validity analyses are indicated with *. Reverse coded items are indicated with (R). In order to increase readability, the font size was decreased.

3.3 Measures

3.3.1 Dependent variable

In case of individual user adoption, it is harder to obtain objective measures of actual usage behavior or adoption. Szajna (1994) recommended self-reported usage to measure actual usage behavior. The opinion about self-reported measures is divided. Moore and Benbasat (1991) argued that self-reported use measures are biased. Other research implies that self-reported use measures correlate well with actual usage behavior measures (Taylor and Todd, 1995; Venkatesh and Davis, 2000). Self-reported use measures should not be considered as precise measures, but they are appropriate as relative measures (Blair and Burton 1987; Hartley, et al. 1977). Likewise, Junco (2013)

argues that self-report measures can approximate measure actual use but are not accurate measures of actual use.

In this research, self-reported use will be used with care to measure actual usage behavior (adoption) of cryptocurrency as speculative investment in the Netherlands. In research to the actual usage of the Internet, Amoroso and Hunsinger (2009) used self-reported use to measure the actual use of the Internet. Silinskyte (2014) also used self-reported use to measure the usage behavior of Bitcoin. Göbert (2018) likewise used self-reported use in his study to measure the adoption of cryptocurrencies. Both Silinskyte (2014) and Amoroso and Hunsinger (2009) incorporated ordinal scales to measure the frequency of usage behavior to measure actual usage behavior. Silinskyte (2014, p.55) used two questions with ordinal scales to measure the usage behavior of Bitcoin: "1. How long have you been using/having Bitcoin? The possible five answers were: I do not have Bitcoin, Less than a year, From 1 to 2 Years, From 2 to 3 years, More than 3 years. 2. On a monthly basis, how many times do you review Bitcoin related data"? The possible five answers were: Less than once a month, once a month, a few times a month, a few times a week, about once a day, several times a day. In this study actual usage behavior will be measured using three items with 5-point ordinal scales likewise to Silinskyte (2014). The items and possible answers are given below in Table 3.

Table 3. *Items to measure actual usage behavior (adoption) of cryptocurrency as speculative investment in the Netherlands*

Item	
ADO1	Since when have you been owning cryptocurrencies? *Possible answers: I have never owned any cryptocurrencies, Less than a year, From 1 to 2 Years, From 2 to 3 years, More than 3 years*
ADO2	How long have you been using cryptocurrencies as speculative investment? *Possible answers: I do not use cryptocurrencies as speculative investment, Less than a year, From 1 to 2 Years, From 2 to 3 years, More than 3 years*
ADO3	How often do you use cryptocurrencies as speculative investment? *Possible answers: I never use cryptocurrencies as speculative investment, Less than once a month, a few times a month, a few times a week, several times a day.*

3.3.2 Independent variables

To measure the constructs forming independent variables all items were derived from Moore and Bensabat (1991). The measures from Moore and Bensabat have been picked, because these measures are widely and actively used in different adoption contexts including cryptocurrency adoption (Lou, 2017; Spenkelink, 2014; Presthus and O'Malley, 2017). When selecting the items, the Cronbach's alpha was taken into account to check internally consistence in their measurements (Field, 2009). By using empirically tested and validated measuring scales from previous researches, a higher reliability can be realized (Schrauf and Navarro, 2005). The Cronbach's alphas of the items from the studies and corresponding measuring scales are displayed in Table 4. All except two constructs have high reliabilities $\alpha \geq 0.80$. Only Trialability and observability have values of $\alpha=0.71$ and $\alpha=0.79$ respectively. These values are still acceptable (Field, 2009). All constructs are measured using 7-point Likert scales.

Table 4. *Measures*

Construct	**Source of items**	**Measure**	**Cronbach's alpha**
Compatibility	Moore and Bensabat (1991)	Likert scale 1-7 Extremely disagree-extremely agree	0.86
Relative advantage	Moore and Bensabat (1991)	Likert scale 1-7 Extremely disagree-extremely agree	0.90
Trialability	Moore and Bensabat (1991)	Likert scale 1-7 Extremely disagree-extremely agree	0.71
Complexity (ease of use)	Moore and Bensabat (1991)	Likert scale 1-7 Extremely disagree-extremely agree	0.84
Observability (Result demonstrability)	Moore and Bensabat (1991)	Likert scale 1-7 Extremely disagree-extremely agree	0.79

3.3.3 Control variables

Arts et al. (2011) argued that adopter demographics explain a small amount of variance in adoption intention and adoption behavior. The results of their analysis showed that age has a small positive effect on adoption intention and a small negative effect on adoption behavior when it comes to new technology adoption. They also found that income had a positive effect on adoption behavior only and education has a small positive effect on adoption intention only (Arts et al., 2011). In the case of cryptocurrency adoption gender, age, income, and education were added as control variables. Without this data it is not possible to make a statement about the representativeness of the sample (Harinck and Harinck, 2009). AFM (2018) argued that cryptocurrency investors differ from traditional investors. Therefore, two types investors were added as control variables to determine if they would have any impact on cryptocurrency adoption as speculative investment by users in the Netherlands. Long-term investor and speculative investor were added as control variables. These two variables were measured using self-reported measures asking if someone uses or does speculative or long-term investments.

3.4 Data collection

3.4.1 Survey distribution

The online survey was opened with a brief introduction. In the brief introduction my contact details were mentioned. Also, the reason for doing this research was mentioned and the purpose was briefly explained. The estimated time required to fill in the questionnaire was also mentioned afterwards. Furthermore, the voluntary nature of the participation in this survey was emphasized. Participants were allowed to withdraw any time without a reason. Then the confidentiality of the responses and the anonymity of the respondents were guaranteed. Finally, appreciation and acknowledgement were expressed towards the respondents. After the brief introduction a pre questionnaire page was created with an explanation of the use of cryptocurrencies as speculative investment in order to achieve a mutual understanding of the concepts that were researched. Then the actual survey was opened with a few general questions about

background data of the respondent, such as gender, age, income, and education. Next, the questions of the independent and dependent variable followed. The order of questions per variable were randomized through Qualtrics.

Before actually spreading the online questionnaire online, the questionnaire was shared with several acquaintances who were familiar with cryptocurrencies as speculative investment to asses on clarity, logic, and spelling. Their feedback and comments were evaluated and processed in the finalization of the questionnaire. The first version of the questionnaire is displayed in Appendix D in English and Dutch. This way the translation from the original items could be checked for errors. Errors that were relevant to the operationalization were directly processed (in Table 2). The questionnaire was translated in Dutch, since I was looking for respondents from the Netherlands. An overview of substantive feedback and comments from acquaintances can be found in Appendix E in Table E1. One specific element was added due to feedback, which was a prize raffle as incentive to increase the amount of survey response. The prize was a voucher with a value of 50 euros from a well-known online store. The final version the questionnaire in Dutch is displayed in Appendix F.

The survey was distributed online via social networks, fora, personal network, and the networks from my surroundings. Examples of the actual distribution are viewable in Figure G1 and Figure G2. There were some concerns regarding privacy. One respondent argued that adding an element were people have to leave personal data in order to win a prize conflicts with cryptocurrencies. The respondent argued that cryptocurrencies emphasize taking personal data seriously. Another respondent argued that cryptocurrency users are very hesitant when hyperlinks or personal data are concerned. Also, a respondent questioned how anonymous actually was. Therefore, privacy and anonymity were checked again. As a result, responses were anonymized directly in Qualtrics and the full data is anonymized.

The raffle was held to determine the winner of the voucher. 170 respondents left their e-mail and therefore had a chance to win the voucher. In order to determine the winner, all e-mail addresses were retracted from Qualtrics. Double entries were removed to guarantee an equal chance. After deletion of double entries 167 entries were left. These entries were put in an online random picker. One winner was picked and contacted. To prove it integrity of the raffle, the details of the raffle and anonymized contact with the winner are added in figures G3-G5.

3.4.2 Research ethics

In this study, several relevant research ethics based on Bryman and Bell (2011) have been taken into account. The Dutch Code of Conduct for Research Integrity has been read and to my best knowledge respected (KNAW et al., 2018) This research has tried to minimize the risk of harm of the respondents. This means that if there could be a risk that respondents could be harmed of brought in a situation of discomfort, there must be a good justification. All participants have been well informed about the fact that they are taken part in an academic research and what the research requires from them. In the introduction of the survey the principle of informed consent was paid attention to, including transparency of research goals. The privacy of all participants to the survey was protected by guaranteeing confidentiality of responses and anonymous data processing. Also, the opinions, comments, and concerns of participants regarding privacy were respected. For all respondents the withdrawal from participating the survey was possible at every stage. There was no pressure whatever to stop them from withdrawing. This was also mentioned in the introduction of the survey. All possible deceptive practices were avoided. Intellectual property is respected. Therefore, a statement of originality was added in this document before the Table of contents.

3.5 Data analysis

The survey data was downloaded from Qualtrics and loaded into SPSS. First, validity and reliability were checked. Items that did not fit the requirements were deleted. Then multiple regression was used to analyze the data and test the hypothesis. The assumptions in order to conduct the analyses were tested and reported.

3.5.1 Validity and reliability

The questionnaire contained several items to measure different theoretical constructs. The reliability, validity and quality of these items was assessed. First of all, several factorial analyses were conducted in order to define the underlying latent structure among the items in the analysis (Field, 2009; Hair et al., 2014). The general use of a factorial analysis is data reduction and data summarization. The primary objective in this case was data summarization, thus finding the latent constructs represented in the items. Therefore, a common factor analysis using principal axis

factoring was conducted (Hair et al., 2014). This resulted in the deletion of two items. No items were deleted through inspection of the Cronbach's alpha, because all Cronbach's alphas were sufficient and the deletion of some of the items would only result in very small increases (Table H1-H12). Also, since the Cronbach's alphas were already sufficient no items were deleted in order to keep valuable information.

Thereafter, the remaining six different constructs were subjected to quality assessment. All constructs passed the quality assessment. Reliability was double checked using both the Cronbach's alpha and the Composite Reliability. Convergent validity was assessed using Average Variance Extracted. Discriminant validity was checked with the aid of Maximum Shared Variance, Average Shared Variance, Average Variance Extracted, and square root of Average Shared Variance (Hair et al., 2014). For the purpose of increased readability, the items have been abbreviated and their abbreviations are displayed in Table I1.

3.5.2 Factorial analyses

With aid of the factorial analyses, conceptual foundation and reassessment of the items, two items were deleted, and six factors were extracted. This iterative process resulted in the elimination of CPL2 and CPL3, which were supposed to represent the construct complexity. After the elimination of those two items the construct complexity still consisted of four items. In total 24 items were retained representing 6 constructs.

Prior to conducting the factorial analyses several assumptions were checked. Relevant descriptive statistics are shown in Table I2 and I3. The sample size was sufficient according to the rule of thumb; number of observations at least five times the number of items (Field, 2009; Hair et al., 2014). Also, Field argued that a sample of 300 or more probably would provide a stable factor solution. With a sample size of N=300 the sample for this study is just on the limit. All items had roughly normal distributions and consisted of at least interval data (Field, 2009). Normality was assessed using skewness and kurtosis values. All items had skewness and kurtosis values within the range of -2 and 2 except ADO3 with a skewness value of 2.100 and a kurtosis value of 3.934. Since this was the only variable out of range, it was ignored to improve interpretability. Multicollinearity and intercorrelation were addressed using two measures; Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) and Bartlett's Test of Sphericity were used to verify the sampling adequacy (Field, 2009;

Hair et al., 2014). For the Kaiser-Meyer-Olkin Measure of Sampling Adequacy > .500 was taken as threshold (Kaiser, 1974). Bartlett's test of sphericity had to be significant with an alpha <.05 (Field 2009; Hair et al., 2014). Furthermore, the following thresholds were used: Communalities >.20 and factor loadings >.40. Also, cross-loaders were assessed; an item was considered a cross loader if the difference between the highest and second highest load on a factor was <.20 (Field, 2009; Hair et al., 2014).

The full amount of 26 items was conducted to an explorative factorial analysis using principal axis factoring. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy was well above the threshold, thus verified the sampling adequacy, KMO = .912 ('superb' according to Field, 2009). Bartlett's test of sphericity $\chi 2$ (325) = 5,655.456, $p < .001$, indicated that correlations between items were sufficiently large (See Table J1).

The decision of how many factors to extract was based using a combination of the conceptual foundation and empirical evidence (Hair et al., 2014). According to the conceptual model in Figure 1 and operationalization of the independent variables in Table 2 six factors should be retained; five independent variables and one dependent variable. Eigenvalues were obtained to assess the factors in the data. Kaiser (1960) proposed that factors with eigenvalues greater than 1 should be retained. In this initial factorial analysis only five factors had eigenvalues >1 (see Table J2). Kaisers criterion is argued to be problematic and inefficient (Taherdoost, Sahibuddin and Jalaliyoon, 2014). Jolliffe (1972, 1986) reported that Kaiser's criterion is too rigid and suggests retaining all factors with eigenvalues greater than .7. This would mean that seven factors should be retained (see Table J2). The sixth factor had an eigenvalue of .960 which is just under Kaisers threshold of 1 (see Table J2). These six factors explained 64.490% of the shared variance, which was sufficient according to Hair et al. (2014). Thus, based on both the conceptual foundation and empirical evidence, six factors were retained in and conducted to analysis.

In the analysis of the 26 original items and six factors, oblique rotation (Promax) was used to produce a more interpretable and simplified solution (Hair et al., 2014). Oblique rotation allows factors to be correlated. In this analysis the factors are correlated; factors forming the independent variables and the factor forming the dependent variable are based on the Rogers model (Rogers, 2003). All items had factor loadings >.40 on at least one factor, but many also loaded highly on multiple factors (see Table J3). All communalities were above the threshold of .20 (see Table J4). There

were two cross-loaders; TRA4 and CPL1 are cross-loaders in this analysis (see Table J5).

Upon closer inspection of the pattern matrix and factor matrix the main thing that stood out was the difference in loadings of group CPL1, CPL4R, CPL5R, and CPL6R and group CPL2 and CPL3. CPL1, CPL4R, CPL5R, and CPL6R have sufficient high negative loadings on factor 1 (factor matrix) and still all negative loadings in the rotated solution, while CPL2 and CPL3 have both high positive loadings on factor 3. According to the conceptualization complexity should have a negative effect, while all other variables should have a positive effect. Only CPL1, CPL4R, CPL5R, and 6R had negative factor loadings. Based on cross-loadings CPL1 should be deleted, because of the smallest difference between the two highest loadings. However, in case of eliminating CPL1 the difference between CPL2 and 3 and the remaining CPL4R, CPL5R, and CPL6R remained the same; CPL2 and CPL3 loading positively on factor 3 and CPL4R, CPL5R, and CPL6R loading negatively on factor 1 (see Table J6). This indicated that complexity was not unidimensional. Thus, all items of complexity were submitted to further inspection.

On closer inspection of the items of complexity in the operationalization in Table 2 there appeared to be a clear difference between the items CPL2 and CPL3 and the items CPL1, CPL4R, CPL5R, and CPL6R. CPL2 and CPL3 measured complexity on a more personal level of mental effort and frustration, while CPL1, CPL4R, CPL5R, and CPL6R measured ease of use or complexity of use in general. In a separate factorial analysis to the items of complexity the difference confirmed again. Since there were two factors that complied with Kaisers criterion of eigenvalues >1 (see Table J7). The correlation matrix showed that CPL1, CPL4R, CPL5R, and CPL6R had higher mutual correlations and correlated lower with CPL 2 and CPL3, while CPL2 and CPL3 correlated higher with each other (Table J8). Both the factor and pattern matrix indicated that CPL1, CPL4R, CPL5R, and CPL6R loaded higher on factor 1 and CPL2 and 3 on factor 2 (see Tables J9 and J10). Thus, based on factorial analyses, conceptual foundation and reassessment of the items CPL2 and CPL 3 were deleted.

Another factorial analysis was conducted with the remaining 24 items. Kaiser-Meyer-Olkin Measure of Sampling Adequacy was well above the threshold, thus verified the sampling adequacy, KMO = .917 (‘superb’ according to Field, 2009). Bartlett’s test of sphericity $\chi 2\ (276) = 5{,}455.001$, $p < .001$, indicated that correlations between items were sufficiently large (see Table J11). Six constructs explained

67.709% of the shared variance (see Table J12). All items had factor loadings >.40 on at least one factor, but many also loaded highly on multiple factors indicating factor correlation (see Table J13). Thus, oblique rotation (Promax) was used. All communalities were well above the threshold of .20 (see Table J14). There were no cross-loaders in this analysis (see Table J15). Clustered items clearly loaded on different constructs and indicated which items and factor presumably stand for a certain construct. These suggestions are displayed below in Table 5.

Table 5. *Factor and suggested construct*

Factor	**Items**	**Suggested construct**
1	REA1, REA2, REA3, REA4, and REA5	Relative advantage (REA)
2	ADO1, ADO2, and ADO3	Actual usage behavior (ADO)
3	OBS1, OBS2, OBS3 and OBS4R	Observability (OBS)
4	CPA1, CPA2, CPA3, and CPA4	Compatibility (CPA)
5	CPL1, CPL4R, CPL5R, and CPL6R	Complexity (CPL)
6	TRA1, TRA2, TRA3, and TRA4	Trialability (TRA)

Note. Based on Table J15. Abbreviations of constructs between parentheses.

3.5.2 Quality assessment

In order to establish the reliability and validity of the six constructs they were subjected to quality assessment. Reliability indicates the degree to which the measured sets of items are internally consistent in their measurements (Hair et al., 2014). Construct validity argues to what extent the measured sets of items actually represent the corresponding latent constructs. Construct validity was validated using convergent validity and discriminant validity (Hair et al., 2014). Reliability was deemed sufficient when the Cronbach's alpha (CA) and the Composite Reliability (CR) were greater than .7. The Composite Reliability (CR) and Average Variance Extracted (AVE) were used to evaluate convergent validity. According to Fornell and Larchker (1981) and Hair et al. AVE should be above .50 and CR should be a higher amountr than AVE. In order to test the discriminant validity Average Variance Extracted (AVE), Maximum Shared Variance (MSV), Average Shared Variance (ASV), and square root of AVE were used.

Both MSV and ASV should be higher amount than AVE. The square root of AVE should be a higher amount than any other inter-construct correlation (Hair et al., 2014; Segars, 1997). From Table 6 and Table 7 can be deducted that all the above conditions were met.

Table 6. Q*uality assessment*

Construct	CA	CR	AVE	MSV	ASV
Relative advantage (REA)	.877	.880	.600	.464	.242
Actual usage behavior (ADO)	.943	.937	.834	.473	.264
Observability (OBS)	.839	.819	.531	.436	.280
Compatibility (CPA)	.895	.863	.616	.464	.235
Complexity (CPL)	.864	.837	.571	.389	.247
Trialability (TRA)	.872	.819	.549	.473	.315

Note. Based on Tables H1-H6 and K1-K7. Abbreviations of constructs between parentheses. Thresholds: Reliability CA >.7, CR >.7, Convergent validity AVE >.5, CR>AVE, Discriminant Validity MSV<AVE, ASV<AVE.

Table 7. *Discriminant validity using square root of AVE and construct correlations*

Construct	REA	ADO	OBS	CPA	CPL	TRA
REA	**.775**	.431	.387	.681	.430	.476
ADO	.431	**.913**	.532	.431	.436	.688
OBS	.387	.532	**.729**	.378	.624	.660
CPA	.681	.431	.378	**.785**	.455	.417
CPL	.430	.436	.624	.455	**.756**	.513
TRA	.476	.688	.660	.417	.513	**.741**

Note. Square root of AVE in **bold** based on Table J16 and Tables K1-K6. Construct abbreviations from Table 5 and Table 6 used to increase readability. Discriminant validity achieved when square root of AVE > inter-construct correlations.

4. Results

4.1 Descriptive statistics

In this study multiple regression is used to examine the dependence relation between the independent variables and a single dependent variable (Hair et al., 2014). Multiple regression was justified; the relationship between the only dependent variable

actual usage behavior and five independent variables derived from Rogers was analyzed. All variables should have been measured using metric scale (Hair et al., 2014). In order to use binominal variables in the regression models, they have to be transformed into dummy variables. The dependent variable and independent variables were measured using metric scale. Binominal control variables were recoded into dummy variables.

Hair et al. (2014) argued a minimum sample size of 5 observations per independent variable and a desired level of 15 to 20 observations per independent variable. The used dataset (n=300) has a ratio of 60:1 per independent variable (number of observations: one independent variable) and is well above both the minimum and desired level of observations.

In order to examine if the variables were normally distributed the skewness and kurtosis values were analyzed. The range was set between -2 and +2 for both skewness and kurtosis. All values were within range, thus indicating acceptable levels of skewness and kurtosis. Also, large sample size reduces the impact of non-normality (Field, 2009; Hair et al., 2014). Since both skewness and kurtosis were within the range and the sample size was relatively large (N=300), the variables were accepted as normally distributed. An overview of descriptive statistics of the summated constructs is provided in Table 8.

Table 8. *Descriptive statistics dependent and independent variables*

	Mean	**Std. Dev.**	**Skewness**	**Kurtosis**	**Minimum**	**Maximum**
1. Actual usage behavior	1.672	1.060	1.276	.244	1	7
2. Compatibility	4.203	1.495	-.474	-.611	1	7
3. Relative advantage	4.283	1.294	-.614	.342	1	7
4. Trialability	3.693	1.603	.120	-1.071	1	7
5. Complexity	4.108	1.332	-.009	-.551	1	7
6. Observability	4.109	1.368	-.262	-.503	1	5

Note. N=300; Based on Table L1.

4.1 Inter-correlations

Prior to testing the hypotheses with aid of multiple regression the inter-construct correlations are discussed. In Table 9 the inter-construct correlations are displayed. The dependent variable actual usage behavior (adoption) significantly correlates with all independent variables. However, all constructs that represent the independent variables have significant inter-correlations. This indicates that all constructs interact with each other. According to Hair et al. (2014) this is not an ideal scenario; the ideal scenario would be if the independent variables have high correlations with the dependent variable and have low multicollinearity with other independent variables. In order to check multicollinearity, the Tolerance and VIF have been checked (Hair et al., 2014). The VIF threshold was set on 10 (VIF<10) and Tolerance value had to be higher than .10 (Tolerance>.10). Both values were within range for every regression model (see Table L2). This indicates that multicollinearity was within generally acceptable range.

Table 9. *Correlation matrix dependent and independent variables*

	1	**2**	**3**	**4**	**5**	**6**
1. Actual usage behavior	1.000					
2. Compatibility	.406*	1.000				
3. Relative advantage	.396*	.652*	1.000			
4. Trialability	.687*	.420*	.457*	1.000		
5. Complexity	-.449*	-.442*	-.401*	-.487*	1.000	
6. Observability	.493*	.348*	.332*	.621*	-.594*	1.000
Mean	1.672	4.203	4.283	3.693	4.108	4.109
Standard deviation	1.060	1.495	1.294	1.603	1.332	1.368

Note. N=300; *p<.001 ; Significance level p<.01 (2-tailed); Based on Table L3.

Since every construct is derived from Diffusion of Innovations it is not surprising that all constructs are correlate to some extend (Rogers, 2003). Innovation characters may be inter-connected to a certain extent (Arts et al., 2011). These inter-correlations of all constructs also occurred in other studies (Plouffe et al., 2001; Scott, Plotnikoff, Karunamuni, Bize, and Rodgers, 2008).

Regarding the independent variables the correlation between relative advantage and compatibility is the strongest (r=.652, p<.001). This strong correlation between these two constructs was also found by Arts et al. in their meta-analysis on drivers of intention and actual behavior.

All constructs show significant two-tailed inter-correlations. However, there is a difference between the strength of these inter-correlations. The higher the correlation, the stronger the relationship between constructs and the better the predictive accuracy of a construct (Hair et al., 2014).

The most relevant inter-correlations in this study are the correlations between the dependent variable and the independent variables. All these correlations are two-tailed significant at p<.01 significance level. The dependent variable actual usage behavior shows the strongest correlation with trialability (r=.687, p<.001). Thereafter, observability has a decent amount of correlation with actual usage behavior (r.=493). Complexity has a negative correlation with actual usage behavior (r=-449, p<.001). The independent variable compatibility also shows a reasonable amount of correlation with the dependent variable actual usage behavior (r=.406, p<.001). Relative advantage has the lowest correlation with actual usage behavior (r=.396, p<.001).

Thus, trialability appears to the best predictor of actual usage behavior of cryptocurrencies as speculative investment among users in the Netherlands, while relative advantage appears to be the worst predictor of the dependent variable.

4.2 Assumptions multiple regression analysis

Prior to the regression analysis the assumptions were examined. Hair et al. (2014) proposed four assumptions: "1. Linearity of phenomenon measured 2. Constant variance of the error terms 3. Independence of the error terms 4. Normality of the error term distribution" (p.178). A regression analysis was conducted to examine these assumptions.

Linearity was assessed using a scatterplot of standardized residuals and standardized predicted values and partial regression plots. All plots approximate linear relationships. These plots are displayed in Figures L1-L6.

Constant variance of error terms was also examined with a scatterplot of standardized residuals and standardized predicted values. The visual inspection indicated that the assumption of homoscedasticity was not met. Figure L7 shows that

the plot had a diamond shape. Thus, the data is heteroscedastic. No transformation substantially improved the scatterplot. Field (2009) also argues that transforming data does not inevitably affect residuals. Weighted least squares can be used if the violation can be assigned to a single independent variable (Hair et al., 2014). The visual inspection of the partial regression plots did not indicate that one particular independent variable was responsible for the violation. Therefore, the assumption of homoscedasticity will be ignored. However, this is one of the major drawbacks of this research. In this case conclusions can still be draw about the sample, but these findings are not generalizable beyond the sample (Field, 2009)

Independence of error terms was tested with Durbin-Watson test. The outcome of this test can range from 0 to 4 with a value around 2 meaning no correlation, thus independence of error terms. Table L4 shows that Durbin-Watson test had a value of 1.927. Thus, there was independence of error terms.

Normality of error term distribution can be examined using the normal probability plot or the histogram of residuals. The histogram is displayed in Figure K8 and the normal probability plot presented in Figure K9. The histogram has a bell shape and in the normal probability plot the plotted residuals follows the diagonal line (Hair et al., 2014). Thus, the error terms were normally distributed.

4.3 Multiple regression analysis

4.3.1 Regression models

Two multiple regression analyses have been conducted to determine which of the five perceived innovation characteristics influence the actual usage behavior (adoption) of cryptocurrencies as speculative investment by users in the Netherlands. In Model 1 only the five independent variables are used in the multiple regression analysis. In Model 2 three control variables were added. Gender, long-term investor, and speculative investor were added since they increased the R square significantly. These three control variables were the only variables that increased the R square significantly, therefore they were chosen (see Table L5). At first sight, monthly net income gave the impression to increase R square significantly (see Table L6). However, after further inspection monthly net income turned out not to increase R square (see

Table L7 and L8). Therefore, gender, long-term investor, and speculative investor were added as control variables in Model 2.

As a result of the addition of these three variables the total variance explained increased with 16.4% (see Table L9). This increase in explained variance is significant ($F_{change}(3, 291) = 47.313$, $p<.001$). Since this increase results in a significant increase of total variance of actual usage behavior Model 2 will be used to test the hypotheses.

In Model 1 five variables explained 70.7% of the total variance of actual usage behavior ($R^2 = 0.707$, $F(5, 294) = 58.660$, $p<.001$). In Model 2 eight variables explained 81.5% of the total variance of actual usage behavior ($R^2 = 0.815$, $F(8, 291) = 47.313$, $p<.001$). Both models and their effects are displayed in Table 10 and are based on Table L2 and L9 in the appendix.

Table 10. *The effects of perceived innovation characteristics, gender, long-term investor, and speculative investor on actual usage behavior (adoption of cryptocurrencies as speculative investment by users in the Netherlands)*

	Model 1: only perceived innovation characteristics			**Model 2: perceived innovation characteristics and three control variables**		
	β	**t**	**p**	**β**	**t**	**p**
Constant		.294	.769		1.444	.150
Compatibility	.097	1.705	.089	.030	.625	.532
Relative advantage	.023	.401	.689	.094	1.945	.053
Trialability	.561*	9.934	.000	.229*	4.211	.000
Complexity	-.097	-1.774	.077	-.084	-1.866	.063
Observability	.045	.780	.436	-.003	-.052	.959
Gender[1]				.108**	2.759	.006
Long-term investor				.069	1.695	.091
Speculative investor				.464*	9.932	.000
R^2 (Adjusted R^2)	.707	(.499)		.815	(0.654)	
F	58.660***			71.731		

Note. N=300; *p<.001; **p<.01; significance level p<.05; Dependent variable: Actual usage behavior; [1]0=female 1=male; Font size decreased for increased readability.

The results of the multiple regression analysis in Model 2 show that relative advantage has a small positive effect on actual usage behavior. However, this effect is not significant at a significance level of $p<.05$ ($\beta=.094$, $p=.053$). Thus, hypothesis 1 is rejected.

Compatibility also has a small positive effect on actual usage behavior. Also, this effect is not significant at a significance level of $p<.05$ ($\beta=.030$, $p=.0532$). Thus, hypothesis 2 is rejected.

Complexity has a small negative effect on actual usage behavior. This effect is not significant at a significance level of $p<.05$ ($\beta=-.084$, $p=.063$). Thus, hypothesis 3 is also rejected.

Trialability has a positive significant effect on actual usage behavior at $p<.05$ significance level ($\beta=.229$, $p<.001$). Thus, hypothesis 4 is rejected.

Observability has a very small negative effect on actual usage behavior. This effect is not significant at a significance level of $p<.05$ ($\beta=-.003$, $p=.959$). Thus, hypothesis 5 is rejected.

In both models trialability is the only perceived innovation characteristic that has significant influence on actual usage behavior. The results are displayed in Table 11 below.

At last two control variables have significant influence on actual usage behavior. Gender has significant positive influence on actual usage behavior ($\beta=.108$, $p=.006$). This means that the chance of adoption increases, when the gender is male. If someone does speculative investments also has significant positive influence on actual usage behavior ($\beta=.464$, $p<.001$).

Table 11. Hypotheses and results

Hypothesis	**Description**	**Result**
H1	*Relative advantage will positively influence the adoption of cryptocurrencies as speculative investment by users from the Netherlands.*	Rejected
H2	*Compatibility will positively influence the adoption of cryptocurrencies as speculative investment by users from the Netherlands.*	Rejected

H3	*Complexity negatively influences the adoption of cryptocurrencies as speculative investment by users from the Netherlands.*	Rejected
H4	*Trialability will positively influence the adoption of cryptocurrencies as speculative investment by users from the Netherlands.*	Accepted
H5	*Observability will positively influence the adoption of cryptocurrencies as speculative investment by users from the Netherlands.*	Rejected

Note. Hypotheses were accepted at significance level $p<0.05$.

5. Discussion

In this research five hypotheses have been formulated to examine the dependence relation between five perceived innovation characteristics and the adoption of cryptocurrencies as speculative investment by users in the Netherlands. The results indicated that only perceived trialability has significant influence on adoption.

Rogers (2003) assumed that all five perceived innovation characteristics influence the adoption of an innovation. Relative advantage, compatibility, trialability, and observability are all expected to positively influence the adoption of an innovation. The perceived innovation characteristic complexity supposedly has a negative effect on the adoption of an innovation.

In Model 1 of the multiple regression analysis, the types of effects conformed the expectations of Rogers (see table 10). However, only trialability had a significant positive effect. All other effects were not significant, and their effect sizes were small. Thus, only one innovation characteristic (perceived trialability) had a significant effect on adoption in contrast to the expectation of Rogers, who expected that all five innovation characteristics influence the adoption of an innovation.

When three control variables were added in regression Model 2, the effect sizes of all variables changed considerably. Also, the effect of observability changed to a minor negative effect. In Model 2 trialability remained the only significant influencer, but the magnitude of its effect was reduced by a substantial amount. This conclusion is still contrary to the expected effects of Rogers (2003).

In the meta-analysis of Arts et al. (2011) the effects of the perceived adoption characteristics are found to be different. Arts et al. found that relative advantage has the greatest effect on adoption behavior; this effect is a significant positive effect. Compatibility has a small significant positive effect on adoption behavior. Observability and complexity both have significant negative effects on adoption behavior. Surprisingly, in the meta-analysis trialability turns out to have a negative effect on adoption behavior. However, this effect is not significant. The results from this thesis are totally not in line with the effects that emerged from Arts et al. (2011).

Both Shahzad et al. (2018) and Spenkelink (2014) found that ease of use has a positive effect on the adoption of cryptocurrencies as payment method. Thus, complexity should have the reverse effect. The results of this research showed that complexity nearly has a significant negative effect in both models. In Model 1 complexity the effect is not significant at $p<.05$ significance level ($\beta=-.097$, $p=.077$). In Model 2 Complexity has a small not significant negative effect on actual usage behavior ($\beta=-.084$, $p=.063$). Therefore, also this effect is not in accordance with literature. However, this can be assigned to the difference context, which was payment method in literature and speculative investment in this study.

With regard to the control variables Arts et al. (2011) argued that age and income have an effect on adoption behavior. Gender and education do not have any effect on adoption behavior. This is opposed to the results of this research. Gender has a significant effect on the adoption of cryptocurrencies as speculative investment by users in the Netherlands. Age and income did not have any effect and did not improve the explanative power of the regression models.

The fact that someone is familiar with any kind of speculative investments (speculative investor) has a significant positive effect on adoption behavior (see Table 10). From all variables, speculative investor has the greatest significant effect ($\beta=.464$, $p<.001$). This is a new finding that had not been addressed in literature yet. Conclusively, the results of this research are very contradictory to the expectations that can be derived from existing literature.

5.1 Limitations

The first limitation of this study is that it does not cover all the constructs from the adoption literature. Therefore, it is not possible to have a full overview and

clarification of the adoption of cryptocurrencies as speculative investment in the Netherlands. The aim of this research was to determine factors that explain the adoption of cryptocurrencies is speculative investment by Dutch users. One factor was found that influences the adoption of cryptocurrencies is speculative investment by Dutch users. However, there are many more factors that could influence its adoption and actual use.

Second, cryptocurrencies have more functions that only the use as speculative investment. The other uses of cryptocurrencies are not covered such as payment method or technological learning interest (Presthus and O'Malley, 2017).

Third, the representativity of sample is not textbook perfect. The average total sample age is younger than the average age in the Netherlands. The average age of cryptocurrency in the sample is also lower than the average age of cryptocurrency investors. The average age in the sample is 31, while the average age of cryptocurrency users in the sample is 29. The average age in the Netherlands is 42 (Statista, 2019a). According to AFM (2018) the average age of cryptocurrency investors in the Netherlands is 38. Also, the sample contains some gender biases (see Table 1). The total sample is slightly male biased (58:42 male-to-female ratio). The number of non-users is slightly female biased (45:55 male-to-female ratio). The gender of cryptocurrency users is very biased towards males (85:15 male-to-female ratio). However, the biased towards males among cryptocurrency users is not uncommon (AFM, 2018; Presthus and O'Malley, 2017).

Fourth, the fact that the data is heteroscedastic was ignored. This is maybe the most significant drawback and limitation of this research, because the findings are not generalizable beyond the sample (Field, 2009).

6. Conclusion

In this research is tried to answer the following question: *which factors influence the adoption of cryptocurrencies as speculative investment by users in the Netherlands*?

The framework which has been used in this study is the Diffusion of Innovations framework of Rogers (2003). Rogers uses five perceived innovation characteristics that could possibly influence the adoption of cryptocurrencies as speculative investment by users in the Netherlands. The results from the research in this study demonstrate that only one of the five innovation characteristics (trialability) has a significant positive effect on adoption. The hypotheses that relative advantage, compatibility and

observability each have a positive effect on adoption, are all rejected. Also, the hypothesis that complexity has a negative effect on adoption, is rejected. Two control variables influenced adoption. Both gender and if someone does some kind of speculative investments have positive influence on adoption. However, due to the limitations mentioned the results should be interpreted with care.

This research advances past research on cryptocurrency adoption, because this research pioneers the sole focus on the use of cryptocurrencies as speculative investment; in contrast to other studies that examined general cryptocurrency adoption or the adoption as payment method. This research also narrows the gap in literature, because of the sole focus on the use of cryptocurrencies as speculative investment.

Furthermore, this research narrows the gap in literature in two other ways. By limiting the research population to users in the Netherlands more specific knowledge is gained, which is applicable to the cryptocurrency context of the Netherlands. Also, this research is the first work in which all five perceived innovation characteristics from Rogers (2003) are used to explain the adoption of cryptocurrency as speculative investment. Thus, by examining a new combination of other key variables than used in previous research, this study offers new insights.

6.1 Theoretical and practical implications

This research was primarily conducted in order to narrow the gap in literature and to provide new insights into cryptocurrency adoption. Theoretical and practical implications are formed with care, since this research has some limits. Mainly, the findings are not generalizable beyond the sample, because of the heteroscedastic of the sample data. Nevertheless, based on the results of the study a few theoretical and practical implications can be cautiously formed. However, these implications should be interpreted with care. The results from the research in this study show that only trialability has significant influence on the adoption. Therefore, trialability seems to be an important factor influencing adoption of cryptocurrencies as speculative investment by users in the Netherlands.

With regard to the instrument I would not recommend using it again in order to examine the adoption of cryptocurrencies as speculative investment. In addition to the fact that using this instrument resulted in a heteroscedastic data sample, the main concern is the high inter-correlations in table 9.

From a practical standpoint trialability and perhaps complexity could be important for the stakeholders of cryptocurrency speculative investment adoption. Although, complexity has a non-significant effect on adoption, it could still be important. Other researches indicated that ease of use had a positive effect on adoption of cryptocurrencies as payment method (Shahzad et al., 2018 and Spenkelink, 2014). One could argue if cryptocurrencies would be perceived as less complex that it would result in a non-user to perceive cryptocurrencies easier accessible. Thus, would result in increased amount of trialability.

6.2 Future research

Recommendations for future research include several aspects. At this point little research has been conducted on the adoption of cryptocurrencies as speculative investment. Therefore, the first recommendation would be to further investigate factors that can influence the adoption of cryptocurrencies as speculative investment.

The results showed that trialability has a significant influence on the adoption. However, trialability should be further investigated in the context of cryptocurrency adoption as speculative investment, since the results were not generalizable. In the field of cryptocurrency adoption as speculative investment in a Dutch context, follow-up investigation could mean that the model and measures should be reassessed, and a new sample should be retrieved to retest the five perceived innovation characteristics against the adoption of cryptocurrency as speculative investment by users in the Netherlands. Actual usage behavior could be measured on a binary scale in the form of actual use.

The variable of complexity should be further investigated. In Model 2 complexity had a p value of p=.063 (β=-.084, p=.063). Thus, complexity was just not significant by a small margin. Also, ease of use (complexity reversed) had a positive effect on adoption of cryptocurrencies as payment method (Shahzad et al., 2018 and Spenkelink, 2014). Therefore, further academic attention should be given to the dependencies in the relation between complexity and cryptocurrency adoption.

Also, the relation between cryptocurrency and general speculative investors should be further investigated, because the familiarity with any kind of speculative investments has a significant positive effect on the adoption of cryptocurrencies as speculative investment by users from the Netherlands (β=.464, p<.001). However, this

was a control variable in the model. Thus, the recommendation is to further elaborate on the relation with cryptocurrency adoption as speculative investment.

6.3 Reflection

As a researcher I perceived the whole process of creating this thesis as intensive and informative. There were periods of difficulty if things did not turn out the way I expected or wanted. These periods were often caused by my own stubbornness wanting to solve things in a certain way. However, often this certain way was not convenient and resulted sometimes some in stress or even irritation. When I finally found a solution for difficulties stress or irritation were displaced by relief. The lesson that I have learned is that I should try to focus more on other possibilities rather than trying to solve something the way I projected in my head. After all, I enjoyed the intellectual process of an academic research. In particular, the constant critical reflection and useful feedback encouraged me to constantly try to improve. This research taught me a lot and provided new insights in critical thinking and problem solving.

References

AFM. (2018, June 26). *Investing in cryptos in the Netherlands*. Retrieved from https://www.afm.nl/nl-nl/nieuws/2018/juli/cryptobezitters

Ajzen, I, & Fishbein, M. (1980). *Understanding attitudes and predicting social behaviour*. Prentice-Hall.

Ajzen, Icek. (1985). From intentions to actions: A theory of planned behavior. In *Action control* (pp. 11–39). Springer.

Ajzen, Icek. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*(2), 179–211.

Amoroso, D. L., & Hunsinger, S. (2009). Measuring the Acceptance of Internet Technology by Consumers: *International Journal of E-Adoption*, *1*(3), 48–81. https://doi.org/10.4018/jea.2009092903

Arts, J. W. C., Frambach, R. T., & Bijmolt, T. H. A. (2011). Generalizations on consumer innovation adoption: A meta-analysis on drivers of intention and behavior. *International Journal of Research in Marketing*, *28*(2), 134–144. https://doi.org/10.1016/j.ijresmar.2010.11.002

Baur, A. W., Bühler, J., Bick, M., & Bonorden, C. S. (2015). Cryptocurrencies as a Disruption? Empirical Findings on User Adoption and Future Potential of Bitcoin and Co. In M. Janssen, M. Mäntymäki, J. Hidders, B. Klievink, W. Lamersdorf, B. van Loenen, & A. Zuiderwijk (Eds.), *Open and Big Data Management and Innovation* (Vol. 9373, pp. 63–80). https://doi.org/10.1007/978-3-319-25013-7_6

Bierer, T. (2016). Hashing It out: Problems and Solutions concerning Cryptocurrency Used as Article 9 Collateral Notes. *Case Western Reserve Journal of Law, Technology and the Internet*, *7*, 79–94.

Blair, E., & Burton, S. (1987). Cognitive Processes Used by Survey Respondents to Answer Behavioral Frequency Questions. *Journal of Consumer Research*, *14*(2), 280–288.

Boyen, X., Carr, C., & Haines, T. (2016). *Blockchain-Free Cryptocurrencies: A Framework for Truly Decentralised Fast Transactions* (No. 871). Retrieved from http://eprint.iacr.org/2016/871

Bryman, A., & Bell, E. (2011). *Business Research Methods 3e*. OUP Oxford.

Cheah, E.-T., & Fry, J. (2015). Speculative bubbles in Bitcoin markets? An empirical investigation into the fundamental value of Bitcoin. *Economics Letters*, *130*, 32–36. https://doi.org/10.1016/j.econlet.2015.02.029

Chu, J., Chan, S., Nadarajah, S., & Osterrieder, J. (2017). GARCH Modelling of Cryptocurrencies. *Journal of Risk and Financial Management*, *10*(4). https://doi.org/10.3390/jrfm10040017

Cusumano, M. A. (2014). The Bitcoin Ecosystem. *Communications of the ACM*, *57*(10), 22–24. https://doi.org/10.1145/2661047

Darlington, J. (2014). *The Future of Bitcoin: Mapping the Global Adoption of World's Largest Cryptocurrency Through Benefit Analysis*. 23.

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User Acceptance of Computer Technology: A Comparison of Two Theoretical Models. *Management Science*, *35*(8), 982–1003. Retrieved from JSTOR.

Easterby-Smith, M. T., Thorpe, R., & Lowe, A. (2002). Management research: An introduction. *Management Research: An Introduction*, *2*, 342.

Elliot, S., & Loebbecke, C. (2000). Interactive, inter-organizational innovations in electronic commerce. *Information Technology & People*, *13*(1), 46–67. https://doi.org/10.1108/09593840010312753

Field, A. (2009). *Discovering statistics using SPSS*. Sage publications.

Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research*, *18*(1), 39–50. https://doi.org/10.2307/3151312

Given, L. M. (Ed.). (2008). *The Sage encyclopedia of qualitative research methods*. Los Angeles, Calif: Sage Publications.

Glaser, F., Haferkorn, M., Siering, M., Weber, C., & Zimmermann, K. (2014). BITCOIN - ASSET OR CURRENCY? REVEALING USERS' HIDDEN INTENTIONS. *Tel Aviv*, 15.

Göbert, M. (2018). *End-user Adaptation of Cryptocurrencies*. 76.

Grant, R. M. (1996). Toward a knowledge-based theory of the firm. *Strategic Management Journal*, *17*(S2), 109–122.

Hair, J. F., Anderson, R. E., Hair, J. F., Anderson, R. E., Babin, B. J., & Black, W. C. (2014). *Multivariate data analysis* (7. ed., Pearson new internat. ed). Harlow: Pearson.

Harinck, F. J. H., & Harinck, F. (2009). *Basisprincipes praktijkonderzoek*. Maklu.

Hartley, C., Brecht, M., Pagerey, P., Weeks, G., Chapanis, A., & Hoecker, D. (1977). Subjective time estimates of work tasks by office workers. *Journal of Occupational Psychology*, *50*(1), 23–36.

Henry, C., Lapenu, C., Zeller, M., & Sharma, M. (2003). *Microfinance Poverty Assessment Tool*. World Bank Publications.

Hileman, G., & Rauchs, M. (2017). 2017 Global Cryptocurrency Benchmarking Study. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.2965436

Hyvönen, K., Repo, P., & Walden, P. (2005). *Adoption of Mobile Services across Different Technologies*.

Jolliffe. (1986). *Principal component analysis*. New York: Springer-Verlag.

Jolliffe, I. T. (1972). Discarding Variables in a Principal Component Analysis. I: Artificial Data. *Journal of the Royal Statistical Society. Series C (Applied Statistics)*, *21*(2), 160–173. https://doi.org/10.2307/2346488

Jonker, N. (2018). What Drives Bitcoin Adoption by Retailers. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3134404

Junco, R. (2013). Comparing actual and self-reported measures of Facebook use. *Computers in Human Behavior*, *29*(3), 626–631. https://doi.org/10.1016/j.chb.2012.11.007

Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrika*, *39*(1), 31–36.

Kaldor, N. (1976). Speculation and Economic Stability. In B. A. Goss & B. S. Yamey (Eds.), *The Economics of Futures Trading* (pp. 111–123). https://doi.org/10.1007/978-1-349-02693-7_6

Kapoor, K., K. Dwivedi, Y., & D. Williams, M. (2014). Innovation adoption attributes: A review and synthesis of research findings. *European Journal of Innovation Management*, *17*(3), 327–348. https://doi.org/10.1108/EJIM-08-2012-0083

Khechine, H., Lakhal, S., & Ndjambou, P. (2016). A meta-analysis of the UTAUT model: Eleven years later. *Canadian Journal of Administrative Sciences / Revue Canadienne des Sciences de l'Administration*, *33*(2), 138–152. https://doi.org/10.1002/cjas.1381

King, J. L., Gurbaxani, V., Kraemer, K. L., McFarlan, F. W., Raman, K. S., & Yap, C.-S. (1994). Institutional factors in information technology innovation. *Information Systems Research*, *5*(2), 139–169.

KNAW, NFU, NWO, TO2-Federatie, Vereniging Hogescholen, & VSNU. (2018). *NEDERLANDSE GEDRAGSCODE WETENSCHAPPELIJKE INTEGRITEIT*. Retrieved from https://doi.org/10.17026/dans-2cj-nvwu

Krueger, N. F., & Carsrud, A. L. (1993). Entrepreneurial intentions: Applying the theory of planned behaviour. *Entrepreneurship & Regional Development*, *5*(4), 315–330. https://doi.org/10.1080/08985629300000020

Kuo Chuen, D. L., Guo, L., & Wang, Y. (2017). Cryptocurrency: *A New Investment Opportunity? The Journal of Alternative Investments*, *20*(3), 16–40. https://doi.org/10.3905/jai.2018.20.3.016

Lee, A. (2015). *Exploring the Innovation Decision Process of Merchant Bitcoin Adoption*.

Lou, A. T. F. (2017). *Integrating Innovation Diffusion Theory and the Technology Acceptance Model: The adoption of blockchain technology from business managers' perspective*.

Luther, W. J. (2016). Cryptocurrencies, Network Effects, and Switching Costs. *Contemporary Economic Policy*, *34*(3), 553–571. https://doi.org/10.1111/coep.12151

Lyytinen, K., & Damsgaard, J. (2001). What's Wrong with the Diffusion of Innovation Theory? In M. A. Ardis & B. L. Marcolin (Eds.), *Diffusing Software Product and Process Innovations* (Vol. 59, pp. 173–190). https://doi.org/10.1007/978-0-387-35404-0_11

Marshall, M. N. (1996). *Sampling for qualitative research*. 4.

Mäkelä, K. (2006). *ESSAYS ON INTERPERSONAL LEVEL KNOWLEDGE SHARING WITHIN THE MULTINATIONAL CORPORATION*. 239.

Mathieson, K. (1991). Predicting user intentions: comparing the technology acceptance model with the theory of planned behavior. *Information Systems Research, 2*(3), 173–191.

Moore, G. C., & Benbasat, I. (1991). Development of an instrument to measure the perceptions of adopting an information technology innovation. *Information Systems Research, 2*(3), 192–222.

Nord, W. R., & Tucker, S. (1987). *Implementing routine and radical innovations*. Free Press.

Pavlou, P. A., & Fygenson, M. (2006). Understanding and predicting electronic commerce adoption: an extension of the theory of planned behavior. *MIS Q., 30*(1), 115–143.

Phillip, A., Chan, J. S. K., & Peiris, S. (2018). A new look at Cryptocurrencies. *Economics Letters, 163*, 6–9. https://doi.org/10.1016/j.econlet.2017.11.020

Plouffe, C. R., Vandenbosch, M., & Hulland, J. (2001). Intermediating technologies and multi-group adoption: A comparison of consumer and merchant adoption intentions toward a new electronic payment system. *Journal of Product Innovation Management, 18*(2), 65–81. https://doi.org/10.1111/1540-5885.1820065

Presthus, W., & O'Malley, N. O. (2017). Motivations and Barriers for End-User Adoption of Bitcoin as Digital Currency. *Procedia Computer Science, 121*, 89–97. https://doi.org/10.1016/j.procs.2017.11.013

Ramanathan, T. R. (2009). *The role of organisational change management in offshore outsourcing of information technology services: Qualitative case studies from a multinational pharmaceutical company*. Universal-Publishers.

Rao, S., & Troshani, I. (2007). A Conceptual Framework and Propositions for the Acceptance of Mobile Services. *Journal of Theoretical and Applied Electronic Commerce Research*, *2*(2), 13.

Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). New York: Free Press,. WorldCat.org.

Roussou, I., & Stiakakis, E. (2019). *Adoption of Digital Currencies: The Companies' Perspective: 6th International Symposium and 28th National Conference on Operational Research, Thessaloniki, Greece, June 2017*. https://doi.org/10.1007/978-3-319-95666-4_4

Saunders, M. N. K., Lewis, P., & Thornhill, A. (2009). *Research methods for business students* (5th ed). New York: Prentice Hall.

Schrauf, R. W., & Navarro, E. (2005). Using Existing Tests and Scales in the Field. *Field Methods*, *17*(4), 373–393. https://doi.org/10.1177/1525822X05279924

Schwandt, T. A. (1994). Constructivist, interpretivist approaches to human inquiry. *Handbook of Qualitative Research*, *1*, 118–137.

Scott, S. D., Plotnikoff, R. C., Karunamuni, N., Bize, R., & Rodgers, W. (2008). Factors influencing the adoption of an innovation: An examination of the uptake of the Canadian Heart Health Kit (HHK). *Implementation Science*, *3*(1), 41. https://doi.org/10.1186/1748-5908-3-41

Segars, A. H. (1997). Assessing the unidimensionality of measurement: A paradigm and illustration within the context of information systems research. *Omega*, *25*(1), 107–121. https://doi.org/10.1016/S0305-0483(96)00051-5

Shahzad, F., Xiu, G., Wang, J., & Shahbaz, M. (2018). An empirical investigation on the adoption of cryptocurrencies among the people of mainland China.

Technology in Society, *55*, 33–40. https://doi.org/10.1016/j.techsoc.2018.05.006

Sheppard, B. H., Hartwick, J., & Warshaw, P. R. (1988). The Theory of Reasoned Action: A Meta-Analysis of Past Research with Recommendations for Modifications and Future Research. *Journal of Consumer Research*, *15*(3), 325. https://doi.org/10.1086/209170

Silinskyte, J. (2014). Understanding Bitcoin adoption: Unified theory of acceptance and use of technology (UTAUT) application. *Master Thesis. Leiden Institute of Advanced Computer Science (LIACS)*, 1–56.

Smith, C., & Kumar, A. (2018). Crypto-Currencies – an Introduction to Not-so-Funny Moneys. *Journal of Economic Surveys*, *32*(5), 1531–1559. https://doi.org/10.1111/joes.12289

Spender, J.-C. (1996). Making knowledge the basis of a dynamic theory of the firm: Making Knowledge. *Strategic Management Journal*, *17*(S2), 45–62. https://doi.org/10.1002/smj.4250171106

Spenkelink, H. (2014). *The adoption process of cryptocurrencies*. 103.

Statista. (2019a). Netherlands: Average age population 2008-2018 | Statistic. Retrieved June 17, 2019, from Statista website: https://www.statista.com/statistics/521650/netherlands-average-age-population-by-gender/

Statista. (2019b). Netherlands: Population, by gender 2018 | Statistic. Retrieved June 17, 2019, from Statista website: https://www.statista.com/statistics/519796/population-of-the-netherlands-by-gender/

Szajna, B. (1994). Software Evaluation and Choice: Predictive Validation of the Technology Acceptance Instrument. *MIS Quarterly*, *18*(3), 319–324. https://doi.org/10.2307/249621

Taherdoost, H., Sahibuddin, S., & Jalaliyoon, N. (2014). *Exploratory Factor Analysis ; Concepts and Theory*.

Tao, C.-C., & Fan, C.-C. (2017). A Modified Decomposed Theory of Planned Behaviour Model to Analyze User Intention towards Distance-Based Electronic Toll Collection Services. *PROMET - Traffic&Transportation*, *29*(1), 85–97. https://doi.org/10.7307/ptt.v29i1.2076

Taylor, S., & Todd, P. A. (1995). Understanding Information Technology Usage: A Test of Competing Models. *Info. Sys. Research*, *6*(2), 144–176.

Teo, T. S. H., & Pok, S. H. (2003). Adoption of WAP-enabled mobile phones among Internet users. *Omega*, *31*(6), 483–498. https://doi.org/10.1016/j.omega.2003.08.005

Thompson, V. A. (1965). Bureaucracy and Innovation. *Administrative Science Quarterly*, *10*(1), 1–20. https://doi.org/10.2307/2391646

Tornatzky, L. G., & Klein, K. J. (1982). Innovation characteristics and innovation adoption-implementation: A meta-analysis of findings. *IEEE Transactions on Engineering Management*, (1), 28–45.

Van de Ven, A. H. (1986). Central Problems in the Management of Innovation. *Management Science*, *32*(5), 590–607. Retrieved from JSTOR.

Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management Science*, *46*(2), 186–204.

Venkatesh, Morris, Davis, & Davis. (2003). User Acceptance of Information Technology: Toward a Unified View. *MIS Quarterly*, *27*(3), 425. https://doi.org/10.2307/30036540

Walton, J. (2014). *Cryptocurrency Public Policy Analysis* (SSRN Scholarly Paper No. ID 2708302). Retrieved from Social Science Research Network website: https://papers.ssrn.com/abstract=2708302

Wiedmer, J. (2018). *The Price of Cryptocurrencies: An Empirical Analysis*.

Wisdom, J. P., Chor, K. H. B., Hoagwood, K. E., & Horwitz, S. M. (2014). Innovation Adoption: A Review of Theories and Constructs. *Administration and Policy in Mental Health*, *41*(4), 480–502. https://doi.org/10.1007/s10488-013-0486-4

Yermack, D. (2015). *Is Bitcoin a Real Currency? An Economic Appraisal*. https://doi.org/10.1016/B978-0-12-802117-0.00002-3

Appendices

Appendix A – summarization relevant innovation adoption frameworks

Model	Brief summary and discussion
Theory of Reasoned Action (Fishbein and Ajzen, 1975).	The Theory of Reasoned Action (TRA) by Fishbein and Ajzen (1975) is considered to be the theory that has been applied to most in attitude and behavior research. The model uses intention as only predictor for actual behavior. Intention is predicted by attitude toward behavior and subjective norms. The model can be used to understand and predict most human behavior (Fishbein and Ajzen, 1975). the model has decent predictive power even in situations outside the boundary conditions originally specified for the model (Sheppard et al., 1988).
Technology Acceptance Model (Davis et al., 1989)	The Technology Acceptance Model (TAM) is a model which describes how individuals accept and use new technologies in the workspace. The model was developed as an expansion on theory of Reasoned Action (Davis et al., 1989; Fishbein and Ajzen, 1975). This model also uses intention as only predictor for actual behavior. Intention is predicted by attitude toward using and perceived usefulness. The model is applied to broad scope of different researches by researches worldwide (Chang et al., 2010). The biggest limitation is that it is a very basic and general model that does not explain possible important factors (King et al., 1994; Taylor and Todd, 1995; Mathieson, 1991).
Theory of Planned Behavior (Ajzen, 1985, 1991)	Theory of planned behavior (TPB) by Ajzen (1985, 1991) is also a model that is an extension of the Theory of Reasoned Action. It is very similar to the TRA model and uses intention as main predictor for actual behavior. However, Ajzen added perceived behavioral control as second predictor for both actual behavior and intention to the two existing predictors for intention (attitude toward behavior and subjective norm). The model is widely used in various practical applications (Elliot and Loebbecke, 2000; Krueger and Carsrud, 1993; Rao and Troshani, 2007). The model uses only three constructs to explain intention and behavior and is therefore narrow and not suited for a broader context like user adoption (Pavlou and Fygenson, 2006).

Decomposed Theory of Planned Behavior (Taylor and Todd, 1995)	This model added eight constructs from innovation diffusion literature as predictors of the three predictors from the TPB model. Intention is still the main predictor of actual behavior, while perceived behavioral control is also responsible for an amount of variance of behavior. The DTPB model is considered to be more complete and management-relevant due to its focus on specific factors that may influence adoption and usage (Teo and Pok, 2003). Also, Mathieson (1991) States that the model is very flexible because of the multiple factors influencing the adoption of technology. Therefore, it could be handy for operators or managers to understand factors influencing consumers' behavior (Tao and Fan, 2016).
The UTAUT model (Venkatesh et al., 2003)	The UTAUT model developed by Venkatesh et al. (2003) is a synthesis of eight different prominent models in the field of technology acceptance literature including among others the TAM, TRA, TPB and Roger's diffusion of innovations. The model is constructed with four predicting constructs influencing behavioral intention and use behavior. The first construct performance expectancy is defined as "the degree to which an individual believes that using the system will help him or her to attain gains in job performance" (Venkatesh et al., p. 447). The second construct effort expectancy represents "the degree of ease associated with the use of the system" (Venkatesh et al., p. 450). The third construct social influence points out "the degree to which an individual perceives that important others believe he or she should use the new system" (Venkatesh et al., p. 451). The fourth construct facilitating conditions indicates "the degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the system" (Venkatesh et al., p. 453). The effects of the predictors are mediated by four variables: gender, age, experience and voluntariness of use. Khechine et al. (2016) confirmed that the UTAUT mode is a robust model, but that it is better suited to explain intention. One of the main limitations of the UTAUT model is that the model is too broad and chaotic (Bogozzi, 2007). It is questionable if the UTAUT model should be used in non-organizational contexts (Hyvönen et al,, 2005).

Diffusion of innovations (Rogers, 1995, 2003)	Diffusion of innovations is a broad model that explains how populations receive innovations. It consists of five stages. In the decision stage Rogers distinguishes between innovations by assigning five innovation characteristics to innovation: relative advantage, compatibility, complexity, trialability and observability. These perceived characteristics are direct predictors of an individual's adoption decision. The main critique is that the model is not complete and does not take some important facets into account (Lyyntinen and Damsaard, 2001)

Appendix B – Overview of relevant studies based on Diffusion of Innovation Theory

Study	Summary
Motivations and Barriers for End-User adoption of Bitcoin as Digital currency (Presthus and O'Malley, 2017)	Technological curiosity was found to influence the end-user adoption of Bitcoin as digital currency. Surprisingly, monetary incentives did not motivate existing users. Questionable benefits and security were found to be barriers to non-users in starting to use Bitcoin.
Exploring the Innovation Decision Process of Merchant Bitcoin Adoption (Lee, 2015)	Innovation diffusion theory was used to examine the Bitcoin adoption among retail merchants. Lee found that the persuasion stage had the most impact on adoption. Trialability was found to be important to reduce adoption barriers.
Adoption of Digital Currencies by Companies in the European Union: A Research Model combining DOI and TAM (Roussou and Stiakakis, 2019)	Both TAM and Diffusion of Innovation Theory were used to investigate the adoption of digital currencies by companies in the European Union. They found that easy of use had influence on the adoption of digital currencies by companies in the European Union.
Role of Innovation Attributes in Explaining the Adoption Intention for the Interbank Mobile Payment Service in an Indian Context (Kapoor et al., 2013)	In a study to a new mobile payment service the five innovation attributes were used to explain the behavioral intention, while actual adoption was influenced by behavioral intention and cost. They found relative advantage, compatibility, and trialability all had positive significant influence on behavioral intention. Complexity had negative significant influence on behavioral intention. Observability did not have significant influence.
Intermediating technologies and multi-group adoption: A comparison of consumer and merchant adoption intentions toward a new electronic	In research to a new electronic payment system relative advantage was found to be the most important influencer to adoption. The new payment system had to demonstrate a clear advantage over the current system they used.

payment system (Plouffe et al., 2001)	Compatibility also was important. The payment system should fit with their current preferences.

Appendix C – Sample data

Table C1.

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Leeftijd	300	18.00	87.00	30.7933	14.23726
Valid N (listwise)	300				

Table C2.

Statistics cryptocurrency users

		Leeftijd	Geslacht
N	Valid	99	99
	Missing	0	0
Mean		28.66	1.15
Minimum		19.00	1
Maximum		62.00	2

Table C3.

Geslacht cryptocurrency users

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Man	84	84.8	84.8	84.8
	Vrouw	15	15.2	15.2	100.0
	Total	99	100.0	100.0	

Table C4.

Statistics cryptocurrency non users

		Geslacht	Leeftijd
N	Valid	201	201
	Missing	0	0
Mean		1.55	31.63
Minimum		1	18
Maximum		2	87

Table C5.

Geslacht cryptocurrency non users

	Frequency	Percent	Valid Percent	Cumulative Percent

Valid	Man	90	44.8	44.8	44.8
	Vrouw	111	55.2	55.2	100.0
	Total	201	100.0	100.0	

Table C6.

Statistics

		Geslacht	LeeftijdCat	WoonNL	Inkomen	Opleiding	Langetermijnbelegger	Speculatievebelegger
N	Valid	300	300	300	300	300	300	300
	Missing	0	0	0	0	0	0	0
Mean		1.42	2.66	1.00	2.580	3.603	1.550	1.680
Std. Deviation		.494	1.279	.000	2.063	.698	.499	.467
Skewness		.326	1.617		1.343	-1.946	-.188	-.776
Std. Error of Skewness		.141	.141	.141	.141	.141	.141	.141
Kurtosis		-1.907	1.291		.747	3.682	-1.978	-1.408
Std. Error of Kurtosis		.281	.281	.281	.281	.281	.281	.281

Table C7.

Descriptive Statistics

	N	Minimum	Maximum	Skewness	Skewness	Kurtosis	Skewness
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
ADO3TR	300	.000	.699	1.367	.141	.637	.141
Opleiding_log	300	.000	.602	.54422	-2.998	.141	10.263
Opleiding_Sqrt	300	1.000	2.000	1.886	-2.405	.141	6.385
Opleiding_div1	300	.250	1.000	.300	4.343	.141	20.289
Opleiding_exp	300	2.718	54.598	43.231	-1.014	.141	-.737
Valid N (listwise)	300						

Table C8.

Geslacht

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Man	174	58.0	58.0	58.0
	Vrouw	126	42.0	42.0	100.0

	Anders	0	0.0	100.0	100.0
	Total	300	100.0	100.0	

Table C9.

Leeftijd

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<20	6	2.0	2.0	2.0
	20-29	209	69.7	69.7	71.7
	30-39	29	9.7	9.7	81.3
	40-49	13	4.3	4.3	85.7
	50-59	22	7.3	7.3	93.0
	>59	21	7.0	7.0	100.0
	Total	300	100.0	100.0	

Table C10.

WoonNL

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Ja	300	100.0	100.0	100.0

Table C11.

Inkomen

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<1000	135	45.0	45.0	45.0
	1000-1999	56	18.7	18.7	63.7
	2000-2999	35	11.7	11.7	75.3
	3000-3999	27	9.0	9.0	84.3
	4000-4999	11	3.7	3.7	88.0
	5000-5999	5	1.7	1.7	89.7
	>5999	18	6.0	6.0	95.7
	Zeg ik liever niet	13	4.3	4.3	100.0
	Total	300	100.0	100.0	

Table C12.

Opleiding

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Middelbare school (VMBO, HAVO, VWO)	8	2.7	2.7	2.7
	Middelbaar Beroeps Onderwijs (MBO)	13	4.3	4.3	7.0
	Hoger Beroeps Onderwijs (HBO)	69	23.0	23.0	30.0
	Wetenschappelijk Onderwijs (Universitair)	210	70.0	70.0	100.0
	Total	300	100.0	100.0	

Table C13.

Langetermijn

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Ja	136	45.3	45.3	45.3
	Nee	164	54.7	54.7	100.0
	Total	300	100.0	100.0	

Table C14.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Ja	96	32.0	32.0	32.0
	Nee	204	68.0	68.0	100.0
	Total	300	100.0	100.0	

Verzonden: vrijdag 7 juni 2019 12:34
Aan: Hoens, T.E.F.J. (Thijs)
Onderwerp: Re: Man/vrouw/anders

Beste Thijs,

Exact!

Met vriendelijke groet,
[redacted]

Van: Hoens, T.E.F.J. (Thijs)
<T.Hoens@student.ru.nl>
Verzonden: vrijdag 7 juni 2019 12:32
Aan: [redacted]
Onderwerp: Re: Man/vrouw/anders

Ter bevestiging, betreft dit degene die "[redacted]" heeft ingevuld bij e-mailadres?
En als ik het goed begrijp heeft u anders ingevuld bij geslacht, maar dit moet man zijn?

Met vriendelijke groet,

Thijs

Figure C1. Anonymized request to change gender mistake.

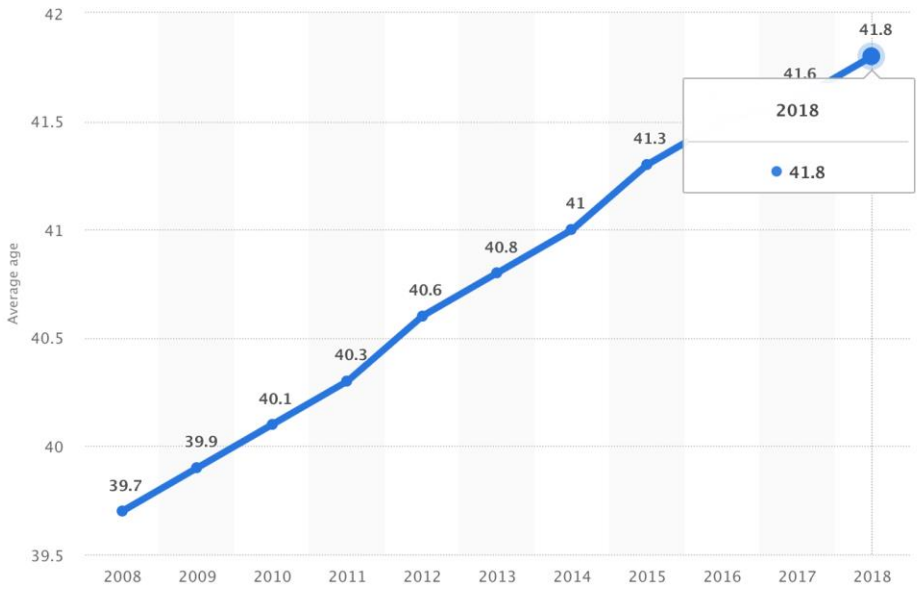


Figure C2. Statista (2019a). Average age in the Netherlands. Reprinted from Statista, statistics, retrieved from https://www.statista.com/statistics/521650/netherlands-average-age-population-by-gender/. Copyright by Statista 2019.

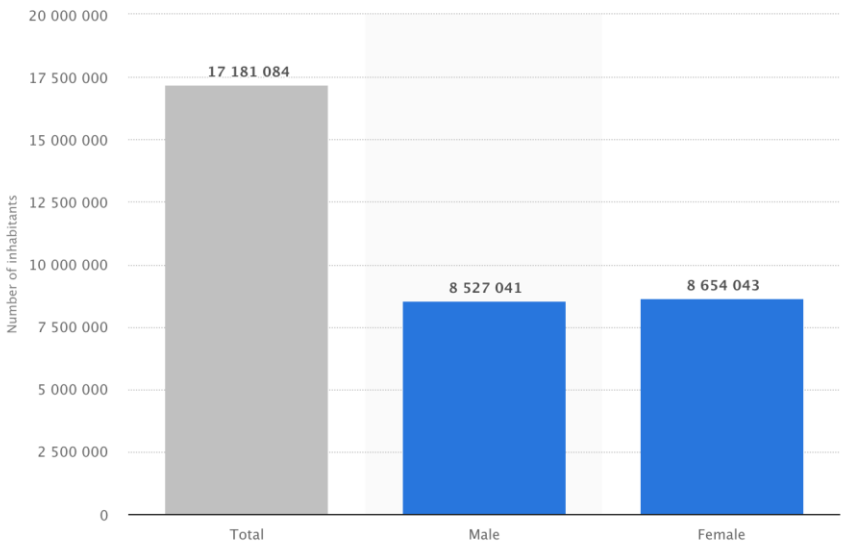


Figure C3. Statista (2019b). Gender distribution in the Netherlands. Reprinted from Statista, statistics, retrieved from https://www.statista.com/statistics/519796/population-of-the-netherlands-by-gender/. Copyright by Statista 2019.

Appendix D – First version of online Questionnaire

English

Introduction

Dear participant,

Welcome to the online survey about the use of cryptocurrencies as speculative investment. First of all, I want to thank you for your time and effort to participate in this study. As part of my Master Thesis business administration at Radboud University, I do research on cryptocurrencies as speculative investment in the Netherlands. The purpose of my research is to gain insight into the attitudes and motives of Dutch consumers towards the use of cryptocurrencies as speculative investment. Completing this survey will take approximately 5-10 minutes. Your participation in this study is completely voluntary. You can withdraw from the survey at any point without any reason. Your responses are strictly confidential, and your data will be processed anonymously.

If there are any uncertainties or if you have any questions about the survey, you can send an email to: T.Hoens@student.ru.nl

Thank you again for participating in this study.

Sincerely,

Thijs Hoens

In order to have a mutual understanding of what is meant by the use cryptocurrencies as speculative investment a brief explanation will be given:
Cryptocurrencies tend to have speculative and risky character and are often used for speculative investment purposes. This is also referred to as trading of cryptocurrencies. Speculative investments differ from investments in the amount of risk and the terms of time focus. Whereas investments focus on long-term gain speculative investments focus on gain in a shorter time frame. Other forms of speculative investments besides trading of cryptocurrencies could be trading of stocks, currencies, or contracts for difference for example.

General questions

1. What is your gender?

Possible answers: Male/Female

2. What is your age?

Possible answers: 0-120 (slider)

3. Do you live in the Netherlands?

Possible answers: Yes/No

4. What is your amount of average monthly net income?

Possible answers: <1000, 1000-1999, 2000-2999, 3000-3999, 4000-4999, 5000-5999, >5999

5. What is your highest level of finished higher education?

Possible answers: None, MBO, HBO, WO

6. Do you make use of speculative investments?

Possible answers: Yes/No

7. Do you make long-term investments?

Possible answers: Yes/No

8. Do you trade in cryptocurrencies?

Possible answers: Yes/No

Adoption (Actual usage behavior)

9. Since when have you been owning cryptocurrencies?

Possible answers: I have never owned any cryptocurrencies, Less than a year, From 1 to 2 Years, From 2 to 3 years, More than 3 years

10. How long have you been using cryptocurrencies as speculative investment?

Possible answers: I do not use cryptocurrencies as speculative investment, Less than a year, From 1 to 2 Years, From 2 to 3 years, More than 3 years

11. How often do you use cryptocurrencies as speculative investment?

Possible answers: I do not use cryptocurrencies as speculative investment, Less than once a month, once a month, a few times a month, a few times a week, about once a day, several times a day.

Compatibility

Possible answers: Likert scale 1-7 Extremely disagree - extremely agree

12. Trading in cryptocurrencies is compatible with my view on speculative investments.

Possible answers: Likert scale 1-7 Extremely disagree - extremely agree

13. Trading in cryptocurrencies fits completely with my current view on speculative investments.
Possible answers: Likert scale 1-7 Extremely disagree - extremely agree
14. I think that trading in cryptocurrencies fits well with the way I like to use other speculative investments.
Possible answers: Likert scale 1-7 Extremely disagree - extremely agree
15. Trading in cryptocurrencies could fit with my speculative investment style.
Possible answers: Likert scale 1-7 Extremely disagree - extremely agree

Relative advantage

16. Trading in cryptocurrencies could improve the quality of my speculative investment returns.
Possible answers: Likert scale 1-7 Extremely disagree - extremely agree
17. Trading in cryptocurrencies could give me a greater control over speculative investments overall.
Possible answers: Likert scale 1-7 Extremely disagree - extremely agree
18. Trading in cryptocurrencies could enable me to make quicker speculative investments.
Possible answers: Likert scale 1-7 Extremely disagree - extremely agree
19. Trading in cryptocurrencies could enhance my speculative investment effectiveness.
Possible answers: Likert scale 1-7 Extremely disagree - extremely agree
20. Trading in cryptocurrencies could make speculative investing easier for me.
Possible answers: Likert scale 1-7 Extremely disagree - extremely agree

Trialability
21. I've had a great deal of opportunity to try various cryptocurrencies as speculative investment.
Possible answers: Likert scale 1-7 Extremely disagree - extremely agree
22. I've had a great deal of opportunity to try one cryptocurrency as speculative investment.
Possible answers: Likert scale 1-7 Extremely disagree - extremely agree
23. I know what to do to satisfactorily use cryptocurrencies as speculative investment.
Possible answers: Likert scale 1-7 Extremely disagree - extremely agree
24. Before deciding whether to use any cryptocurrency as speculative investment, I would be able to properly try them out.
Possible answers: Likert scale 1-7 Extremely disagree - extremely agree

Complexity (Ease of Use)

25. I believe that cryptocurrencies as speculative investment are difficult to use.

Possible answers: Likert scale 1-7 Extremely disagree - extremely agree

26. The use of cryptocurrencies as speculative investment would require a lot of mental effort.

Possible answers: Likert scale 1-7 Extremely disagree - extremely agree

27. Using cryptocurrencies as speculative investment could be frustrating.

Possible answers: Likert scale 1-7 Extremely disagree - extremely agree

28. I believe that it is easy to use cryptocurrencies as speculative investment for what I want it to use it for.

Possible answers: Likert scale 1-7 Extremely disagree - extremely agree

29. Overall, I believe that cryptocurrencies as speculative investment are easy to use.

Possible answers: Likert scale 1-7 Extremely disagree - extremely agree

30. Learning how to use cryptocurrencies as speculative investment is easy for me.

Possible answers: Likert scale 1-7 Extremely disagree - extremely agree

Observability

31. I have no difficulty telling others about the results that can be achieved from using cryptocurrencies as speculative investment.

Possible answers: Likert scale 1-7 Extremely disagree - extremely agree

32. I believe I could communicate the consequences of using cryptocurrencies as speculative investment to others.

Possible answers: Likert scale 1-7 Extremely disagree - extremely agree

33. The results of using cryptocurrencies as speculative investment are apparent to me.

Possible answers: Likert scale 1-7 Extremely disagree - extremely agree

34. I would have difficulty explaining why using cryptocurrencies as speculative investment may or may not be beneficial.

Possible answers: Likert scale 1-7 Extremely disagree - extremely agree

END

Thanks again for your participation! This will help the cryptocurrency investment community in the Netherlands!

Dutch

Introductie

Beste deelnemer,

Ik wil u van harte welkom heten op de enquête over het gebruik van cryptocurrencies als speculatieve investering. Allereerst wil ik u hartelijk danken voor uw deelname in dit onderzoek. In het kader van mijn Master Thesis Bedrijfskunde aan de Radboud Universiteit doe ik onderzoek naar het gebruik van cryptocurrencies als speculatieve investering. Het doel van mijn onderzoek is om inzicht te krijgen in de houdingen van Nederlanders ten opzichte van het gebruik van cryptocurrencies als speculatieve investering. Het invullen van deze enquête kost ongeveer 5-10 minuten. Deelname aan deze studie is volledig vrijwillig. U kunt zich op elk moment terugtrekken van het invullen van de survey zonder enige reden. De antwoorden zijn strikt vertrouwelijk en uw gegevens zullen anoniem verwerkt worden.

Mochten er onduidelijkheden zijn of mocht u vragen hebben over de enquête, dan kunt u een e-mail sturen naar: T.Hoens@student.ru.nl

Nogmaals hartelijk dank voor uw deelname aan dit onderzoek.
Met vriendelijke groet,

Thijs Hoens

Om wederzijds begrip te hebben van wat wordt bedoeld met het gebruik van cryptocurrencies als speculatieve investering, zal een korte uitleg worden gegeven:
Cryptocurrencies hebben vaak een speculatief en riskant karakter en worden vaak gebruikt voor speculatieve beleggingsdoeleinden. Het gebruik van cryptocurrencies voor speculatieve beleggingsdoeleinden wordt ook de handel in cryptocurrencies genoemd (cryptocurrency trading).
Speculatieve beleggingen verschillen van investeringen in de hoeveelheid risico en de tijdfocus. Terwijl investeringen zijn gericht zijn op een voordeel op de lange termijn, concentreren speculatieve investeringen zich op winst in een korter tijdsbestek. Andere vormen van speculatieve beleggingen naast de handel in cryptocurrencies zijn bijvoorbeeld het handelen in aandelen, valuta's of contracts for difference (CFD's).

Algemene vragen

1. Wat is uw geslacht?

Mogelijke antwoorden: Man/Vrouw

2. Wat is uw leeftijd

Mogelijke antwoorden: 0-120 (slider)

3. Woont u in Nederland

Mogelijke antwoorden: Ja/Nee

4. Wat is uw gemiddeld netto maandelijks inkomen?

Mogelijke antwoorden: <1000, 1000-1999, 2000-2999, 3000-3999, 4000-4999, 5000-5999, >5999

5. Wat is uw hoogst behaalde diploma in het hoger onderwijs?

Mogelijke antwoorden: Geen, MBO, HBO, WO

6. Doet u aan speculatieve beleggingen?

Mogelijke antwoorden: Ja/Nee

7. Doet u aan investeringen met oog op de lange termijn?

Mogelijke antwoorden: Ja/Nee

8. Handelt u in cryptocurrencies?

Mogelijke antwoorden: Ja/Nee

Adoption (Actual usage behavior)

9. Sinds wanneer bezit u cryptocurrencies

Mogelijke antwoorden: Ik heb nog nooit cryptocurrencies in bezit gehad, minder dan 1 jaar, Van 1 tot 2 jaar, van 2 tot 3 jaar, meer dan 3 jaar

10. Hoe lang gebruikt u al cryptocurrencies als speculatieve investering?

Mogelijke antwoorden: Ik gebruik geen cryptocurrencies als speculatieve investering, minder dan 1 jaar, Van 1 tot 2 jaar, van 2 tot 3 jaar, meer dan 3 jaar

11. Hoe vaak gebruikt u cryptocurrencies als speculatieve investering?

Mogelijke antwoorden: Minder dan een keer per maand, een keer per maand, een paar keer per maand, een paar keer per week, bijna elke dag, een paar keer per dag.

Compatibility

12. Het handelen in cryptocurrencies komt overeen met mijn visie op speculatieve beleggingen.

Mogelijke antwoorden:7-punts schaal van extreem mee oneens tot extreem mee eens

13. Het handelen in cryptocurrencies past volledig binnen mijn huidige kijk op speculatieve beleggingen.

Mogelijke antwoorden:7-punts schaal van extreem mee oneens tot extreem mee eens

14. Ik denk dat het handelen in cryptocurrencies past binnen de manier hoe ik andere beleggingen maak.
Mogelijke antwoorden:7-punts schaal van extreem mee oneens tot extreem mee eens
15. Het handelen in cryptocurrencies zou goed bij mijn speculatieve investeringsstijl kunnen passen.
Mogelijke antwoorden:7-punts schaal van extreem mee oneens tot extreem mee eens

Relative advantage

16. Het handelen in cryptocurrencies zou de kwaliteit van mijn speculatieve beleggingsrendement kunnen verbeteren.
Mogelijke antwoorden:7-punts schaal van extreem mee oneens tot extreem mee eens
17. Het handelen in cryptocurrencies zou me meer controle over al mijn beleggingen kunnen geven.
Mogelijke antwoorden:7-punts schaal van extreem mee oneens tot extreem mee eens
18. Het handelen in cryptocurrencies zou het mogelijk kunnen maken om sneller te beleggen.
Mogelijke antwoorden:7-punts schaal van extreem mee oneens tot extreem mee eens
19. Het handelen in cryptocurrencies zou mijn beleggingseffectiviteit kunnen verbeteren.
Mogelijke antwoorden:7-punts schaal van extreem mee oneens tot extreem mee eens
20. Het handelen in cryptocurrencies zou speculaties omtrent beleggingen makkelijker voor mij kunnen maken.
Mogelijke antwoorden:7-punts schaal van extreem mee oneens tot extreem mee eens

Trialability
21. Ik had ruimschoots gelegenheid om verschillende cryptocurrencies uit te proberen als speculatieve belegging.
Mogelijke antwoorden:7-punts schaal van extreem mee oneens tot extreem mee eens
22. Ik had ruimschoots gelegenheid om één cryptocurrency uit te proberen als speculatieve belegging.
Mogelijke antwoorden:7-punts schaal van extreem mee oneens tot extreem mee eens
23. Ik weet wat ik moet doen om cryptocurrencies op een bevredigende manier te gebruiken als speculatieve belegging.
Mogelijke antwoorden:7-punts schaal van extreem mee oneens tot extreem mee eens
24. Alvorens te beslissen om cryptocurrency te gebruiken als speculatieve belegging, zou ik voldoende gelegenheid hebben om deze beleggingsmogelijkheid te testen.

Mogelijke antwoorden:7-punts schaal van extreem mee oneens tot extreem mee eens

Complexity (Ease of Use)

25. Ik ben van mening dat cryptocurrencies als speculatieve belegging moeilijk in gebruik zijn.

Mogelijke antwoorden:7-punts schaal van extreem mee oneens tot extreem mee eens

26. Ik denk dat het gebruik van cryptocurrencies als speculatieve belegging veel mentale inspanning vergt.

Mogelijke antwoorden:7-punts schaal van extreem mee oneens tot extreem mee eens

27. Ik denk dat het gebruik van cryptocurrencies als speculatieve belegging frustrerend zou kunnen zijn.

Mogelijke antwoorden:7-punts schaal van extreem mee oneens tot extreem mee eens

28. Ik ben van mening dat het makkelijk is om cryptocurrencies als speculatieve belegging te gebruiken.

Mogelijke antwoorden:7-punts schaal van extreem mee oneens tot extreem mee eens

29. Over het algemeen ben ik ervan overtuigd dat cryptocurrencies makkelijk te gebruiken zijn als speculatieve belegging.

Mogelijke antwoorden:7-punts schaal van extreem mee oneens tot extreem mee eens

30. Het leren om cryptocurrencies als speculatieve belegging te gebruiken is makkelijk voor me.

Mogelijke antwoorden:7-punts schaal van extreem mee oneens tot extreem mee eens

Observability

31. Het kost mij geen moeite om anderen te vertellen over de resultaten die behaald kunnen worden door cryptocurrencies als speculatieve belegging te gebruiken.

Mogelijke antwoorden:7-punts schaal van extreem mee oneens tot extreem mee eens

32. Ik geloof dat ik de consequenties van het gebruik van cryptocurrencies als speculatieve belegging kan communiceren richting anderen.

Mogelijke antwoorden:7-punts schaal van extreem mee oneens tot extreem mee eens

33. De resultaten van het gebruik van cryptocurrencies als speculatieve belegging zijn duidelijk voor me.

Mogelijke antwoorden:7-punts schaal van extreem mee oneens tot extreem mee eens

34. Het zou me moeite kosten om uit te leggen waarom het gebruik van cryptocurrencies als speculatieve belegging al dan niet gunstig kan zijn.

Mogelijke antwoorden:7-punts schaal van extreem mee oneens tot extreem mee eens

Einde

Nogmaals bedankt voor uw deelname! Dit draagt bij aan de cryptocurrency beweging in Nederland.

Appendix E – Substantive comments and feedback questionnaire

Table E1. ***Substantive comments per construct***

Thema	Comment
Introductie	"Kost vervangen door duurt"
	"Komma bij dan kunt u een mail sturen weg"
Vooraf	"Gepaard aan in plaats van gepaard met"
	"Groot risico in plaats van groter risico"
General	"Vraag 4 'in euro's' toevoegen"
questions	"Bij geslacht 'anders' toevoegen"
	" Bij onderwijs nadenken over effect op doelgroep"
	"Vraag 6 en 7 omwisselen en herformuleren"
	"Zeg ik liever niet toevoegen bij inkomen"
Actual usage	"Wellicht is het belangrijk om inzicht te krijgen in het type belegger. Om
behavior	zo te zien of mensen cryptocurrencies toevoegen aan hun normale
	investeringsarsenaal of dat ze louter speculanten zijn".
Relative	"Vraag 17 is onduidelijk. Wordt daar bedoeld dat het minder tijd kost om
advantage	een investering te doen?"
	"Vraag 16 en 19 lijken op enigszins op elkaar"
	"Definities toevoegen van rendement en effectiviteit"
Trialability	"Termijn van investering, zodra je toegang hebt tot een exchange kan je
	in principe alles kopen en verkopen met 1 druk op een knop, wat bedoel
	je met try, redenen om te investeren zijn vaak niet gebonden aan of iets
	"werkt" of niet, maar insert heel verhaal over whitepapers en hype en
	weet ik veel wat"
	"Vergeten te vertalen"
Complexity	"Vraag 25 is believe het juiste woord om hier te gebruien?"
	"Wellicht vraag toevoegen over de informatie die beschikbaar wordt
	gesteld over de investering (prospectus)"
	"Vraag 27 een weghalen"
Observability	"Vraag 31 results of advantages?"
END	"'This will improve the insight in the investment in' beter".
General	"Verder ziet de vragenlijst er over het algemeen wel solide uit Zal een
comments	boel gaan zeggen over hoeveel mensen denken te weten, ik denk niet dat
	een boel mensen zich daadwerkelijk bewust zijn van wat ze precies weten

en waar ze precies in investeren en zelf de risico's goed kunnen toetsen etc.”

“Vragenlijst zal veel zeggen over naïviteit van investeerders”.

“Misschien vragen of mensen de resultaten van het onderzoek willen weten door ze de keuze te geven hun e-mailadres in te voeren”.

“Sinds wanneer bezit u (al dan niet met tussenpozen) cryptocurrencies? "Ik heb nog nooit..."-> dat antwoord snapte ik niet”

“kan ik niet teruggaan om antwoorden te wijzigen?”

“ bij sommige vragen heb je 'zou' + ww., bijv. zou verbeteren, zou makkelijker maken. klopt dit taalkundig? is het niet zou kunnen + ww?”

“ als je een beloning gebruikt, geef dat nog ff extra aan op de laatste pagina aan zodat mensen zich niet belazerd voelen”

“Beloning overwegen”

Appendix F – Final version questionnaire

Introductie

Beste deelnemer,

Welkom bij de enquête over het gebruik van cryptocurrencies als speculatieve belegging. Allereerst wil ik u hartelijk danken voor uw deelname aan dit onderzoek. In het kader van mijn Master Thesis Bedrijfskunde aan de Radboud Universiteit doe ik onderzoek naar het gebruik van cryptocurrencies als speculatieve belegging. Het doel van mijn onderzoek is om inzicht te krijgen in de houding van Nederlanders ten opzichte van het gebruik van cryptocurrencies als speculatieve belegging. Het invullen van deze enquête duurt ongeveer 5-10 minuten. Deelname aan deze studie is volledig vrijwillig. U kunt zich op elk moment terugtrekken van het invullen van de survey zonder opgaaf van redenen. De antwoorden zijn strikt vertrouwelijk en uw gegevens zullen anoniem verwerkt worden.

Indien u kans wilt maken op een €50 cadeaubon te besteden bij bol.com kunt u aan het einde van de enquête uw e-mailadres achterlaten.

Mochten er onduidelijkheden zijn of mocht u vragen hebben over de enquête dan kunt u een e-mail sturen naar: T.Hoens@student.ru.nl

Nogmaals hartelijk dank voor uw deelname aan dit onderzoek.
Met vriendelijke groet,

Thijs Hoens

Vooraf

Voor een beter begrip van wat in de survey wordt bedoeld met “het gebruik van cryptocurrencies als speculatieve belegging”, geldt de volgende korte uitleg:
Cryptocurrencies hebben vaak een sterk fluctuerende koers gepaard aan een groot risico en worden daarom vaak gebruikt als speculatieve belegging. Speculatief beleggen is het kopen van een goed met de achterliggende gedachte om het op een later tijdstip weer te verkopen met winst als gevolg van een prijsstijging. De speculant is niet van plan het goed zelf te gebruiken of waarde toe te voegen en neemt met de transactie een risico. Het gebruik van cryptocurrencies als speculatieve belegging wordt ook de handel in cryptocurrencies genoemd (cryptocurrency trading).

Andere vormen van speculatieve beleggingen naast de handel in cryptocurrencies zijn bijvoorbeeld het handelen in derivaten waarbij wordt geanticipeerd op snelle koersveranderingen, zoals opties of contracts for difference (CFD's).

Algemene vragen

1. Wat is uw geslacht?

Mogelijke antwoorden: Man/Vrouw/Anders

2. Wat is uw leeftijd?

Mogelijke antwoorden: 0-120

3. Woont u in Nederland?

Mogelijke antwoorden: Ja/Nee

4. Wat is uw gemiddeld netto maandelijks inkomen in euro's?

Mogelijke antwoorden: <1000, 1000-1999, 2000-2999, 3000-3999, 4000-4999, 5000-5999, >5999

5. Wat is uw hoogst behaalde diploma in het hoger onderwijs?

Mogelijke antwoorden: Middelbare school, Middelbaar Beroeps Onderwijs, Hoger Beroeps Onderwijs, Wetenschappelijk Onderwijs, Geen van bovenstaande.

6. Belegt u wel eens met oog op de lange termijn?

Mogelijke antwoorden: Ja/Nee

7. Belegt u wel eens op een speculatieve manier?

Mogelijke antwoorden: Ja/Nee

8. Handelt u in cryptocurrencies?

Mogelijke antwoorden: Ja/Nee

Adoption (Actual usage behavior)

9. Sinds wanneer bezit u (al dan niet met tussenpozen) cryptocurrencies?

Mogelijke antwoorden: Ik heb nog nooit cryptocurrencies in mijn bezit gehad, minder dan 1 jaar, Van 1 tot 2 jaar, van 2 tot 3 jaar, meer dan 3 jaar

10. Hoe lang gebruikt u al cryptocurrencies als speculatieve belegging?

Mogelijke antwoorden: Ik gebruik geen cryptocurrencies als speculatieve investering, minder dan 1 jaar, Van 1 tot 2 jaar, van 2 tot 3 jaar, meer dan 3 jaar

11. Hoe vaak gebruikt u cryptocurrencies als speculatieve belegging?

Mogelijke antwoorden: Ik gebruik cryptocurrencies nooit als speculatieve investering, Minder dan een keer per maand, een paar keer per maand, een paar keer per week een paar keer per dag.

Compatibility

12. Het handelen in cryptocurrencies komt overeen met mijn visie op speculatieve beleggingen.
Mogelijke antwoorden:7-punts schaal van extreem mee oneens tot extreem mee eens
13. Het handelen in cryptocurrencies past volledig binnen mijn huidige kijk op speculatieve beleggingen.
Mogelijke antwoorden:7-punts schaal van extreem mee oneens tot extreem mee eens
14. Ik denk dat het handelen in cryptocurrencies past binnen de manier hoe ik overige speculatieve beleggingen doe.
Mogelijke antwoorden:7-punts schaal van extreem mee oneens tot extreem mee eens
15. Het handelen in cryptocurrencies zou goed bij mijn speculatieve beleggingsstijl kunnen passen.
Mogelijke antwoorden:7-punts schaal van extreem mee oneens tot extreem mee eens

Relative advantage

*Onder **beleggingsrendement** worden de prestaties/opbrengsten van de belegging verstaan. Met **effectiviteit van speculatieve beleggingen** worden de mate en de wijze van realisatie van het beoogde doel bedoeld.*

16. Het handelen in cryptocurrencies zou de kwaliteit van mijn speculatieve beleggingsrendement kunnen verbeteren.
Mogelijke antwoorden:7-punts schaal van extreem mee oneens tot extreem mee eens
17. Het handelen in cryptocurrencies zou mij meer controle over al mijn beleggingen kunnen geven.
Mogelijke antwoorden:7-punts schaal van extreem mee oneens tot extreem mee eens
18. Het handelen in cryptocurrencies zou het mogelijk kunnen maken om sneller rendement te behalen.
Mogelijke antwoorden:7-punts schaal van extreem mee oneens tot extreem mee eens
19. Het handelen in cryptocurrencies zou de effectiviteit van mijn speculatieve beleggingen kunnen verbeteren.

Mogelijke antwoorden:7-punts schaal van extreem mee oneens tot extreem mee eens

20. Het handelen in cryptocurrencies zou speculatief beleggen makkelijker voor mij kunnen maken.

Mogelijke antwoorden:7-punts schaal van extreem mee oneens tot extreem mee eens

Trialability

21. Ik heb ruimschoots gelegenheid gehad om verschillende cryptocurrencies uit te proberen als speculatieve belegging.

Mogelijke antwoorden:7-punts schaal van extreem mee oneens tot extreem mee eens

22. Ik heb ruimschoots gelegenheid gehad om één cryptocurrency uit te proberen als speculatieve belegging.

Mogelijke antwoorden:7-punts schaal van extreem mee oneens tot extreem mee eens

23. Ik weet wat ik moet doen om cryptocurrencies op een bevredigende manier te gebruiken als speculatieve belegging.

Mogelijke antwoorden:7-punts schaal van extreem mee oneens tot extreem mee eens

24. Alvorens te beslissen om cryptocurrency te gebruiken als speculatieve belegging, zou ik voldoende gelegenheid hebben om deze beleggingsmogelijkheid te testen.

Als

Mogelijke antwoorden:7-punts schaal van extreem mee oneens tot extreem mee eens

Complexity (Ease of Use)

25. Ik ben van mening dat cryptocurrencies als speculatieve belegging moeilijk in gebruik zijn.

Mogelijke antwoorden:7-punts schaal van extreem mee oneens tot extreem mee eens

26. Ik denk dat het gebruik van cryptocurrencies als speculatieve belegging veel mentale inspanning vergt.

Mogelijke antwoorden:7-punts schaal van extreem mee oneens tot extreem mee eens

27. Ik denk dat het gebruik van cryptocurrencies als speculatieve belegging frustrerend zou kunnen zijn.

Mogelijke antwoorden:7-punts schaal van extreem mee oneens tot extreem mee eens

28. Ik ben van mening dat het makkelijk is om cryptocurrencies als speculatieve belegging te gebruiken.

Mogelijke antwoorden:7-punts schaal van extreem mee oneens tot extreem mee eens

29. Over het algemeen ben ik ervan overtuigd dat cryptocurrencies makkelijk te gebruiken zijn als speculatieve belegging.

Mogelijke antwoorden:7-punts schaal van extreem mee oneens tot extreem mee eens

30. Het leren om cryptocurrencies als speculatieve belegging te gebruiken is makkelijk voor me.
Mogelijke antwoorden:7-punts schaal van extreem mee oneens tot extreem mee eens

Observability
31. Het kost mij geen moeite om anderen te vertellen over de resultaten die behaald kunnen worden door cryptocurrencies als speculatieve belegging te gebruiken.
Mogelijke antwoorden:7-punts schaal van extreem mee oneens tot extreem mee eens
32. Ik geloof dat ik de consequenties van het gebruik van cryptocurrencies als speculatieve belegging kan communiceren richting anderen.
Mogelijke antwoorden:7-punts schaal van extreem mee oneens tot extreem mee eens
33. De resultaten van het gebruik van cryptocurrencies als speculatieve belegging zijn duidelijk voor me.
Mogelijke antwoorden:7-punts schaal van extreem mee oneens tot extreem mee eens
34. Het zou me moeite kosten om uit te leggen waarom het gebruik van cryptocurrencies als speculatieve belegging al dan niet gunstig kan zijn.
Mogelijke antwoorden:7-punts schaal van extreem mee oneens tot extreem mee eens

Indien u kans wilt maken op de bol.com cadeaubon ter waarde van €50 kunt u hieronder uw e-mailadres achterlaten.

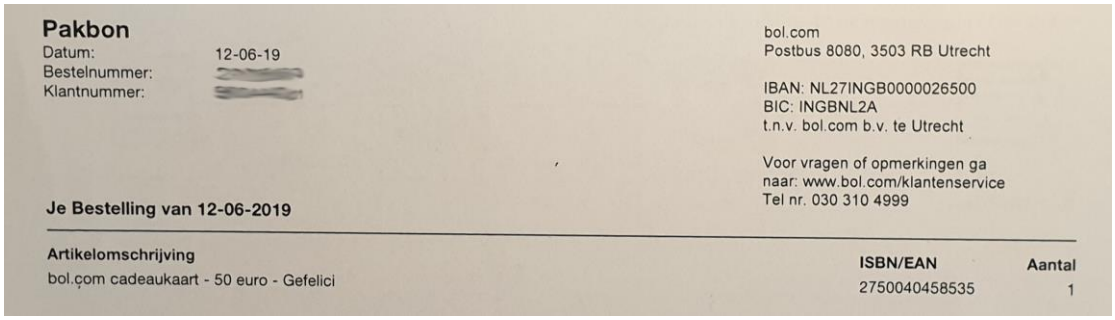
Einde
Nogmaals bedankt voor uw deelname. Dit draagt bij aan een groter inzicht in de cryptocurrency beleggingen in Nederland.

Appendix G – Survey distribution

Figure G1. Example of survey distribution

Figure G2. Example of survey distribution

Figure G3. Random winner picker



Pakbon

Datum: 12-06-19
Bestelnummer: [redacted]
Klantnummer: [redacted]

bol.com
Postbus 8080, 3503 RB Utrecht

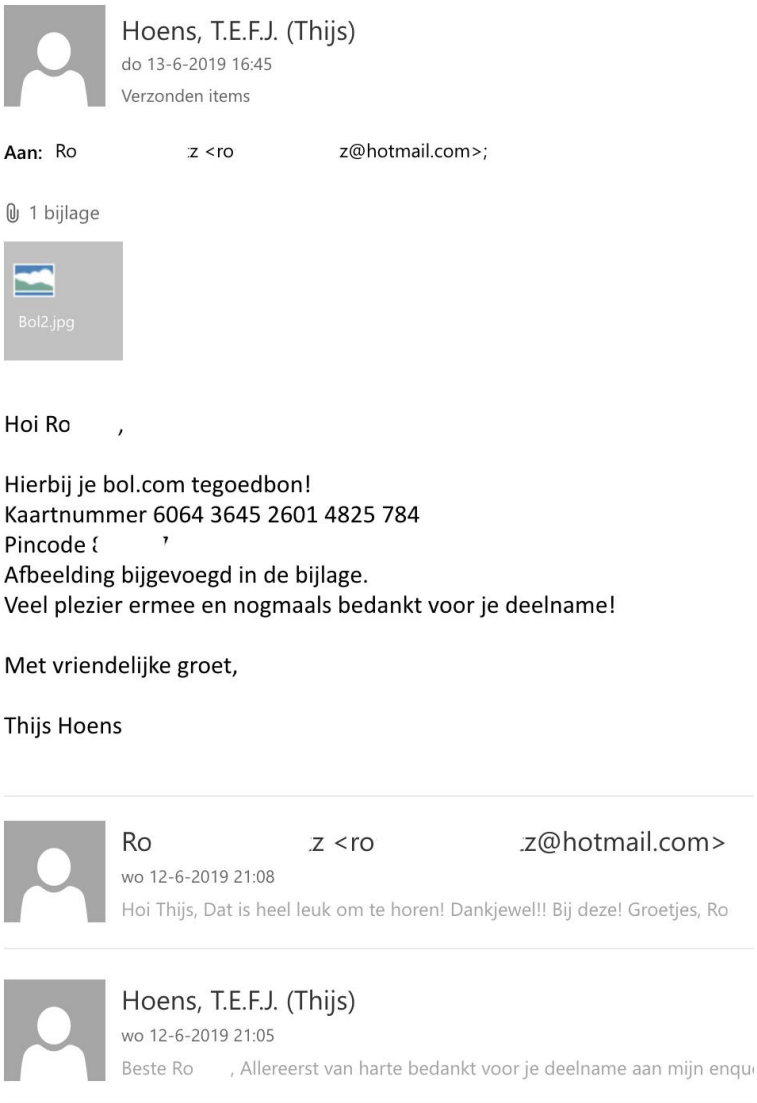
IBAN: NL27INGB0000026500
BIC: INGBNL2A
t.n.v. bol.com b.v. te Utrecht

Voor vragen of opmerkingen ga naar: www.bol.com/klantenservice
Tel nr. 030 310 4999

Je Bestelling van 12-06-2019

Artikelomschrijving	ISBN/EAN	Aantal
bol.com cadeaukaart - 50 euro - Gefelici	2750040458535	1

Figure G4. Invoice of bol.com voucher.



Hoens, T.E.F.J. (Thijs)
do 13-6-2019 16:45
Verzonden items

Aan: Ro :z <ro z@hotmail.com>;

1 bijlage

Bol2.jpg

Hoi Ro ,

Hierbij je bol.com tegoedbon!
Kaartnummer 6064 3645 2601 4825 784
Pincode {
Afbeelding bijgevoegd in de bijlage.
Veel plezier ermee en nogmaals bedankt voor je deelname!

Met vriendelijke groet,

Thijs Hoens

Ro .z <ro .z@hotmail.com>
wo 12-6-2019 21:08
Hoi Thijs, Dat is heel leuk om te horen! Dankjewel!! Bij deze! Groetjes, Ro

Hoens, T.E.F.J. (Thijs)
wo 12-6-2019 21:05
Beste Ro , Allereerst van harte bedankt voor je deelname aan mijn enqu

Figure G5. Email conversation with winner

Appendix H – SPSS output Cronbach's Alpha

Table H1.

Reliability Statistics Relative advantage

Cronbach's Alpha	N of Items
.877	5

Table H2.

Reliability Statistics Actual Usage Behavior (Adoption)

Cronbach's Alpha	N of Items
.943	3

Table H3.

Reliability Statistics Observability

Cronbach's Alpha	N of Items
.839	4

Table H4.

Reliability Statistics Compatibility

Cronbach's Alpha	N of Items
.895	4

Table H5.

Reliability Statistics Complexity

Cronbach's Alpha	N of Items
.864	4

Table H6.

Reliability Statistics Trialability

Cronbach's Alpha	N of Items
.872	4

Table H7.

Item-Total Statistics Relative advantage

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
REA1	17.16	25.907	.794	.829
REA2	18.02	29.588	.568	.883
REA3	16.39	28.587	.640	.867
REA4	16.99	26.221	.793	.830
REA5	17.09	27.681	.755	.840

Table H8.

Item-Total Statistics Actual Usage Behavior (Adoption)

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
ADO1	3.25	4.186	.917	.890
ADO2	3.31	4.302	.933	.875
ADO3	3.48	5.387	.813	.970

Table H9.

Item-Total Statistics Observability

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
OBS1	12.51	16.786	.746	.762
OBS2	12.11	17.112	.712	.777
OBS3	12.12	17.303	.699	.783
OBS4R	12.57	19.798	.533	.852

Table H10.

Item-Total Statistics Compatibility

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
CPA1	12.32	21.275	.729	.879
CPA2	12.58	20.545	.794	.855
CPA3	12.66	21.074	.787	.858
CPA4	12.86	20.379	.762	.867

Table H11.

Item-Total Statistics Complexity

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
CPL1	12.03	17.548	.647	.853
CPL4R	12.42	16.103	.768	.804
CPL5R	12.58	16.157	.779	.799
CPL6R	12.27	16.987	.662	.848

Table H12.

Item-Total Statistics Trialability

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
TRA1	11.16	22.258	.827	.794
TRA2	11.05	22.065	.815	.798
TRA3	11.44	23.565	.756	.824
TRA4	10.67	28.598	.520	.909

Appendix I – Abbreviations and descriptive statistics items

Table I1. ***Abbreviations Items Per Construct***

Construct	Abbreviation	Item
Compatibility	CPA1	Trading in cryptocurrencies is compatible with my view on speculative investments.
	CPA2	Trading in cryptocurrencies fits completely with my current view on speculative investments.
	CPA3	I think that trading in cryptocurrencies fits well with the way I like to use other speculative investments.
	CPA4	Trading in cryptocurrencies could fit with my speculative investment style.
Relative advantage	REA1	Trading in cryptocurrencies could improve the quality of my speculative investment returns.
	REA2	Trading in cryptocurrencies could give me a greater control over speculative investments overall.
	REA3	Trading in cryptocurrencies could enable me to make quicker speculative investments.
	REA4	Trading in cryptocurrencies could enhance my speculative investment effectiveness.
	REA5	Trading in cryptocurrencies could make speculative investing easier for me.
Trialability	TRA1	I've had a great deal of opportunity to try various cryptocurrencies as speculative investment.
	TRA2	I've had a great deal of opportunity to try one cryptocurrency as speculative investment.
	TRA3	I know what to do to satisfactorily use cryptocurrencies as speculative investment.
	TRA4	Before deciding whether to use any cryptocurrency as speculative investment, I would be able to properly try them out.
Complexity	CPL1	I believe that cryptocurrencies as speculative investment are difficult to use.
	CPL2*	The use of cryptocurrencies as speculative investment would require a lot of mental effort.
	CPL3*	Using cryptocurrencies as speculative investment could be frustrating.
	CPL4R	I believe that it is easy to use cryptocurrencies as speculative investment for what I want it to use it for. (R)
	CPL5R	Overall, I believe that cryptocurrencies as speculative investment are easy to use. (R)
	CPL6R	Learning how to use cryptocurrencies as speculative investment is easy for me. (R)
Observability	OBS1	I have no difficulty telling others about the results that can be achieved from using cryptocurrencies as speculative investment.
	OBS2	I believe I could communicate the consequences of using cryptocurrencies as speculative investment to others.
	OBS3	The results of using cryptocurrencies as speculative investment are apparent to me.

	OBS4	I would have difficulty explaining why using cryptocurrencies as speculative investment may or may not be beneficial (R).
Actual usage behavior (adoption)	ADO1	Since when have you been owning cryptocurrencies?
	ADO2	How long have you been using cryptocurrencies as speculative investment?
	ADO3	How often do you use cryptocurrencies as speculative investment?

Note. Deleted items using reliability- and validity analyses are indicated with *. Reverse coded items are indicated with (R).

Table I2.

Descriptive Statistics items part 1

	N	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error
CPA1	300	1	7	4.49	1.717	2.946	-.572	.141
CPA2	300	1	7	4.23	1.708	2.918	-.438	.141
CPA3	300	1	7	4.15	1.654	2.734	-.401	.141
CPA4	300	1	7	3.95	1.776	3.154	-.168	.141
REA1	300	1	7	4.25	1.639	2.685	-.426	.141
REA2	300	1	7	3.40	1.579	2.494	.358	.141
REA3	300	1	7	5.02	1.573	2.475	-.869	.141
REA4	300	1	7	4.42	1.606	2.579	-.623	.141
REA5	300	1	7	4.32	1.499	2.246	-.517	.141
TRA1	300	1	7	3.61	1.937	3.750	.215	.141
TRA2	300	1	7	3.73	1.978	3.912	.115	.141
TRA3	300	1	7	3.33	1.901	3.613	.304	.141
TRA4	300	1	7	4.11	1.720	2.958	-.206	.141
CPL1	300	1	7	4.40	1.556	2.422	-.365	.141
CPL2	300	1	7	5.03	1.434	2.056	-.779	.141
CPL3	300	1	7	5.27	1.331	1.771	-.923	.141
CPL4R	300	1	7	4.02	1.587	2.518	.149	.141
CPL5R	300	1	7	3.85	1.565	2.449	.182	.141
CPL6R	300	1	7	4.16	1.614	2.605	-.123	.141
OBS1	300	1	7	3.92	1.687	2.847	-.123	.141
OBS2	300	1	7	4.33	1.692	2.864	-.444	.141
OBS3	300	1	7	4.32	1.685	2.839	-.495	.141
OBS4R	300	1	7	3.87	1.599	2.557	.096	.141
ADO1	300	1	5	1.77	1.198	1.435	1.227	.141
ADO2	300	1	5	1.71	1.157	1.338	1.361	.141
ADO3	300	1	5	1.54	.992	.985	2.100	.141
ADO3TR	300	.000	.699	.13	.207	.043	1.367	.141

Valid N (listwise)	300						

Table I3.

Descriptive Statistics items part 2

	Kurtosis	
	Statistic	Std. Error
CPA1	-.735	.281
CPA2	-1.008	.281
CPA3	-.975	.281
CPA4	-1.173	.281
REA1	-.493	.281
REA2	-.658	.281
REA3	.214	.281
REA4	-.370	.281
REA5	-.280	.281
TRA1	-1.299	.281
TRA2	-1.359	.281
TRA3	-1.279	.281
TRA4	-1.037	.281
CPL1	-.889	.281
CPL2	.145	.281
CPL3	.689	.281
CPL4R	-.973	.281
CPL5R	-.950	.281
CPL6R	-.970	.281
OBS1	-1.009	.281
OBS2	-.786	.281
OBS3	-.858	.281
OBS4R	-.992	.281
ADO1	.145	.281
ADO2	.542	.281
ADO3	3.934	.281
ADO3TR	.637	.141
Valid N (listwise)		

Appendix J – SPSS output factorial analyses

Table J1.

KMO and Bartlett's Test all 26 items

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.912
Bartlett's Test of Sphericity	Approx. Chi-Square	5,655.456
	df	325
	Sig.	.000

Table J2.

Total Variance Explained all 26 items

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	10.071	38.734	38.734	9.764	37.553	37.553	7.354
2	2.926	11.255	49.989	2.612	10.048	47.601	6.632
3	2.335	8.982	58.971	1.948	7.491	55.092	7.231
4	1.340	5.156	64.126	.973	3.741	58.833	6.311
5	1.245	4.789	68.915	.896	3.446	62.279	3.102
6	.960	3.693	72.609	.575	2.211	64.490	3.699
7	.857	3.297	75.906				
8	.692	2.662	78.567				
9	.623	2.397	80.964				
10	.594	2.285	83.249				
11	.437	1.680	84.929				
12	.434	1.669	86.598				
13	.401	1.543	88.141				
14	.382	1.468	89.609				
15	.358	1.378	90.987				
16	.324	1.245	92.232				
17	.306	1.177	93.409				
18	.281	1.081	94.490				
19	.258	.991	95.481				
20	.240	.925	96.405				
21	.223	.856	97.261				
22	.201	.774	98.036				

23	.189	.726	98.761		
24	.156	.601	99.363		
25	.117	.449	99.812		
26	.049	.188	100.000		

Extraction Method: Principal Axis Factoring.

a. When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.

Table J3.

Factor Matrix[a] all 26 items

	Factor					
	1	2	3	4	5	6
CPA1	.536	.431			.417	
CPA2	.641	.398			.392	
CPA3	.632	.500			.238	
CPA4	.711	.375				
REA1	.599	.550			-.259	
REA2	.442	.369			-.356	
REA3	.603	.299				
REA4	.652	.464			-.223	
REA5	.662	.401			-.254	
TRA1	.735	-.340	.286			.282
TRA2	.732	-.303	.235			.234
TRA3	.761	-.269				.209
TRA4	.473					
CPL1	-.491		.509	.242		
CPL2			.578	.277		
CPL3			.458	.255	.225	-.247
CPL4R	-.600		.484			
CPL5R	-.656		.434			.214
CPL6R	-.689	.220	.280			
OBS1	.688	-.283		.317		
OBS2	.591	-.312		.318		
OBS3	.674	-.249		.286		
OBS4R	.382	-.326		.213		
ADO1	.739	-.344	.351	-.341		
ADO2	.737	-.308	.358	-.395		

ADO3	.668	-.238	.271	-.294

Extraction Method: Principal Axis Factoring. Blanks <.20.

a. 6 factors extracted. 9 iterations required.

Table J4.

Communalities all 26 items

	Initial	Extraction
CPA1	.606	.665
CPA2	.693	.759
CPA3	.694	.715
CPA4	.683	.710
REA1	.715	.776
REA2	.484	.470
REA3	.561	.527
REA4	.716	.739
REA5	.649	.670
TRA1	.811	.831
TRA2	.791	.752
TRA3	.699	.715
TRA4	.342	.311
CPL1	.514	.573
CPL2	.393	.479
CPL3	.355	.413
CPL4R	.677	.611
CPL5R	.687	.680
CPL6R	.604	.606
OBS1	.642	.685
OBS2	.558	.575
OBS3	.600	.627
OBS4R	.373	.330
ADO1	.907	.918
ADO2	.913	.948
ADO3	.690	.684

Extraction Method: Principal Axis Factoring.

Table J5.

Pattern Matrix[a] all 26 items

	Factor					
	1	2	3	4	5	6
CPA1				.885		

CPA2				.921		
CPA3		.219		.726		
CPA4				.653		
REA1		.947				
REA2		.687			-.292	
REA3		.628			.201	
REA4		.848				
REA5		.765				
TRA1			.272			.652
TRA2	.223		.245			.577
TRA3	.251		.228			.501
TRA4	.227					.400
CPL1	-.275				.444	.210
CPL2					.776	
CPL3					.756	
CPL4R	-.583				.271	
CPL5R	-.591					.230
CPL6R	-.512				.205	
OBS1	.852					.202
OBS2	.842					
OBS3	.815					
OBS4R	.678					
ADO1			.998			
ADO2			1.060			
ADO3			.849			

Extraction Method: Principal Axis Factoring. Blanks <.20.

Rotation Method: Promax with Kaiser Normalization.[a]

a. Rotation converged in 9 iterations.

Table J6.

Factor Matrix[a] after deleting CPL1 (25 items)

	Factor					
	1	2	3	4	5	6
CPA1	.537	.430		.270	-.327	
CPA2	.642	.397			-.387	
CPA3	.636	.497			-.234	
CPA4	.712	.371			-.204	

REA1	.606	.546			.272	
REA2	.443	.369		-.228	.276	
REA3	.609	.293				
REA4	.659	.457			.242	
REA5	.663	.400			.238	
TRA1	.747	-.357	.234			.337
TRA2	.743	-.317				.297
TRA3	.765	-.273				
TRA4	.477					
CPL2			.551	.407		
CPL3			.436	.416		
CPL4R	-.578		.467			
CPL5R	-.635		.411			
CPL6R	-.677	.210	.292			
OBS1	.688	-.281	-.256	.209		
OBS2	.590	-.309	-.213	.285		
OBS3	.672	-.246	-.215	.249		
OBS4R	.378	-.323	-.214			
ADO1	.744	-.354	.368	-.246		
ADO2	.743	-.321	.388	-.258	-.262	
ADO3	.670	-.245	.292	-.216		

Extraction Method: Principal Axis Factoring. Blanks <.20.
a. 6 factors extracted. 10 iterations required.

Table J7.

Total Variance Explained CPL1,2,3,4,5,6

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	3.156	52.597	52.597	2.788	46.469	46.469	2.683
2	1.255	20.914	73.511	.809	13.476	59.945	1.580
3	.508	8.474	81.985				
4	.432	7.208	89.192				
5	.409	6.812	96.004				
6	.240	3.996	100.000				

Extraction Method: Principal Axis Factoring.

a. When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.

Table J8.

Correlation Matrix[a] CPL1,2,3,4,5,6

		CPL1	CPL2	CPL3	CPL4R	CPL5R	CPL6R
Correlation	CPL1	1.000	.378	.326	.593	.595	.518
	CPL2	.378	1.000	.520	.260	.251	.197
	CPL3	.326	.520	1.000	.204	.185	.206
	CPL4R	.593	.260	.204	1.000	.759	.601
	CPL5R	.595	.251	.185	.759	1.000	.619
	CPL6R	.518	.197	.206	.601	.619	1.000
Sig. (1-tailed)	CPL1		.000	.000	.000	.000	.000
	CPL2	.000		.000	.000	.000	.000
	CPL3	.000	.000		.000	.001	.000
	CPL4R	.000	.000	.000		.000	.000
	CPL5R	.000	.000	.001	.000		.000
	CPL6R	.000	.000	.000	.000	.000	

a. Determinant = .085

Table J9.

Factor Matrix[a] CPL1,2,3,4,5,6

	Factor	
	1	2
CPL1	.739	
CPL2	.470	.571
CPL3	.414	.568
CPL4R	.824	-.234
CPL5R	.835	-.268
CPL6R	.689	

Extraction Method: Principal Axis Factoring.

a. 2 factors extracted. 11 iterations required. Blanks <.20.

Table J10.

Pattern Matrix[a] CPL1,2,3,4,5,6

	Factor

	1	2
CPL1	.607	.238
CPL2		.735
CPL3		.717
CPL4R	.874	
CPL5R	.906	
CPL6R	.716	

Extraction Method: Principal Axis Factoring.

Rotation Method: Promax with Kaiser Normalization.

Blanks <.20.

a. Rotation converged in 3 iterations.

Table J11.

KMO and Bartlett's Test remaining 24 items (CPL2,3 deleted)

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.917
Bartlett's Test of Sphericity	Approx. Chi-Square	5,455.001
	Df	276
	Sig.	.000

Table J12.

Total Variance Explained remaining 24 items (CPL2,3 deleted)

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	10.038	41.824	41.824	9.750	40.624	40.624	6.531
2	2.925	12.189	54.013	2.620	10.918	51.541	6.467
3	1.882	7.841	61.854	1.620	6.749	58.290	6.380
4	1.247	5.196	67.050	.930	3.874	62.164	6.073
5	1.147	4.780	71.830	.788	3.283	65.448	5.892
6	.875	3.647	75.477	.543	2.261	67.709	7.042
7	.692	2.884	78.361				
8	.623	2.594	80.955				
9	.570	2.376	83.332				
10	.447	1.862	85.194				

11	.418	1.740	86.933			
12	.388	1.617	88.550			
13	.358	1.494	90.044			
14	.335	1.396	91.440			
15	.313	1.305	92.745			
16	.289	1.205	93.950			
17	.260	1.082	95.031			
18	.246	1.025	96.056			
19	.229	.954	97.011			
20	.206	.857	97.868			
21	.189	.788	98.655			
22	.156	.652	99.307			
23	.117	.489	99.796			
24	.049	.204	100.000			

Extraction Method: Principal Axis Factoring.

a. When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.

Table J13.

Factor Matrix[a] remaining 24 items (CPL2,3 deleted)

	Factor					
	1	2	3	4	5	6
CPA1	.536	.432			.358	
CPA2	.639	.400		-.281	.311	
CPA3	.632	.504			.204	
CPA4	.710	.379				
REA1	.600	.556		.220		
REA2	.437	.363		.201	-.240	
REA3	.604	.303				
REA4	.652	.469				
REA5	.660	.401				
TRA1	.741	-.337	.293			-.308
TRA2	.740	-.302	.231			-.307
TRA3	.759	-.262				
TRA4	.473			.229		
CPL1	-.480		.411	.236	.231	
CPL4R	-.605		.554		.203	

CPL5R	-.655		.467		.212	
CPL6R	-.686	.222	.269			
OBS1	.690	-.287	-.221	.258		
OBS2	.594	-.315	-.217		.233	
OBS3	.675	-.248	-.213			
OBS4R	.382	-.334	-.202			.206
ADO1	.743	-.333	.411	-.242		
ADO2	.742	-.299	.426	-.342		
ADO3	.670	-.228	.318	-.204		

Extraction Method: Principal Axis Factoring. Blanks <.20.

a. 6 factors extracted. 9 iterations required.

Table J14.

Communalities remaining 24 items (CPL2,3 deleted)

	Initial	Extraction
CPA1	.599	.659
CPA2	.687	.753
CPA3	.691	.723
CPA4	.680	.710
REA1	.712	.787
REA2	.468	.434
REA3	.560	.515
REA4	.715	.737
REA5	.645	.667
TRA1	.810	.878
TRA2	.789	.813
TRA3	.697	.697
TRA4	.339	.307
CPL1	.466	.512
CPL4R	.677	.773
CPL5R	.685	.730
CPL6R	.601	.609
OBS1	.640	.724
OBS2	.553	.615
OBS3	.600	.638
OBS4R	.355	.380
ADO1	.907	.926
ADO2	.913	.975
ADO3	.688	.686

Extraction Method: Principal Axis Factoring.

Table J15.

Pattern Matrix[a] remaining 24 items (CPL2,3 deleted)

	Factor					
	1	2	3	4	5	6
CPA1				.871		
CPA2				.891		
CPA3	.215			.720		
CPA4				.627		
REA1	.949					
REA2	.680		-.226			
REA3	.606					
REA4	.837					
REA5	.753					
TRA1						.927
TRA2						.878
TRA3						.589
TRA4						.466
CPL1					-.762	
CPL4R					-.898	
CPL5R					-.797	
CPL6R					-.513	
OBS1			.768			
OBS2			.779			
OBS3			.684			
OBS4R			.679			
ADO1		.925				
ADO2		1.013				
ADO3		.788				

Extraction Method: Principal Axis Factoring.

Rotation Method: Promax with Kaiser Normalization.

Blanks <.20.

a. Rotation converged in 8 iterations.

Table J16.

Factor Correlation Matrix

Factor	1	2	3	4	5	6
1	1.000	.431	.387	.681	.430	.476
2	.431	1.000	.532	.431	.436	.688
3	.387	.532	1.000	.378	.624	.660
4	.681	.431	.378	1.000	.455	.417
5	.430	.436	.624	.455	1.000	.513
6	.476	.688	.660	.417	.513	1.000

Extraction Method: Principal Axis Factoring.

Rotation Method: Promax with Kaiser Normalization.

Appendix K – Calculations quality assessment

Table K1.

AVE and CR Relative advantage

	λ	λ2	ε
REA1	0.949	0.901	0.099
REA2	0.680	0.462	0.538
REA3	0.606	0.367	0.633
REA4	0.837	0.701	0.299
REA5	0.753	0.567	0.433
Sum	3.825	2.998	2.002
N	5		
AVE	.600		
Square root of AVE	.775		
CR	.880		

Note. Average variance extracted (AVE) is calculated by ∑λ^2/∑λ^2 + ∑ (1 – λ^2); Composite reliability (CR) is calculated by (∑λ)^2 /(∑λ)^2 + ∑ (1 – λ^2), where λ = factor loadings (Fornell and Larcker, 1981).

Table K2.

AVE and CR Actual Usage behavior (Adoption)

	λ	λ2	ε
ADO1	0.925	0.855625	0.144375
ADO2	1.013	1.026169	-0.026169
ADO3	0.788	0.620944	0.379056
Sum	2.726	2.502738	0.497262
N	3		
AVE	.834		
Square root of AVE	.913		
CR	.937		

Note. Average variance extracted (AVE) is calculated by ∑λ^2/∑λ^2 + ∑ (1 – λ^2); Composite reliability (CR) is calculated by (∑λ)^2 /(∑λ)^2 + ∑ (1 – λ^2), where λ = factor loadings (Fornell and Larcker, 1981).

Table K3.

AVE and CR Observability

	λ	λ2	ε
OBS1	0.768	0.590	0.410
OBS2	0.779	0.607	0.393
OBS3	0.684	0.468	0.532
OBS4R	0.679	0.461	0.539
Sum	2.910	2.126	1.874
N	4		
AVE	.531		
Square root of AVE	.729		
CR	.819		

Note. Average variance extracted (AVE) is calculated by ∑λ^2/∑λ^2 + ∑ (1 – λ^2); Composite reliability (CR) is calculated by (∑λ)^2 /(∑λ)^2 + ∑ (1 – λ^2), where λ = factor loadings (Fornell and Larcker, 1981).

Table K4.

AVE and CR Compatibility

	λ	λ2	ε
CPA1	0.871	0.759	0.241
CPA2	0.891	0.794	0.206
CPA3	0.72	0.518	0.482
CPA4	0.627	0.393	0.607
Sum	3.109	2.464	1.536
N	4		
AVE	.616		
Square root of AVE	.785		
CR	.863		

Note. Average variance extracted (AVE) is calculated by ∑λ^2/∑λ^2 + ∑ (1 – λ^2); Composite reliability (CR) is calculated by (∑λ)^2 /(∑λ)^2 + ∑ (1 – λ^2), where λ = factor loadings (Fornell and Larcker, 1981).

Table K5.

AVE and CR Complexity

	λ	λ2	ε
CPL1	-0.762	0.581	0.419
CPL4R	-0.898	0.806	0.194
CPL5R	-0.797	0.635	0.364
CPL6R	-0.513	0.263	0.737
Sum	-2.970	2.285	1.714
N	4		
AVE	.571		
Square root of AVE	.756		
CR	.837		

Note. Average variance extracted (AVE) is calculated by ∑λ^2/∑λ^2 + ∑ (1 – λ^2); Composite reliability (CR) is calculated by (∑λ)^2 /(∑λ)^2 + ∑ (1 – λ^2), where λ = factor loadings (Fornell and Larcker, 1981).

Table K6.

AVE and CR Trialability

	λ	λ2	ε
TRA1	0.927	0.859	0.141
TRA2	0.878	0.771	0.229
TRA3	0.589	0.347	0.653
TRA4	0.466	0.217	0.783
Sum	2.860	2.194	1.806
N	4		
AVE	.549		
Square root of AVE	.741		
CR	.819		

Note. Average variance extracted (AVE) is calculated by ∑λ^2/∑λ^2 + ∑ (1 – λ^2); Composite reliability (CR) is calculated by (∑λ)^2 /(∑λ)^2 + ∑ (1 – λ^2), where λ = factor loadings (Fornell and Larcker, 1981).

Table K7.

ASV and MSV

	ASV	MSV
Relative advantage	.242	.464
Actual usage behavior (adoption)	.264	.473
Observability	.280	.436
Compatibility	.235	.464
Complexity	.247	.389
Trialability	.315	.473

Note. Based on table J16. Average shared variance (ASV) is calculated by ∑inter-factor correlations^2/5. Maximum shared variance (MSV) is calculated by highest inter-factor correlations^2.

Appendix L – SPSS output regression

Table L1.

Descriptive Statistics summated constructs

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic
CPAavg_summated	300	1.000	7.000	4.20250	1.494987	-.474	-.611
REAavg_summated	300	1.000	7.000	4.28267	1.293604	-.614	.342
TRAavg_summated	300	1.000	7.000	3.69333	1.603233	.120	-1.071
CPLavg_summated	300	1.000	7.000	4.10833	1.332296	-.009	-.551
OBSavg_summated	300	1.000	7.000	4.10917	1.368069	-.262	-.503
ADOavg_summated	300	1.000	5.000	1.67222	1.060229	1.276	.244
Valid N (listwise)	300						

Table L2.

Coefficients[a]

		Unstandardized Coefficients		Standardized Coefficients			Correlations			Collinearity Statistics	
Model		B	Std. Error	Beta	t	Sig.	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	.106	.361		.294	.769					
	CPAavg_summated	.068	.040	.097	1.705	.089	.406	.099	.070	.531	1.884
	REAavg_summated	.019	.046	.023	.401	.689	.396	.023	.017	.530	1.886
	TRAavg_summated	.371	.037	.561	9.934	.000	.687	.501	.410	.534	1.872
	CPLavg_summated	-.077	.043	-.097	-1.774	.077	-.449	-.103	-.073	.573	1.746
	OBSavg_summated	.035	.045	.045	.780	.436	.493	.045	.032	.502	1.993
2	(Constant)	.438	.303		1.444	.150					
	CPAavg_summated	.021	.034	.030	.625	.532	.406	.037	.021	.518	1.932
	REAavg_summated	.077	.040	.094	1.945	.053	.396	.113	.066	.490	2.040
	TRAavg_summated	.151	.036	.229	4.211	.000	.687	.240	.143	.391	2.557
	CPLavg_summated	-.067	.036	-.084	-1.866	.063	-.449	-.109	-.063	.571	1.752
	OBSavg_summated	-.002	.038	-.003	-.052	.959	.493	-.003	-.002	.487	2.053
	Geslacht_dummy_man	.231	.084	.108	2.759	.006	.396	.160	.094	.756	1.323
	Langetermijn_dummy_ja	.147	.087	.069	1.695	.091	.455	.099	.058	.693	1.443
	Speculatief_dummy_ja	1.053	.106	.464	9.932	.000	.746	.503	.338	.529	1.889

a. Dependent Variable: ADOavg_summated

Note. Font size decreased for increased readability

Table L3.

Correlation Matrix[a]

		ADOavg_summated	CPAavg_summated	REAavg_summated	TRAavg_summated	CPLavg_summated	OBSavg_summated
Correlation	ADOavg_summated	1.000	.406	.396	.687	-.449	.493
	CPAavg_summated	.406	1.000	.652	.420	-.442	.348
	REAavg_summated	.396	.652	1.000	.457	-.401	.332
	TRAavg_summated	.687	.420	.457	1.000	-.487	.621
	CPLavg_summated	-.449	-.442	-.401	-.487	1.000	-.594
	OBSavg_summated	.493	.348	.332	.621	-.594	1.000
Sig. (1-tailed)	ADOavg_summated		.000	.000	.000	.000	.000
	CPAavg_summated	.000		.000	.000	.000	.000
	REAavg_summated	.000	.000		.000	.000	.000
	TRAavg_summated	.000	.000	.000		.000	.000
	CPLavg_summated	.000	.000	.000	.000		.000
	OBSavg_summated	.000	.000	.000	.000	.000	

a. Determinant = .076

Table L4.

Model Summary[b]

					Change Statistics					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.707[a]	.499	.491	.756494	.499	58.660	5	294	.000	1.927

a. Predictors: (Constant), CPAavg_summated, OBSavg_summated, CPLavg_summated, TRAavg_summated, REAavg_summated

b. Dependent Variable: ADOavg_summated

Table L5.

Model Summary[e]

				Std.	Change Statistics					
Model	R	R Square	Adjusted R Square	Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.707[a]	.499	.491	.756494	.499	58.660	5	294	.000	
2	.723[b]	.523	.513	.739920	.023	14.318	1	293	.000	
3	.741[c]	.549	.539	.720135	.027	17.321	1	292	.000	
4	.815[d]	.664	.654	.623398	.114	98.654	1	291	.000	1.708

a. Predictors: (Constant), OBSavg_summated, REAavg_summated, CPLavg_summated, TRAavg_summated, CPAavg_summated

b. Predictors: (Constant), OBSavg_summated, REAavg_summated, CPLavg_summated, TRAavg_summated, CPAavg_summated, Geslacht_dummy_man

c. Predictors: (Constant), OBSavg_summated, REAavg_summated, CPLavg_summated, TRAavg_summated, CPAavg_summated, Geslacht_dummy_man, Langetermijn_dummy_ja

d. Predictors: (Constant), OBSavg_summated, REAavg_summated, CPLavg_summated, TRAavg_summated, CPAavg_summated, Geslacht_dummy_man, Langetermijn_dummy_ja, Speculatief_dummy_ja

e. Dependent Variable: ADOavg_summated

Table L6.

Model Summary[h]

				Std.	Change Statistics					
Model	R	R Square	Adjusted R Square	Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.707[a]	.499	.491	.756494	.499	58.660	5	294	.000	
2	.723[b]	.523	.513	.739920	.023	14.318	1	293	.000	
3	.723[c]	.523	.511	.741055	.000	.103	1	292	.748	
4	.728[d]	.530	.517	.736736	.007	4.433	1	291	.036	
5	.729[e]	.532	.517	.736545	.002	1.151	1	290	.284	
6	.745[f]	.555	.540	.719110	.023	15.233	1	289	.000	
7	.816[g]	.666	.654	.624094	.111	95.697	1	288	.000	1.741

a. Predictors: (Constant), OBSavg_summated, REAavg_summated, CPLavg_summated, TRAavg_summated, CPAavg_summated

b. Predictors: (Constant), OBSavg_summated, REAavg_summated, CPLavg_summated, TRAavg_summated, CPAavg_summated, Geslacht_dummy_man
c. Predictors: (Constant), OBSavg_summated, REAavg_summated, CPLavg_summated, TRAavg_summated, CPAavg_summated, Geslacht_dummy_man, Leeftijd
d. Predictors: (Constant), OBSavg_summated, REAavg_summated, CPLavg_summated, TRAavg_summated, CPAavg_summated, Geslacht_dummy_man, Leeftijd, Inkomen
e. Predictors: (Constant), OBSavg_summated, REAavg_summated, CPLavg_summated, TRAavg_summated, CPAavg_summated, Geslacht_dummy_man, Leeftijd, Inkomen, Opleidingtransformed
f. Predictors: (Constant), OBSavg_summated, REAavg_summated, CPLavg_summated, TRAavg_summated, CPAavg_summated, Geslacht_dummy_man, Leeftijd, Inkomen, Opleidingtransformed, Langetermijn_dummy_ja
g. Predictors: (Constant), OBSavg_summated, REAavg_summated, CPLavg_summated, TRAavg_summated, CPAavg_summated, Geslacht_dummy_man, Leeftijd, Inkomen, Opleidingtransformed, Langetermijn_dummy_ja, Speculatief_dummy_ja
h. Dependent Variable: ADOavg_summated

Table L7.

Model Summary[f]

				Std.	Change Statistics					
Model	R	R Square	Adjusted R Square	Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.707[a]	.499	.491	.756494	.499	58.660	5	294	.000	
2	.723[b]	.523	.513	.739920	.023	14.318	1	293	.000	
3	.726[c]	.527	.516	.737490	.005	2.934	1	292	.088	
4	.742[d]	.550	.538	.720677	.023	14.783	1	291	.000	
5	.815[e]	.664	.654	.623801	.114	98.402	1	290	.000	1.713

a. Predictors: (Constant), OBSavg_summated, REAavg_summated, CPLavg_summated, TRAavg_summated, CPAavg_summated
b. Predictors: (Constant), OBSavg_summated, REAavg_summated, CPLavg_summated, TRAavg_summated, CPAavg_summated, Geslacht_dummy_man
c. Predictors: (Constant), OBSavg_summated, REAavg_summated, CPLavg_summated, TRAavg_summated, CPAavg_summated, Geslacht_dummy_man, Inkomen
d. Predictors: (Constant), OBSavg_summated, REAavg_summated, CPLavg_summated, TRAavg_summated, CPAavg_summated, Geslacht_dummy_man, Inkomen, Langetermijn_dummy_ja
e. Predictors: (Constant), OBSavg_summated, REAavg_summated, CPLavg_summated, TRAavg_summated, CPAavg_summated, Geslacht_dummy_man, Inkomen, Langetermijn_dummy_ja, Speculatief_dummy_ja
f. Dependent Variable: ADOavg_summated

Table L8.

Model Summary[c]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.815[a]	.664	.654	.623398	.664	71.731	8	291	.000	
2	.815[b]	.664	.654	.623801	.001	.624	1	290	.430	1.713

a. Predictors: (Constant), Speculatief_dummy_ja, REAavg_summated, Geslacht_dummy_man, CPLavg_summated, Langetermijn_dummy_ja, OBSavg_summated, CPAavg_summated, TRAavg_summated

b. Predictors: (Constant), Speculatief_dummy_ja, REAavg_summated, Geslacht_dummy_man, CPLavg_summated, Langetermijn_dummy_ja, OBSavg_summated, CPAavg_summated, TRAavg_summated, Inkomen

c. Dependent Variable: ADOavg_summated

Table L9.

Model Summary[c]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.707[a]	.499	.491	.756494	.499	58.660	5	294	.000	
2	.815[b]	.664	.654	.623398	.164	47.313	3	291	.000	1.708

a. Predictors: (Constant), OBSavg_summated, REAavg_summated, CPLavg_summated, TRAavg_summated, CPAavg_summated

b. Predictors: (Constant), OBSavg_summated, REAavg_summated, CPLavg_summated, TRAavg_summated, CPAavg_summated, Geslacht_dummy_man, Langetermijn_dummy_ja, Speculatief_dummy_ja

c. Dependent Variable: ADOavg_summated

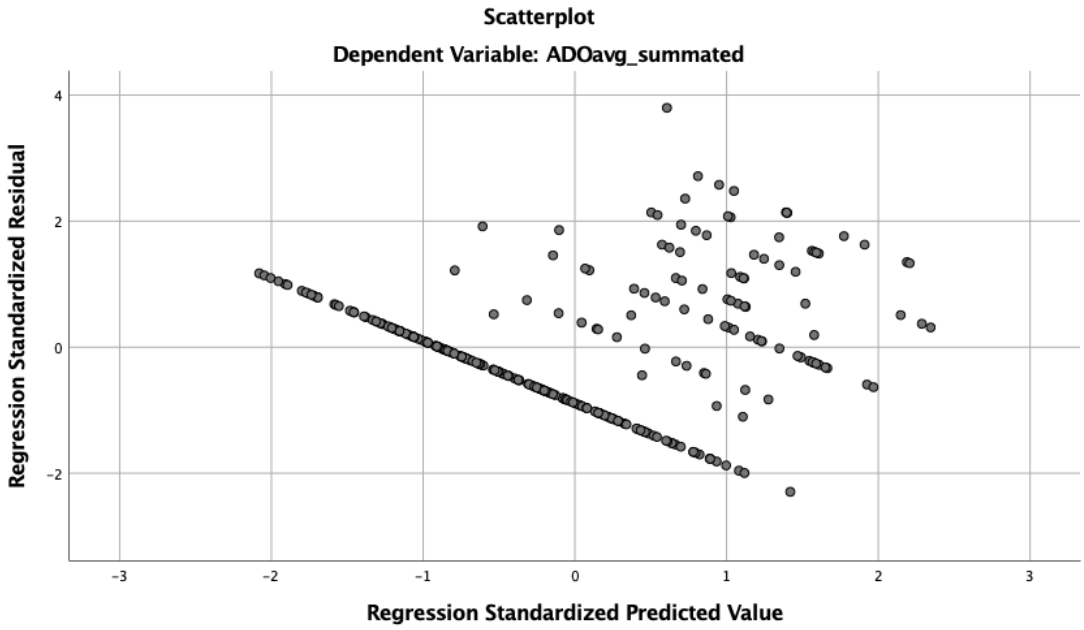


Figure L1. Scatterplot of standardized residuals and standardized predicted values

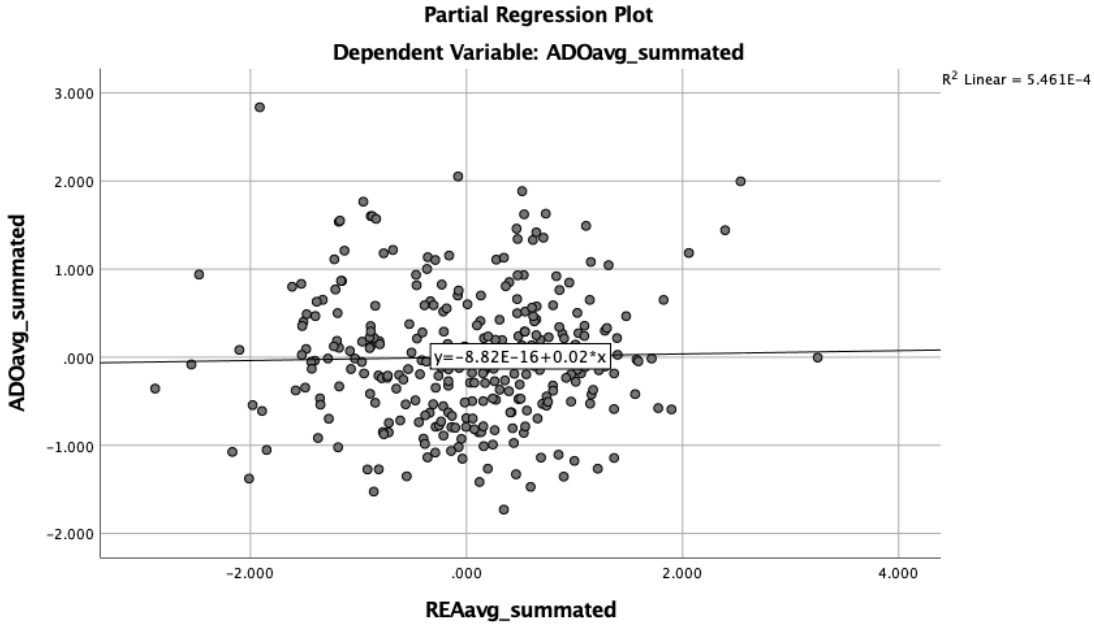


Figure L2. Partial regression plot relative advantage

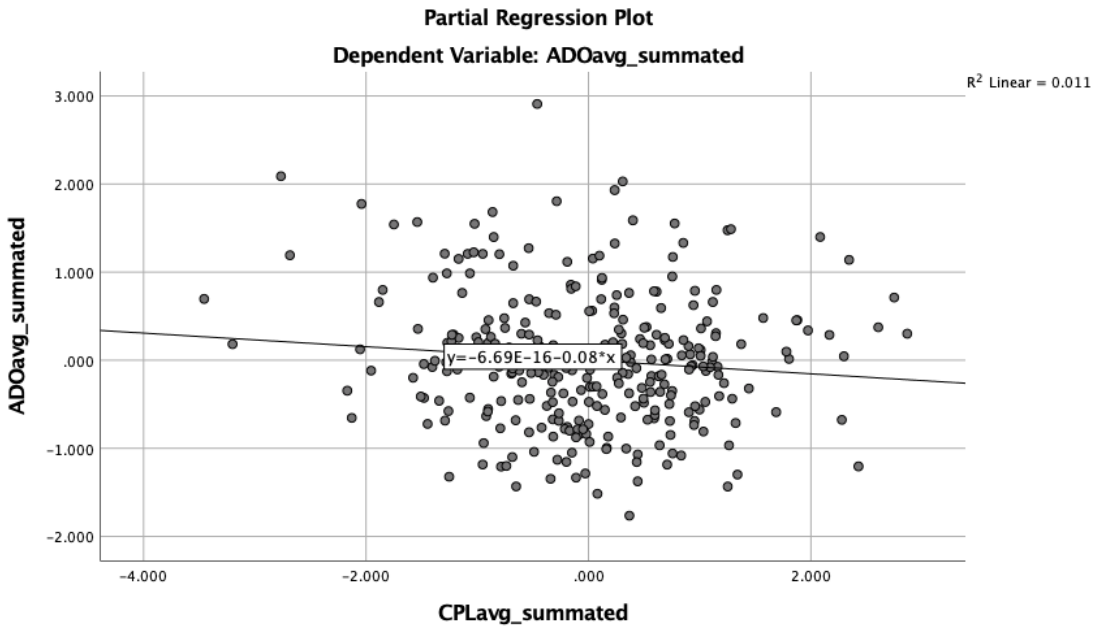


Figure L3. Partial regression plot complexity

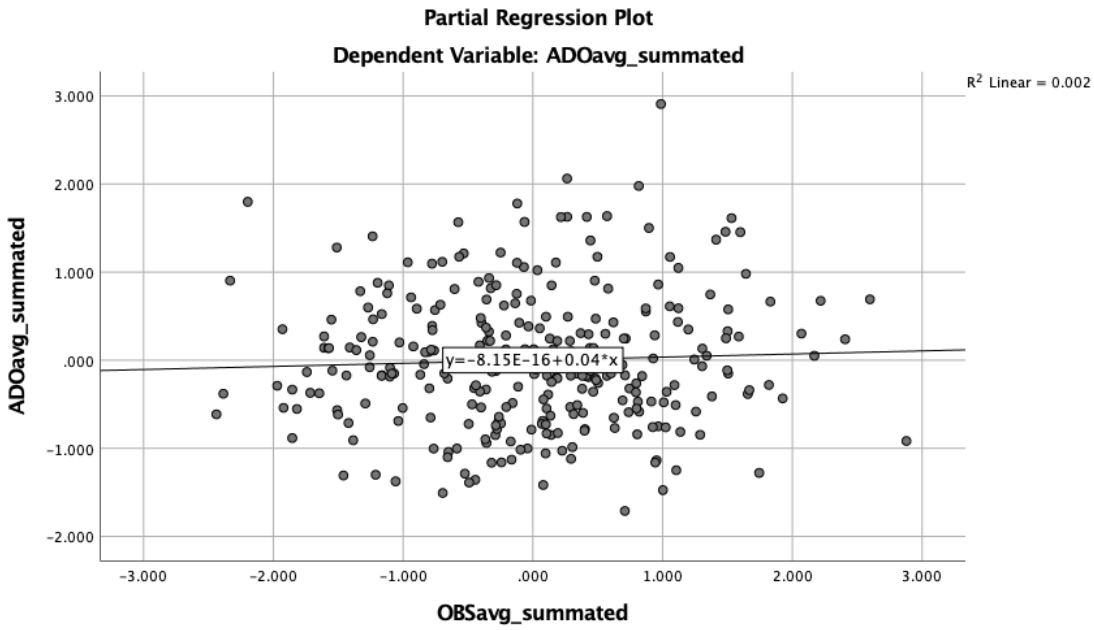


Figure L4. Partial regression plot observability

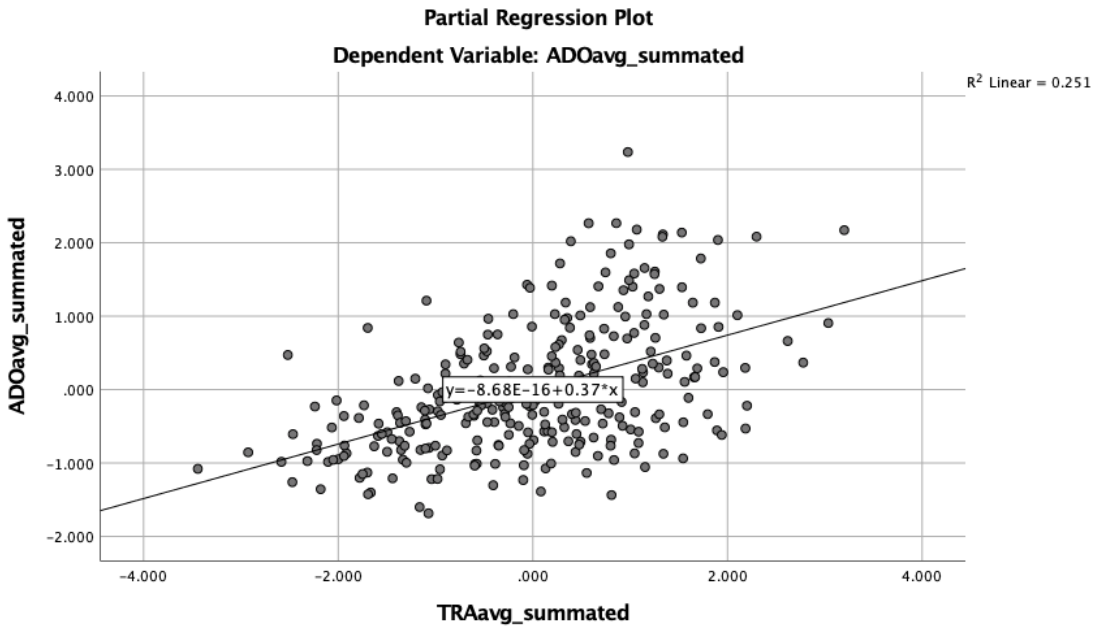


Figure L5. Partial regression plot trialability

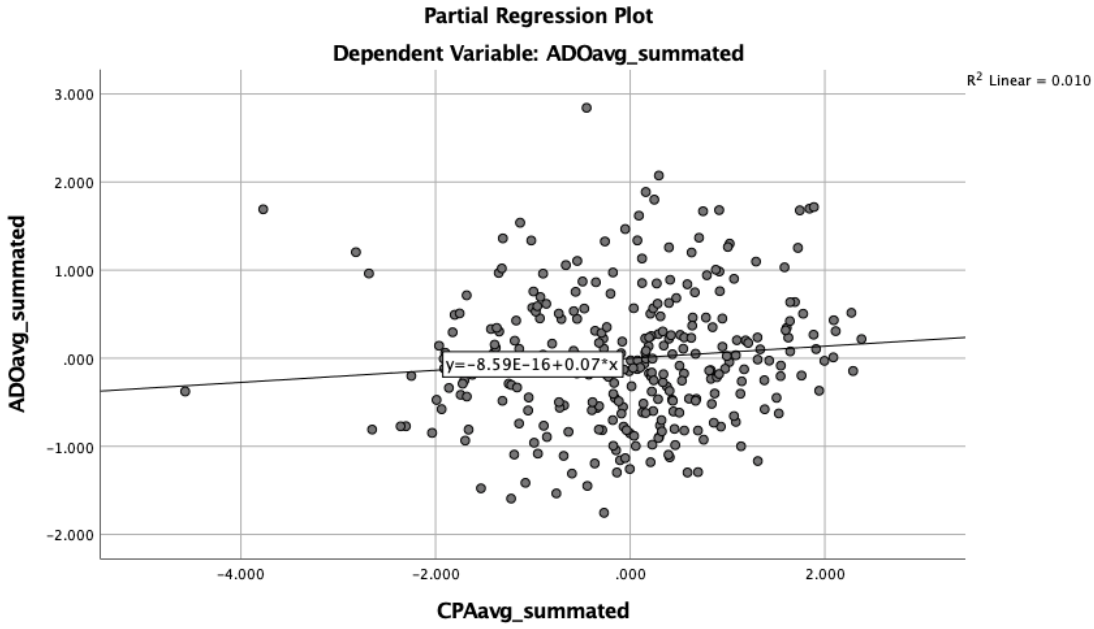


Figure L6. Partial regression plot compatibility

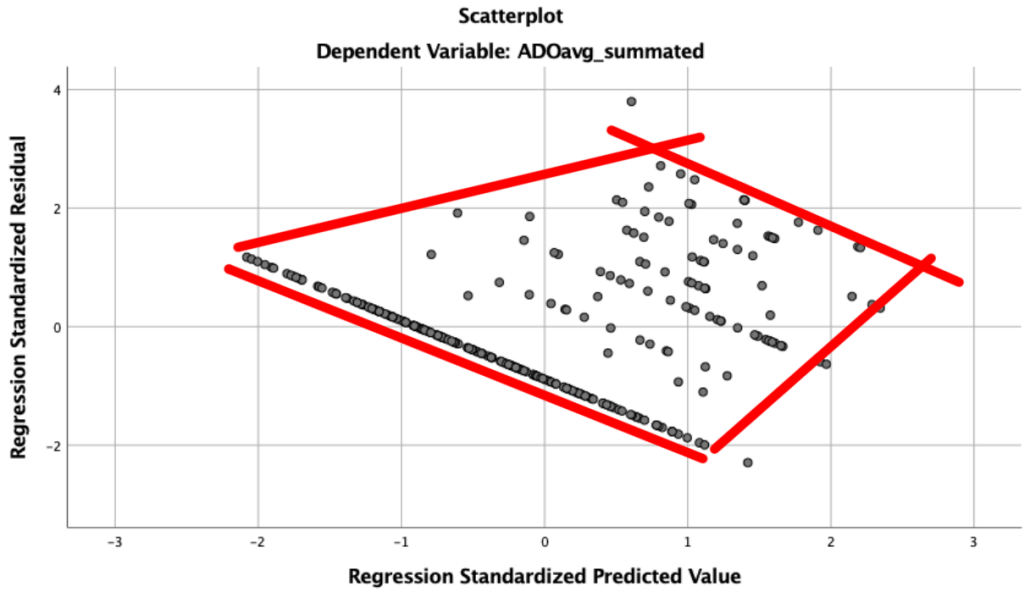


Figure L7. Scatterplot of standardized residuals and standardized predicted values with drawing

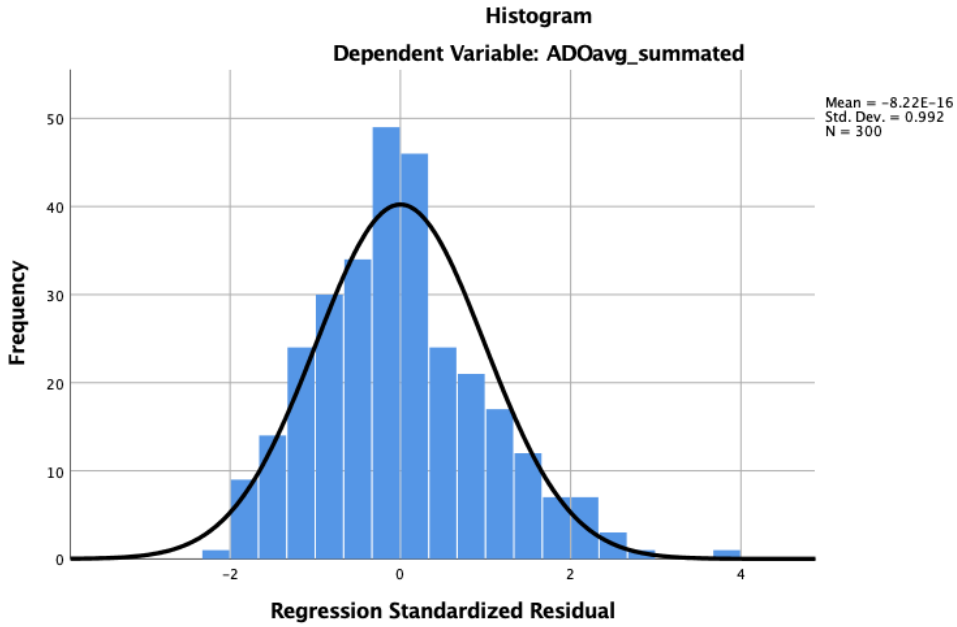


Figure L8. Histogram

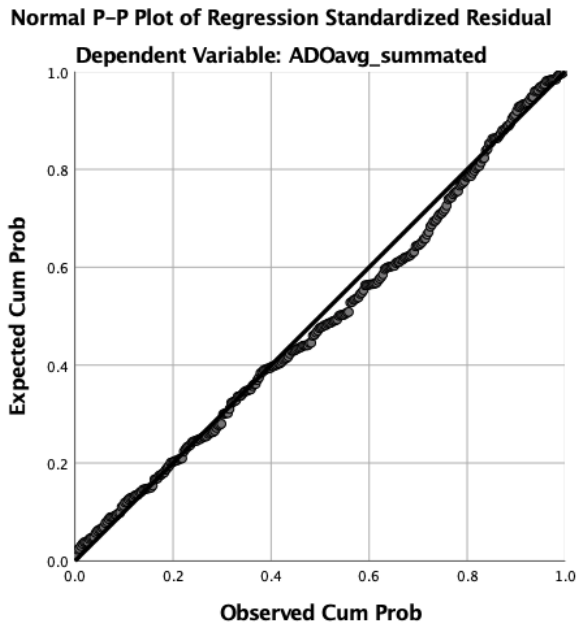


Figure L9. Normal P-P Plot of Regression Standardized Residual