A portrait of a crypto investor

A quantitative study identifying key characteristics of non-professional crypto investors

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Bachelor Thesis
Stockholm School of Economics
2022

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Abstract:

This thesis aims to investigate the new phenomena of crypto through a quantitative study based on a sample of n=31 crypto investors. The study portrays key characteristics of crypto investors as well as to what extent these characteristics affect attitudes towards the crypto market, and consequently, investing behavior. This is done by answering the following research questions: R1: *What does the typical non-professional crypto investor look like?* and R2: *To what extent do the underlying characteristics of the crypto investors explain their attitudes toward the crypto market?* By applying a linear regression model, the results from the population survey are analyzed in order to establish what factors have the largest effects on attitude. In addition to the linear regression model, descriptive data is analyzed in order to identify the overall characteristics of the typical crypto investor. The model used to predict attitudes towards the crypto market is inspired by the Theory of Planned Behavior and uses the variables "Knowledge", "Risk propensity", "Norms" and "Grit", which we argue do, in fact, affect the attitudes towards the crypto market. Significant positive correlations are found between knowledge and attitudes, as well as between norms and attitudes. A positive but insignificant correlation was found between risk propensity and attitude, while a significant negative correlation was found between grit and attitude.

Keywords:

Crypto Investors, Cryptocurrencies, Theory of Planned Behavior

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Bachelor Thesis
Bachelor Program in Business & Economics
Stockholm School of Economics

Acknowledgements

We would like to thank…

Patric Andersson

For great support, wise insights and engaging guidance

Adam Solberg, David Narva, Sofie Valentin and Gustav Moberg

For guidance and helpful comments

Survey respondents

For taking the time to answer our survey

Glossary

Due to confusion regarding the terminology in the crypto space, this glossary defines commonly used terms within the industry of distributed ledger technologies and cryptographic digital assets.

Blockchain: A database technology that relies on a ledger that is distributed throughout a computer network and whose records are known as blocks (Britannica, 2022).

Bitcoin: A digital currency created by an anonymous computer programmer or group of programmers known as Satoshi Nakamoto in 2009 (Britannica, 2022).

Mining (in the context of bitcoin) is the process by which new bitcoins are entered into circulation. It is also the way in which networks confirm new transactions which is a critical component of the blockchain ledger's maintenance and development (Investopedia, 2022).

Cryptocurrency: A cryptocurrency is a digital or virtual currency that is secured by cryptography, which makes it nearly impossible to counterfeit or double spend (Cointelegraph, 2022).

Non-Fungible Token(s) (NFTs) is a non-interchangeable digital asset such as a photograph, song or video whose ownership has been authenticated and stored on a database called a blockchain (Britannica, 2022).

Asset-Backed Token(s) are digital claims on a physical asset and are backed by that asset. Gold, crude oil, real estate, equity or just about any other real, physical asset can be tokenized and become an asset backed token (Coinmarketcap, 2021).

Utility Token(s) are a special type of crypto token designed for serving a particular use case in a concerned ecosystem. Utility tokens grant the rights to users to perform some actions on a specific blockchain network or decentralized application (Howell, J. 2022).

Traditional Financial Markets refers broadly to any marketplace where the trading of securities occur, including stock market, bond market, forex market and derivatives market among others (Investopedia, 2022).

Contents

1. Introduction

Traditionally, written by Publius Terentius Afer, the Roman playwright Phormio:
Fortis fortuna adiuvat – fortune favors the brave

Since the release of the Bitcoin white paper: A Peer-to-Peer Electronic Cash System (2009), there has been a dramatic development in the crypto market. The technology behind crypto markets builds upon a distributed ledger technology called blockchain. The interest in such technology has grown exponentially due to its inherent capabilities of allowing decentralized and, to some extent, anonymous transactions (Fabian & Ermakova, 2016) Blockchain technology helps eliminate the need for intermediaries to validate transactions, which allows for a more efficient market with faster transaction times (Wall, Jämthagen, & Wahlberg, 2016) new and potent technology has drawn the attention of many different groups of society such as regulators, institutions and investors.

Cryptocurrencies have gained a lot of media attention during the past years, mostly because of their dramatic returns and volatility. However, discussions have also arisen about how to deal with its potential risks and issues. Due to the lack of intermediaries and to some extent lacking traceability, cryptocurrencies have been subject to illicit use such as the selling of drugs and other criminal activities **(**Foley, Karlsen, Putniņš 2019**).** Another discussion is the environmental footprint left by the mining activities required to maintain blockchains like Bitcoin.

The future of cryptocurrency and blockchain technology seems unclear today. It is still in its infancy and development is needed before true mass adoption is possible. One aspect that creates uncertainty is the lack of regulation in many countries (*4th annual global crypto hedge fund report 2022*). Still, many are intrigued by the potential use cases and investment opportunities that are offered through this new technology. However, it remains unclear what truly affects individuals' attitudes toward the emerging crypto market.

1.1. Background

1.1.1. Overview of the crypto market

The cryptocurrency market has been subject to dramatic gains and losses as well as high volatility since its emergence back in 2009, and the market has become more and more complex. Notably in recent news, the collapse of the cryptocurrency exchange FTX has shaken the public's trust in the crypto space (Reuters, 2022).

Due to its inherent volatile characteristics, the crypto market has been a popular subject for traders trying to benefit from the intense price fluctuations. For example, the price of Bitcoin went from around 3 000 USD in March of 2020 up to over 68 000 USD in October 2021, to then fall back down to around 16 000 USD in November 2022 (Coingecko, 2022). However,

despite the high volatility and dramatic shocks such as the FTX collapse, the attention to Bitcoin and cryptocurrency seems to be increasing, both from private investors and institutions. The cryptocurrency market seems to be slowly transitioning from being viewed purely as a high-risk speculation to becoming a part of the global financial system. In a survey conducted by Fidelity (2021), it was found that 52% of respondents were already invested in digital assets. The study also showed that surprisingly 84% of European high-net-worth individuals were already invested. In PWCs 4th edition of their annual crypto hedge fund report, it was shown that one in three hedge funds invests in digital assets. It was also shown that over a quarter of hedge fund managers not yet invested are looking to invest or already planning to invest (*4th annual global crypto hedge fund report 2022*).

The crypto market differs from the traditional financial markets in several ways. One unique feature is that it is open for trading 24 hours a day, 7 days a week, 365 days a year. It has gone from being purely peripheral to being comparable to the capitalization level of an intermediate-size stock exchange.

1.2. Problem statement

This thesis is written in the field of marketing, where marketing research is the function that links consumers, customers and the public to the marketer through information used to identify and define opportunities and problems (AMA, 2017).

Due to the rise of the recent phenomenon of cryptocurrency, especially regarding investments in it, which has increased dramatically over recent years. This study aims at clarifying the characteristics that determine the underlying dynamics of non-professional cryptocurrency investors/traders. Investing in cryptocurrency has become more accessible for the everyday retail investor, partly due to improved user experiences as well as extensive marketing in the field compared to a few years ago.

Although it is a relatively new space, the amount of research conducted on crypto markets has increased dramatically over the past few years. However, we have found that the current research lacks in the area of understanding the overall characteristics of market participants, especially the investors.

This paper is based on a mixed population sample of crypto investors in an attempt to clarify what these characteristics are and what their role might be in explaining investor attitudes and behaviors.

It is crucial to understand the investors and their behavior in-dept to know how to communicate with them from a marketing perspective. Furthermore, investor behavior and attitude are important factors for understanding the current state of the market and where it might be moving next.

1.3. Purpose, research questions & expected contributions

Given the development and interesting features of the emerging cryptocurrency market, as well as the limited amount of prior research on the underlying characteristics of its market participants, this thesis aims at explaining who the investors are and what their personal characteristics and behaviors look like. Through this explorative study, the aim is to investigate what behavioral factors might correlate with positive attitudes toward the crypto market, and, consequently, increased investments into the crypto sphere. Furthermore, the purpose of the study is to present useful descriptive knowledge that might contribute to a better understanding of the investors. To understand the investors sentiment and behavior is crucial for understanding the quickly transitioning crypto market and where it might be headed in the future.

Hence, the research questions that are to be examined in this study are the following:

R1: *What does the typical non-professional crypto investor look like?*

R2: *To what extent do the underlying characteristics of the crypto investors explain their attitudes toward the crypto market?*

By researching these questions, firstly, our hope is to shed light on what behavioral characteristics is typical for a crypto investor. By identifying key characteristics of the crypto investors, we try to explain how these characteristics affect investors attitudes toward the crypto market. This knowledge is crucial to understand how to communicate with investors in an efficient way.

Secondly, we want to understand who the investors are and what the main underlying reasons are for them deciding to invest in cryptocurrency. An understand of who the investors are and what their main reasons for investing can help all parties involved in attracting investors to the crypto sphere, ranging from existing crypto projects, investment firms, and eventually, to guide new crypto projects in how to tailor their business models and offerings to suit the needs of the investors.

Third, we wish to clear out eventual misconceptions and prejudices that people might have about the crypto market and the people participating in it, primarily those portrayed by the mainstream media. We hope to contribute to a balanced and more nuanced understanding amid all the noise going on in the world, especially after recent events of bankruptcy for large exchanges like FTX, as mentioned in the introduction.

1.4. Thesis outline

To answer the research questions, this thesis is divided into 5 pieces. The first section consists of an Introduction, followed by a Theory section, where relevant literature is presented together with the theoretical foundations on which this study and its hypotheses are founded. After this a Methodology section is presented, where the course of actions taken during the conduction of this study is presented. The 4th section consists of Results and Analysis, where the results of the collected data are presented together with a test of hypotheses and other relevant results. Lastly, a Discussion section is presented, wrapping up the findings of the Results and Analysis section together with suggestions of topics for future research.

2. Literature review and theoretical framework

The space of cryptocurrency is a new phenomenon, which is also reflected in the amount of research conducted in the area. The method used for collecting literature and the replicability of the study is crucial for its relevance. Hence this study is based primarily on literature from Academic Journals such as Scopus Review and Google Scholar. The purpose of this thesis is to better understand the behavior and characteristics of cryptocurrency investors. Hence, literature has been collected in the areas of cryptocurrency markets, behavior of crypto market participants and other theories pertaining to these subjects. Keywords that were used in the search for information was: *Crypto, *Emerging markets psychology, *Crypto psychology, *Theory of Planned Behavior, *Knowledge and Attitude, *Crypto Gambling, *Crypto Risk, *Risk Propensity Test, *News Sources and Markets and *Grit.

2.1. Previous research

After reviewing existing research, we have identified four major avenues that the existing research can be divided into. These are: 1) Crypto and Gambling, pertaining to studies on similarities and correlations between crypto trading and gambling. 2) Performance, focusing on the performance and different measures of performance for crypto traders and the market. 3) Intentions & Behavior, mostly based on the Theory of Planned Behavior, where efforts are made to understand what factors affect individuals' intentions and, ultimately, behavior regarding cryptocurrency. 4) Use cases, studying potential adoption and use cases of blockchain technology and cryptocurrencies for real world applications.

In the following section, the prior research that has been reviewed is divided into two categories. One pertaining to studies conducted on the cryptocurrency market and one pertaining to studies conducted on the individuals participating in this market. This study will focus primarily on the research conducted on individuals' behavior but will also touch on the literature with a focus on cryptocurrency markets.

2.2.1. Previous research on the cryptocurrency market

The table below presents a summary of prior literature on the topic of cryptocurrency markets:

Author(s)	**Key Findings**
Veerasingam, Teoh (2022)	*Research paper with data collected from 200 individuals. The study concluded that attitude toward risk and subjective norms have a significant positive influence on the investment decision in cryptocurrency. Through adding machine learning forecasting as a moderating variable between the relationship between perceived benefits and investment decisions because investors*

	perceived that machine learning enhanced investors' confidence to invest by predicting the future trend of cryptocurrency prices.
Coulter, Kelly Ann (2022)	*Coulter et al. examined the relationship between events reported in international news via categorical discourse and Bitcoin price. They found that the identified discourses may have had an effect on the movements in the crypto market, especially Bitcoins price volatility. The study found that in some cases, the source of the news may have amplified the volatility effect.*
Delfabbro, L. King, Williams (2021)	*The paper explains that crypto trading has emerged during the era of social media which has led to a strong social media culture of crypto advisors, spruikers/influencers and more experienced advisors on platforms such as Youtube.*
Charfeddine, Lanouar; Benlagha, Noureddine, Maouchi, Youcef (2020)	*The study finds that Bitcoin and Ethereum are relatively disconnected and decoupled from traditional financial markets. This could indicate that there is potential for diversification and hedging opportunities. This can be done by including a small weight of digital assets in a portfolio consisting of more conventional financial assets. However, they also find evidence that the relationship between cryptocurrencies and conventional assets is sensitive to external shocks.*
Bori, Gupta, Roubaud (2019)	*Herd investing has been thought to intensely affect movements in markets. The study focuses on 14 leading cryptocurrencies that constitute 68.36% of the overall market at the time. The study found that the cryptocurrency market is subject to herding behavior that seems to vary over time. This herding behavior is indicative of relative market inefficiencies.*
Mondoza-Tello, Mora, Pujol-Lopez, D.Lytras (2019)	*The article points out that cryptocurrencies arouse interest in society because they reformulate the generation and transference of money. The article explains how the ownership of a cryptocurrency is collectively administered and validated by the participants in the community.*
Hazlet, Luther (2019)	*The article argues against Yermack (2015) which rests on a non-standard conception of money as it outlines the differences between the definition of money being (i.e., a commonly accepted medium of exchange) versus the common functions of money (i.e., medium of exchange, store of value and unit of account).The article uses the market capitalization of government-issued monies and concludes that their demand is*

	similar to those of Bitcoin. However they cannot conclude definitely whether Bitcoin is widely-accepted or expected to be widely accepted at some point in the future.
ElBahrawy, Alessandretti, Kandler, Pastor-Satorras, Baronchelli (2017)	*The study explains that Bitcoin is a digital asset designed to work as a medium of exchange. The study draws on data extracted from the website Coin Market Cap. The paper points out that the neutral model of evolution captures several of the observed properties of the market.*
Wall, Malm (2016)	*The thesis argues about potential use cases for crypto regarding securities trading. The authors argue that blockchain technology could be the base for a new, trustless securities market. This would allow for next-generation financial activities in the securities market such as peer-to-peer delivery versus payment and smart contract securities where the blockchain platform would need to incorporate a currency token. The authors go on to argue that the blockchain must position itself correctly within the financial industry and the distributed ledger ecosystem.*
Nakamoto (2009)	*Nakamoto lays the foundation for a purely peer-to-peer version of electronic cash allowing for online payments to be sent directly from one party to another without going through a financial institution.*

2.1.2. Previous research cryptocurrencies from a user perspective

The table below presents a summary of prior literature on the topic of crypto investors:

Author(s)	***Key findings***
Bowden & Gemayel 2022	*It is stated that crypto investors decision making is potentially more affected by public sentiment than in traditional markets. This could be due to a lack of quantifiable financial fundamental information and historical precedent for pricing behavior. They used a data set of 2 000 crypto transactions in order to test how sentiment in different crypto communities on Reddit affected the performance, deposit and withdrawal behavior, and position exposure of cryptocurrency traders. Evidence supported that sentiment plays a role in investors decision-making processes.*
Steinmetz, Fred (2022)	*Cross-sectional research on the interrelations of cryptocurrency and gambling where the article states that gambling is an aspect of all financial speculation, be it trading in high-risk stock or in cryptocurrency markets. Furthermore, the article concludes that the profiles of crypto-gamblers resemble those of skill-based gamblers and stock traders but differ in terms of their average young age.*

Ante, Fiedler, von Meduna, Steinmetz (2021)	*Nationally representative survey data set of 3,864 German citizens of which 9.2% reported owning crypto. Knowledge and the degree of ideological motivation for owning cryptocurrency have a positive effect on returns. This paper is the first scientific analysis of individual investments in Crypto.*
Stix, Helmut (2021)	*An Austrian survey study among household to study ownership and purchase intentions of crypto-assets and finds that owners are more risk-tolerant.*
Morren, Paas (2020)	*The article states that IMC's (Instructural Manipulation Checks) have different values toward advertisements and brands. IMC's failures can reduce the magnitude of negative correlations between oppositely scored scale items.*
Mazambani & Mutambara (2020)	*Through studying the Theory of Planned Behavior for prediction intentions to invest in cryptocurrency, they found that attitude and perceived behavioral control had a positive impact on the intentions to use cryptocurrency. However, subjective norms were found to have a negative but non-significant influence.*
Aloosh, Ouzan (2020)	*The paper reviews psychological mechanisms that propose to be a particular risk factors for excessive crypto trading. It outlines that the particular features that make this form of speculation unique is its 24-hour availability, long-form nature and the extreme volatility of outcomes as well as the strong influence of sentiment and social influence.*
J. Mills, Nower (2019)	*The paper argues that cryptocurrencies are emerging digital currencies that allow anonymity in accessing various risk-taking activities through the internet (e.g., drugs, gambling). Through a cross-sectional online survey, they collected data and constructed a Problem Gambling Severity Index and concluded that trading crypto currencies are strongly associated with problem gambling.*
Schaupp & Festa (2018)	*The Theory of Planned Behavior was used to study what factors that influence people's intention to adopt the use of cryptocurrency. It was found that both attitude, subjective norms, and perceived behavioral control positively influenced the intention to adopt cryptocurrency.*
Sjöberg, Engelberg (2009)	*The paper finds that students of finance have a positive attitude to economic risk taking and gambling behavior, a high level of sensation seeking and a low level of money concern.*
Duckworth, Peterson, Matthews, Kelly (2007)	*The authors tested the importance of the noncognitive trait grit, defined as perseverance and passion for long term goals. They found that grit showed incremental predictive validity of success measures over and beyond IQ and conscientiousness. The findings suggest that achievement of difficult goals entails not only talent but also sustained and focused application of talent over time.*

2.2. Theoretical foundation & presentation of hypotheses

In this section, the most central theories and prior findings for this study are presented. These came to provide inspiration and lay the foundation for how the hypotheses were formulated and how this study was conducted.

2.2.1. Knowledge

Knowledge is a crucial element for any kind of decision making, especially when it comes to investments. Since the crypto market is relatively new and highly related to technology, the entry barriers for understanding it properly may be higher than for other, more conventional markets.

In (*Attitude strength: Antecedents and consequences 1995*) (Petty & Krosnick, 1995) it is explained how people with low knowledge on a subject are likely to be more easily influenced and persuaded by the narrative that is presented to them if the source of information seems reliable. In the case of the crypto market, the mainstream media covering risks and uncertainties of cryptocurrencies may influence people's attitudes toward the market, especially those who are less knowledgeable to begin with. The risk of media narratives affecting the attitudes of less knowledgeable people makes it an interesting area to study.

One example is the Swedish ”Finansinspektionen”, whose job is to supervise companies on the financial market and create well-functioning markets for financial services. Finansinspektionen has officially warned the Swedish population about high risks related to cryptocurrency investments (Finansinspektionen, 2021).

In a study conducted by Coulter et al. (2022), it was found that international news had an effect on Bitcoins price, and, especially, its price volatility. Furthermore, they found that different news sources may have amplified the volatility effect in different ways.

The high importance of knowledge regarding investment decision making in combination with the risk of attitudes being affected by mainstream narratives makes it interesting to study how knowledge about the crypto market may influence investors attitudes toward it. This led to the formulation of the first hypothesis:

H1: *Knowledge is positively correlated to attitudes toward the crypto market.*

2.2.2. Risk propensity

Risk is a fundamental part of financial markets, and risk assessment lies at the core of investing and decision making. In the Merriam Webster dictionary, risk is defined as: “the possibility of loss or danger”.

In a study conducted by Sjöberg & Engelberg (2009), it was found that attitude towards financial risk taking was related to sensation seeking, emotional intelligence and perceived importance of money (money concern). Their study was based on a group of 93 students in financial economics. They found that the students had high risk preferences, high levels of sensation seeking and low levels of money concern (Sjöberg & Engelberg, 2009).

The inherent properties of cryptocurrency markets are that they are risky and volatile due to extreme fluctuations in prices (Aloosh & Ouzan, 2020). This makes it interesting to study whether increased preferences for risk could be positively correlated with attitudes toward the crypto market, which led to the formulation of the second hypothesis:

> **H2:** *An increased propensity for risk-taking has a positive effect on attitudes toward the crypto market.*

2.2.3. Subjective norms & Theory of Planned Behavior (TPB)

The Theory of Planned Behavior states that a person's behavior can be explained by his intentions to execute that behavior. The intentions are explained by the variables: attitudes toward the behavior, subjective norms, and perceived behavioral control. The Theory of Planned Behavior is found to be well supported by empirical evidence (Ajzen, 1988).

In a study conducted by Mazambani & Mutambara (2022), the Theory of Planned Behavior was used to study the effect on the intention to invest in cryptocurrencies by looking at the following factors: attitudes toward investing in cryptocurrency, subjective norms, and perceived behavioral control. They found that attitude and perceived behavioral control had a positive influence on the intention to invest in cryptocurrency. They also found that subjective norms had a negative non-significant influence on intentions.

Another study on intentions to adopt the use of cryptocurrency using the Theory of Planned Behavior was conducted by Schaupp & Festa (2018). In this study it was found that all three variables: attitude, subjective norms and perceived behavioral control, influenced the intention to adopt cryptocurrency positively.

Bowden & Gemayel (2022) studied the importance of community sentiment when it comes to crypto investors decision making. They found that crypto investors decision making is likely

more influenced by public sentiment than in traditional financial markets (Bowden & Gemayel, 2022).

The purpose of this study is to examine what underlying factors might affect investors attitudes toward the crypto market, where attitude toward the crypto market is used as a dependent variable, explained by several independent variables. Norms are an important factor in the Theory of Planned Behavior for explaining intentions toward a certain behavior. Since crypto investors seem to be even more influenced by the opinions of other than investors in other markets, this thesis will examine wither a relationship exists between social norms and one's attitude toward the crypto market. This led to the formulation of the third hypothesis:

H3: *Social norms have a positive effect on attitudes toward the crypto market.*

2.2.4. Grit

In order to succeed in an area several qualities are needed. One of those that have made an impact on the research world is grit. Grit is defined as a person's perseverance and passion for long term goals by Duckworth, Peterson, Matthews, & Kelly (2007). They studied the importance of grit in achieving difficult goals. They found that grit showed incremental predictive validity of success measures over and beyond IQ and conscientiousness.

In a study conducted by Mishra, Beshai, Wuth & Refaie (2019) it was found that lack in grit had an effect on problem gambling. They studied different effects of mental resilience on problem gambling, where grit was one of the variables tested (Mishra, Beshai, Wuth, & Refaie, 2019).

In a study conducted by Mills & Nower (2019), it was found that problem gambling is strongly correlated with crypto trading and trading with high-risk stocks. This makes it interesting to investigate whether the same relationship might apply between grit and attitude toward the crypto market. This led to the formulation of the fourth hypothesis:

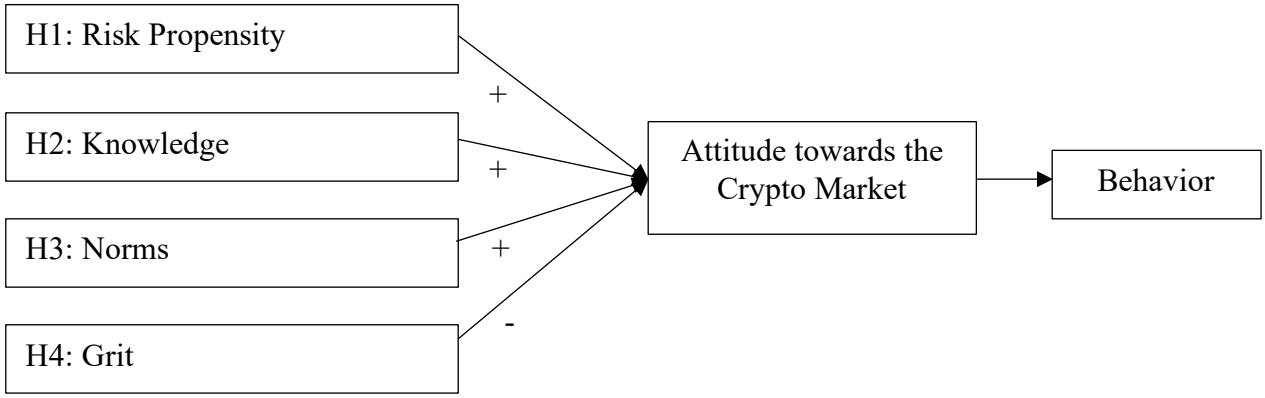
H4: *An investor's level of grit has a negative effect on attitudes toward the crypto market.*

2.3. Hypothesis Overview

This thesis aims to answer whether the factors of risk propensity, knowledge, social norms and grit affect crypto investors' attitude towards the crypto market. Potential correlations will also be studied between individuals' attitudes toward the crypto market and their actual behavior when it comes to investing.

Furthermore, we will conduct an explorative study on what might be the reasons for individuals deciding to invest in cryptocurrency market, what type of news sources these investors rely on in order to gather information for their decision making, as well as to what extent they rely on each if these different sources of information. We will also examine what the typical demographics are for a crypto investor.

Fig.1 Hypothesis



A "+" indicates that the hypotheses suggest a positive impact on the dependent variable and a "-" indicates that the hypotheses suggest a negative impact on the dependent variable.

Furthermore, this study will examine the following descriptive information:

What are the typical demographics of a cryptocurrency investor?

What are the main reasons for investing in cryptocurrency?

What are the main sources for information gathering used by crypto investors?

What does the typical cryptocurrency investing behavior look like?

3. Methodology

This section will outline the methodology on which this study was conducted. In order to answer the research questions formulated in section 1, a survey study in the form of a questionnaire was conducted to collect the data needed for testing the hypotheses.

3.1. Scientific approach and research design

The purpose of this study is to portray the typical crypto investor. This is done by a combination of confirmative and explorative approaches. The first research question, R1, is examined primarily through an inductive method, where the collected data is used to draw conclusion about the typical crypto investor. The second research question, R2, is examined through a deductive method where the theories and findings from previous studies are tested and validated.

A quantitative method was used for the collection of data, where an online survey in the form of a questionnaire was used to collect the data needed for analyzing the characteristics of the crypto investors. The quantitative approach was used in order to examine the differences between individuals and treat them as a heterogenous group.

3.2. Pilot study

Before publishing the survey online to the broader public, it was tested through a pilot study. At this stage, the survey was sent out to three selected people for testing and reviewing. This was done through Qualtrics. Out of the three selected people, one had a background in academics, one in the finance industry and one with vast experience of crypto trading. These people were chosen in order to get insights and perspectives from both an academic standpoint and from experienced finance- and crypto market participants. The feedback from the pilot study pointed out a few unclearly formulated questions but consisted mainly of grammatical errors. These errors were corrected before publishing the main study.

3.3. Main Study

3.3.1. Questionnaire

The questionnaire was constructed in the online survey program Quartics. It consisted of 9 different blocks containing a total of 27 different questions in different structures and lengths. Throughout the questionnaire the respondents were subject to the following formats of answers: 5-degree Likert scale, 7-degree Likert scale, multiple choice, text answers and regular one choice answers.

The focus areas were as follows: Introduction and consent to GDPR, 1) Knowledge about the Crypto market, 2) Trading and investing behavior, 3) Attitude (perception), 4) Risk

propensity, 5) Norms, 6) Grit scale, 7) Reasons, 8) News, 9) Demographics and 10) End of survey - where the respondents also received their score from the constructed knowledge test (see Appendix 2 for the full questionnaire).

Furthermore, an instructional manipulation check was used in Q4.1, which is a way to test if the respondents are actively paying attention to the study (Morren & Paas, 2020). Failures to comply with this control can reduce the test power in statistical analysis.

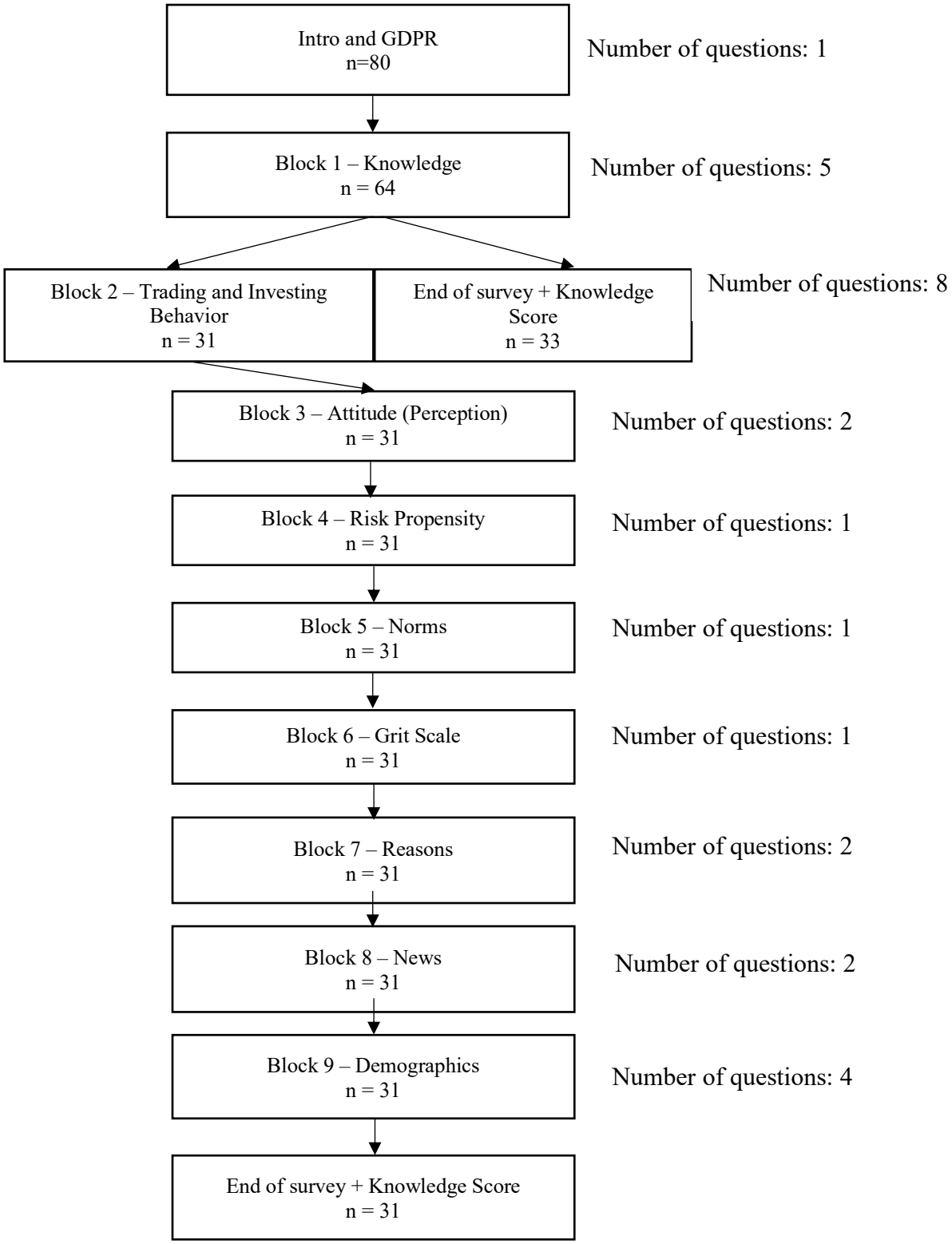
The main study was constructed into 6 different replicas which was labelled 1) Digital Asset Society, 2) Friends and Family, 3) Krypto Sverige 4) Rikatillsammans.se 5) Victorwhit3 and 6) Email. The purpose of this was to keep track of the different distribution channels and the answers.

1) Digital Asset Society was distributed in person at a Binance (crypto brokerage/exchange firm) event at the Stockholm School of Economics, 2) Friends and Family was sent via private messages containing a link to friends and family. 3) Krypto Sverige was published on Krypto Sveriges Facebook page, 4) Rikatillsammns.se was distributed on the community's internet forum, 5) Victorwhit3 was posted as a story and post on Victorwhit3's Instagram profile and 6) Email was sent via email. This approach was chosen due to the anonymous nature of cryptocurrency users and the difficulties in receiving responses. In total 80 responses were received.

The data was then exported from Qualtrics and cleaned in excel. 32 respondents had fully completed the survey, this was due to Q2.2 (see Appendix 2) where respondents were asked whether they actively or passively are invested in crypto, 33 respondents answered "no" and were forwarded to the end of the survey where they received their score of the knowledge quiz. Out of the 32 complete survey answers, one outlier was identified that answered the survey in only 52 seconds. This outlier was eliminated from the data.

3.3.2. Survey Flow

Figure 1. Survey flow illustrated



Note: ”n” = number of respondents that completed that specific block of the survey.

3.3.3. Variables

This section follows a presentation of the variables used in the study and the scales used to measure them. The intention variable was used as a dependent variable with the other variables [Risk Propensity, Knowledge, Norms and Grits] were independent variables. The 7-point Likert scale was used when measuring Risk Propensity and Norms. The Knowledge test consisted of a quiz where the respondents could receive a maximum of 100% and a minimum of 0%. For the Grit variable a 5-point Likert scale was used. Mean values were calculated for all variables. These means were then used to conduct a linear regression model between the dependent and independent variables (see Appendix 2 for the complete questionnaire).

Indexed Dependent Variable

Attitude towards the Crypto market. This thesis aims to explain how certain behavioral characteristics affect investors attitudes toward the crypto market. Hence, inspiration was taken from the questionnaire used by Kim (2021) for measuring attitude. However, adjustments were made in order to make it customized for the overall crypto market instead of only Bitcoin, which was the main topic in that study. The attitude block consisted of 5 different questions that were answered through a 7-point Likert scale where the answer options range from “Strongly Disagree” to “Strongly Agree”. The respondent also had the option to add additional information to their answers regarding perception of the crypto market in a free text option. The data collected from this free text option is analyzed separately from the quantitative data received from the 7-point Likert scale. The open text answers were analyzed through a theme analysis (Bell et al., 2019).

Indexed Independent Variables

Risk propensity. In order to measure investors' risk propensity, the questionnaire created by Sjöberg & Engelberg (2009) was modified by reducing them from 22 to 10 items. The survey questions were downsized to 10 questions in order to limit the length of the survey and make it more attainable for the respondents to complete the whole survey. The 10 questions were determined by using those that were best representative for the crypto market. The answer alternatives consisted of a 7-point Likert scale ranging from “Strongly Disagree” to “Strongly Agree”.

Social Norms. A question block about norms regarding investing in cryptocurrency was created, influenced by the study conducted by (Stix, 2021a)on the Theory of Planned Behavior. The block consisted of 5 questions, where respondents were asked to answer to what degree they agreed with the 5 different statements. The answer alternatives consisted of a 7-point Likert scale ranging from “Strongly Disagree” to “Strongly Agree”.

Knowledge about the crypto market. A knowledge test was conducted where respondents were asked to fill in one of the following words in order to complete a statement: “Non-fungible token (NFT)”, “Asset-backed token”, “Utility token”, “Blockchain”, “Bitcoin” or “None”. These concepts are commonly occurring in the crypto sphere (see glossary for

definitions). The purpose of this question block was to create a general assessment of the survey participants' overall knowledge of the crypto market.

Grit. In order to receive a reliable measure for the level of grit, the grit test constructed by Duckworth et al. (2007), was used. The original questionnaire consisted of 12 variables. 2 variables from the original test were eliminated in order to limit the length of the survey. The 10 different statements were answered through a 5-point Likert scale with a range from "Strongly Disagree" to "Strongly Agree".

Reasons for investing in the crypto market. To better understand the crypto investors, a question block was created where the respondents were asked about their reasons behind deciding to invest in the crypto market. 7 statements with reasons for investing in crypto were presented on which the respondents answered to what degree they agree with each of the statements through a 7-point Likert scale ranging from "strongly disagree" to "strongly agree". The statements regarding reasons for investing was presented: "I do not believe in traditional financial markets", "I want to get rich quickly", I want to feel part of a community", "I want to access a more volatile market", "I believe it is the future", "It is a way to decentralize the financial markets" and "Because my friends invest in crypto".

3.3.4. As the crypto market seems to be relatively uncorrelated with traditional financial markets, except when exposed to financial shocks, this thesis will examine if hedging towards traditional markets could be a reason for investing in crypto markets (Charfeddine, Benlagha, & Maouchi, 2020). This led to the introduction of a question about distrust in the traditional financial markets being a reason for wanting to invest in crypto.

Furthermore, the influence of public sentiment on crypto investors' decision-making studied by Bowden & Gemayel (2022) made it interesting to study to what extent community participation is a reason for investing in crypto(Bowden & Gemayel, 2022). In addition, the survey contained questions about to what extent quick financial returns, high volatility, decentralization, long-term adoption, or the influence of friends were viewed as reasons for investing in the crypto market. The rest of the statements were created to cover other potential reasons for investing that were deemed to be relevant to the crypto market. These statements were validated by the respondents in the pilot study.

Other variables

News sources. Several studies have been made on the effect of news on different markets. The way that news is presented as well as what type of news source it originates from may influence the market price and the volatility of the underlying asset (Coulter, 2022).
Due to the importance of news sources and their dynamic with the crypto market, a block of questions was created regarding what news sources investors typically rely on and to what extent they rely on each one of them. The news sources included in the survey were: social media, online forums, mainstream media and crypto focused platforms. The respondents were then asked to mark how often they use each one of these news sources for information

gathering by choosing one of the following statements: hourly, daily, weekly, monthly or yearly. The choice of news sources applied in this question block was tested and validated by people with vast experience from trading with cryptocurrency in the pilot study.

Investment behavior & earlier experiences
Two different variables were used to measure the behavior of the investors. These variables are trading frequency and share of portfolio placed in cryptocurrency. The first question was: "How often do you purchase/invest in crypto?". The respondents were given five different answer alternatives to this question: "I do not purchase/invest in crypto", "Hourly", "Daily", "Weekly", Monthly" or "Yearly. The second question was: "What is the share of your savings/investments placed in crypto. For this question the respondent was asked to answer in percentages in free text. By studying these two variables separately it is possible to gain insight both into how active the investor is in their trading activities as well as how large share of their total investments are dedicated to cryptocurrency.

In addition to the behavior variables, four other items were measured to get a better understanding of the investors. The first item measured was about their cryptocurrency portfolios, where they were given a list of 14 common cryptocurrencies from the top 100 market capitalization list. Respondents were then asked to mark which of these that they have purchased/invested in. Secondly, they were asked about earlier experience, where the respondents were asked how many years of experience, they had from the first time they purchased/invested in cryptocurrency. This question was answered in a free text. The third item measured investment performance, where respondents answered how they perceive their own investment performance in the form of a 7-point Likert scale, ranging from "very negative" to "very positive". In the fourth and last item, respondents were asked what time horizon best describes the typical amount of time that they hold an investment position before exiting. This question was answered in the form of free text.

Demographics. Demographics were deemed to be an important aspect to take into consideration in order to portray the crypto investors. A survey block was created with questions regarding demographic factors. In this block, respondents were asked about their age, gender, and highest level of completed education.

3.4. Data collection and statistical methods

3.4.1. Data Collection

The online survey, administered through Qualtrics was distributed through different online channels (Facebook, Instagram, an internet forum and email) as well as in person (a crypto event at the Stockholm School of Economics) between the dates October 24 to November 14, 2022 with the in-person event taking place on October 28, 2022.

The survey was intended to be answered by people who are involved in cryptocurrencies, thus it was assumed that most of these respondents were fluent in the language of English.

3.4.2. Data Quality

The total number of respondents who began the survey resulted in 80 of which 64 respondents continued to the knowledge block where 33 respondents answered that they do not invest in cryptocurrencies and were forwarded to the end of the survey. 32 respondents completed the survey to 100%, it was observed that 1 participant had a response time of 53 seconds, this response was then excluded from the final data set as it was deemed unreasonable to complete the survey in such a short time. The average response time of the participants who reached the end, with complete answers, was 12 minutes. In order to process the data, it was required for the respondents to a) consent to GDPR and b) fulfill the survey to 100%.

3.4.3. Data selection

Data excluded from the survey was Q2.3, Q2.4, Q2.5 and Q2.8 (see Appendix 2) as it was deemed that the questions had no further use in the study. It is worth noting that Table 10 and Table 11 were constructed on n = 17. The multiple-choice answer in Q2.6 and the text answer in Q2.7 were found to be unanswered in 14 out of the 31 responses, this was noticed when the data was cleaned manually. Furthermore, questions marked with R indicate that reverse scoring was used (see Appendix 2).

3.4.4. Data analysis

The collected data from the questionnaire was exported to excel for cleaning by the authors of this study. The means and reverse scoring were constructed in excel manually, the variables Attitude, Knowledge, Risk Propensity, Norms and Grit were then compiled to an excel table of n = 31. The cleaned data was then imported to the statistical analysis program R (version 2022.07.2) for the construction of tables 1, 7, 8, 9, 10 and 11. Tables 2 and 4 were computed in excel and tables 3, 5 and 6 were constructed manually. The data used in Table 10 and Table 11, were constructed from Q2.6 and Q2.7, named portfolio and purchases.

In the question blocks regarding reasons to invest, news channels and norms, respondents were allowed to comment on their answers or add additional information through an open text option. The comments in regard to these questions were collected and analyzed separately through a theme analysis. For further information about theme analysis see Bell et al. (2019).

A multiple linear regression model was used to determine the linear relationship between the dependent variable attitude and the independent variables knowledge, risk propensity, norms and grit. Furthermore, the Pearson correlation matrix was used to measure correlation between the variables. The method includes Pearson, Kendall and Spearman, a non-parametric testing measure.

3.4.5. Reliability and validity

In regard to how the reliability and validity of the dataset used in this survey measures up, which is often discussed in the topic of analyzing quantitative data in large scales (Bel et al., 2019), it is assessed through the two constructs a) reliability and b) validity.

Reliability

When examining how a method measures something consistently, it is important to inspect how the reliability of several repeatedly performed measurements gives the same result (Bell et al., 2019). This was tested through the commonly used Cronbach's alpha.

When measured independently, it was found that only the variable grit reached the acceptable level of internal consistency for this thesis, a Cronbach's alpha of 0.70 or above. It is suspected that the low number of questions and poor inter-relatedness might have caused this error. The cross-correlation of norms and risk propensity, as well as grit and risk propensity (table 9) resulted in a Cronbach's Alpha of 0.82 and 0.84 respectively. This is acknowledged throughout the remaining tests in the thesis.

Table 1: Summary of Cronbach's alpha for the dependent and independent variables

Variable	Cronbach's Alpha	No. of Items.	Mean	Standard deviation
Attitude	0.64	5	4.60	1.04
Knowledge	0.61	4	2.92	0.71
Risk Propensity	0.58	9	4.27	0.68
Norms	0.46	5	4.16	0.79
Grit	0.70*	10	3.37	0.52
Reasons	0.67	6	4.23	1.02
News	0.62	4	2.54	0.82

Validity

In the first part of the survey, the respondents were asked whether they were actively and/or passively engaged in the cryptocurrency market. If the respondent answered that they were not actively and/or passively engaged in the cryptocurrency market, they were immediately sent to the end of the survey and their answers were eliminated from our data.

To ensure reliable answers in the survey, a control question was used (see Q2.2 in Appendix 2). The control question asked the respondent to mark the alternative "strongly disagree". All answers that did not mark "strongly agree" on this question were eliminated from the data.

The average age of the survey respondents was 29. This young age could have a negative effect on the validity of the sample since younger people, especially undergraduate students, tend to differ in thinking and behavior from the general population (Bell at al, 2019). However, since the field of cryptocurrency is a phenomenon mostly adopted by the younger and more technology savvy generation, this risk should be balanced out. Another risk with using primarily students as a sample is that they tend to exert more-than-typical effort in order to answer the survey questions the 'right' way (Bell et al, 2019).

3.4.6. Survey evaluation

To evaluate how the respondent perceived the quality of the survey, three questions were asked at the end of the survey. Those questions were: 1) the questions were clearly formulated, to which the median of respondents agreed. 2) the answers were clearly formulated, to which the median of respondents agreed and 3) the questions tried to affect my answers in a certain direction where the respondents at the median answered that they somewhat disagree.

4. Results and analysis

In this part of the thesis the collected data will be presented and analyzed. The results are divided into two parts: 1) Descriptive statistics, where information about demographics, reasons for investing and news sources are presented and analyzed. In addition, comments collected in the area's reasons, news and norms are summarized and analyzed through a theme analysis. 2) Regression study, where a linear regression between our independent and dependent variables is presented. In addition to the regression model, correlations are measured between the dependent and independent variables, followed by a correlation test between the attitude variable and the two variables for behavior. In the last section, the hypotheses will be tested.

4.1. Descriptive statistics

Demographics

Out of the 31 complete and validated survey answers collected, 26 respondents were male, 3 women, one respondent identified as a 3rd gender and one respondent chose to not answer. The average age of the respondents was 29, with an age span from 18 to 59 and a median age of 25. The average level of completed education was high, with 2 PHD´s, 6 University post graduate degrees (Masters), 18 University graduate degrees (Bachelor's) and 5 Elementary school graduates.

Reasons

Table 2: Reasons for investing in cryptocurrencies

Question 7.1	Mean	Median	Standard Deviation
I invest in Crypto because I do not believe in traditional financial markets.	3.68	4	1.85
I invest in Crypto because I want to get rich quickly.	4.13	5	1.72
I invest in Crypto because I want to feel part of a community.	3.28	4	1.49
I invest in Crypto because I want to access a more volatile market.	4.27	4	1.93
I invest in Crypto because I believe it is the future.	5.03	5	1.66
I invest in Crypto because it is a way to decentralize the financial markets.	5.00	5	1.44

Note: n = 31, 7-degree likert scale
1=Strongly Disagree, 2=Disagree, 3=Somewhat Disagree, 4=Neither disagree nor agree, 5=Somewhat agree, 6=Agree and 7=Strongly Agree

When analyzing the reasons for the participants investing in cryptocurrencies, it was found that the answers were relatively neutral on average and no clear bias for any specific reason was found. However, the strongest reasons for investing in cryptocurrencies was shown to be that the participants believe that 1) cryptocurrencies are the future and 2) that it is a way to decentralize the financial markets. Furthermore, the weakest reason was that the participants want to feel part of a community, which on average got a score of 3.28 in the sample of n=31. It is difficult to draw any further conclusions due to the neutrality of the remaining answers.

Table 3: Further comments for reasons of investing in Cryptocurrencies

Question 7.2
"Easiest way to get rich quick."
"I also invest in crypto as an insurance policy to traditional financial markets and for diversification purposes."
"With crypto you stand to lose 100% but can gain 10,000% in a day (if not more on small coins).. with traditional investments you can still lose close to 100% but only realistically gain 10% in a year…… I think

about this a lot and it's hard to not gamble more 😂"

"The unregulated aspect is what makes crypto special and interesting."

"As stated, only invested once as a "quick investment" or a "pump and dump", as I believe that crypto I too unpredictable right now, I cannot seem to take it seriously unfortunately, not right now when I know how many people just want to get rich fast with crypto, whereas if compared to the "regular" stock market, there are a lot more rational people who are in it for the long run."

"Crypto is coming, although most of the adoption probably won't make retail investors rich, it's really going to change the world of fintech .. I think"

"The reason that I invest in Crypto is not because I do not believe in traditional finance markets, but rather that it is important to create a balance."

"yes, I hope that the crypto community can get a better reputation, and I do believe that for example Bitcoin is the internets "cash", no traceability and so on."

"The halls of eternity echo with the cries of those who sold their Bitcoin."

When analyzing the comments left by the respondents in connection with the question about reasons, two common themes were identified that seem to be appearing repeatedly. First, a "Get rich quick" sentiment seems to be a common theme.

Second, the philosophy of cryptocurrencies being an escape or a hedge from the current financial system is found to be a recurring theme. Respondent mention phrases such as seeing cryptocurrencies as an "insurance policy" and to "create a balance" between traditional financial markets.

News

Table 4: Analysis of how respondents consume news

Question 8.1	Mean	Median	Standard Deviation
Social media (Twitter Youtube, Instagram etc.)	2.97	3	1.30
Forums (Substack, Discord Flashbacl etc.)	2.30	2	1.17
Mainstream media (Print, TV, Radio etc.).	2.03	2	1.22
Crypto focused platforms (Coinbase, Chainalysis, Coinmarketcap etc.)	2.75	3	1.10

Note: n = 31,
1=Not at all, 2=Monthly, 3=Weekly, 4=Daily, 5=Several times per day

From Table 4 it is found that the respondents on average used social media and crypto focused platforms for information gathering on a weekly basis. When looking at online forums and mainstream media, respondents seem to rely on these channels on a monthly basis.

Table 5: Further comments on news

Question 8.2
"I used to check Reddit a lot of times per day when it was going parabolic, but now have managed to go completely cold turkey and look at most once per month. I sleep a lot better now when I don't look haha"
"Bitcoin is an economic machine, based on a truth machine, poised to emerge as a freedom machine."
"I get cointracker daily emails but recently am just letting my assets sit on Coinbase."

Furthermore, as seen in table 5, one respondent commented that the forum Reddit was used as a source of information. The respondent goes on to state that: "I sleep a lot better now when I don't look haha" which could be an implication of psychological effects of crypto trading.

Norms

Table 6: Further comments on norms

Question 5.2
"The signal is monetary expansion everywhere. The problem is people are going to lose half their wealth in a few years. The solution is Bitcoin. The rest in noise."
"Unregulated mean high risk but high opportunity and low transaction costs."
"The crypto scene is not only about profit, it's also about values. Satoshi didn't primarily develop BTC due to profit, but due to political reasons."

When asked how respondents perceived the social norms when investing in cryptocurrencies the comments in Table 6 were received. Of the 3 comments collected, it is deemed that only the 3rd comment adheres to what was asked of the respondents regarding norms. The respondent stated that "The crypto scene is not only about profit, it's also about values: "Satoshi didn't primarily develop BTC due to profit, but due to political reasons".

4.2. Regression analysis of independent variables

In this section of the thesis, an analysis of the dependent and independent variables is conducted through a model inspired by the Theory of Planned Behavior which is illustrated section 3.2. The analysis fits the variables in a multiple linear regression to investigate how attitude is explained by knowledge, risk propensity, norms and grit.

4.2.1. Analysis of independent variables

Table 7: Analysis of dependent variable (Attitude) & independent variables (Knowledge, Risk Propensity, Norms & Grit)

	1st Qu.	Median	Mean	3rd Qu.	Std
Attitude	4.60	5.20	5.21	6.10	1.28
Knowledge	0.50	0.80	0.74	1.00	0.32
Risk Propensity	4.38	4.88	4.80	5.38	0.76
Norms	2.90	4.20	3.39	4.50	1.86
Grit	3.00	3.20	3.49	4.10	0.56

Note: N = 31
Attitude, Risk Propensity and Norms 7-point likert scale.
Grit 5-point likert scale.
Knowledge % scale.
Rounded to 2 decimals.

From Table 7 it was found that the dependent variable attitude had a mean of 5.21 with a standard deviation of 1.28 measured on a 7-degree Likert scale (see appendix 2) indicating that respondents generally have a positive attitude toward the crypto market. Furthermore, it is found that the respondents on average had a high knowledge score (74%). The average score for risk propensity was 4.80 indicating that the respondents have a slightly positive

attitude toward risk. Moreover, social norms do not seem to advocate for investments in cryptocurrencies, with an average score of 3.39. Notably this variable had a standard deviation of 1.86 indicating that outliers possibly could skew the result. Lastly, grit as measured on a 5-degree Likert scale indicates that the respondents had an above average level of grit, with a mean score of 3.49.

To examine the linear relationship between Attitude towards cryptocurrencies (dependent variable) and Knowledge, Risk Propensity, Norms and Grit (independent variables), the following multiple linear regression was tested:

$$Attitude\ towards\ cryptocurrency = \beta 0 + \beta 1(Knowledge) + \beta 2(Risk\ Propensity) + \beta 3(Norms) + \beta 4(Grit\ Scale) + \mu i$$

The model had an adjusted R^2-value of 0.37 as well as a F-value of 0.45.

Table 8: Multiple linear regression analysis between dependent variable (Attitude) and independent variables (Knowledge, Risk Propensity, Norms & Grit)

	Estimate	Standard Error	t value	Pr(>|t|)
(Intercept)	6.62	1.55	4.28	0.002 **
Knowledge	1.33	0.66	2.03	0.05 *
Risk Propensity	0.01	0.25	0.04	0.97
Norms	0.34	0.11	3.20	0.004 **
Grit	-1.03	0.36	-2.84	0.009 **

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1

Note: n = 31
Residual standard error: 1 on 27 degrees of freedom
Multiple R-Squared: 0.45 Adjusted R-Squared: 0.37
F-statistic: 0.45 on 4 and 27 DF, p-value: 0.002
Rounded to 2 decimals.

From the multiple linear regression analysis, it is observed that the intercept (Attitude), the dependent variable is significant with a p-value of less than 0.01. The independent variable Norms fall within the 0.01 significance level. This observation indicates that for each unit of increase in the norms factor attitude toward cryptocurrencies will increase by 0.34 units.

Furthermore, the model indicates that the independent variable Grit is significant at the 0.01 level, each unit of increase in Grit will lead to a decreased Attitude towards cryptocurrencies of -1.03 units.

At the 0.05 significance level, the independent variable Knowledge indicates that each unit of increase in knowledge will lead to an increased Attitude towards cryptocurrencies of 1.33 units. (see Appendix 3 for a graphical illustration).

Risk propensity was found to not have any significance in the model.

Table 9: Means, standard deviations and Pearson correlation matrix

	M	SD	1	2	3	4
1. Attitude	5.21	1.28				
2. Knowledge	0.74	0.32	0.38 * (0.66)			
3. Risk Propensity	4.80	0.76	0.19	0.42 * (0.58)		
4. Norms	3.39	1.86	0.50 *	0.37 *	0.33 (0.82)	
5. Grit	3.49	0.56	0.37	0.37 *	0.19	0.35 (0.84)

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1

Note: 29 degrees of freedom. () Cronbach's Alpha.
Rounded to 2 decimals.

In the cross-sectional correlation table Attitude and Knowledge correlates by 0.38 with a significance at the 0.05 level. The cross-sectional Cronbach's alpha was measured at 0.66, indicating poor inter-relatedness as the reliability measure should be 0.70 or above. The cross-sectional correlation between Knowledge and Risk Propensity also showed to be significant, correlating at 0.42 with a Cronbach's alpha of 0.58, suggesting a poor inter-relatedness. When observing the correlation between Risk Propensity and Norms it was found to not be significant, however inspecting the inter-relatedness of the two variables, the Cronbach's alpha measured 0.82 indicating a strong reliability.

Furthermore, the cross-sectional correlation between Norms and Grit where the correlation is 0.35, with a strong validity of 0.84. This correlation was found not to be significant. In the cross-sectional study, it was found that all variables had 29 degrees of freedom.

Table 10: Pearson correlation matrix between dependent variable (Attitude) & the Purchase variable

	M	SD	1
1. Attitude	5.21	1.28	
2. Purchases	4.18	0.73	-0.25

Signif. codes: 0 '***' 0.01 '**' 0.01 '*' 0.05 '.' 0.1

Note: t = -1, df = 15, p-value = 0.33
95% confidence interval: -0.65 0.26
Purchases defined as: 1 = I do not purchase/invest in Crypto, 2 = Hourly, 3 = Daily, 4 = Weekly, 5 = Monthly and 6 = Yearly.
Rounded to 2 decimals.

When testing the correlation between Attitude and Purchase frequency with a sample of n=17, it was observed that the mean Purchase scored 4.18, meaning that the respondents on average purchase crypto weekly with a standard deviation of 0.73. The observed correlation was -0.25 indicating that the Attitude towards crypto and the frequency of purchases has a negative correlation. This test had a p-value of 0.33, hence it was deemed not to be significant.

Table 11: Pearson correlation matrix between dependent variable (Attitude) & the Portfolio variable

	M	SD	1
1. Attitude	5.21	1.28	
2. Portfolio	0.25	0.41	0.45 .

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1

Note: t = 1.97, df = 15, p-value = 0.07
95% confidence interval: -0.04 0.77
Portfolio: % scale
Rounded to 2 decimals.

The average portfolio allocation of the respondents was 0.25 of their portfolios invested in cryptocurrencies. The standard deviation was 0.41 with a correlation between Attitude and Portfolio of 0.45 which tested significant at the 0.10 significance level. The test had a p-value of 0.07.

4.3. Analysis of hypothesis

This section of the thesis contains an analysis of the hypothesis constructed in section 2.2. based on the data in table 8.

4.3.1. Knowledge & Attitude toward the crypto market

The results presented in table 8 show that the knowledge factor was significant (p = <0.05). The unstandardized beta coefficient was *B* = 1.33 which means that a higher knowledge score has a positive effect on the attitude toward the crypto market. Empirical evidence thus exists for H1.

H1	Knowledge is positively correlated to attitudes toward the crypto market.	**Supported**

4.3.2. Risk propensity & Attitude toward the crypto market

The results show that the risk propensity factor was not significant (p = 0.97). The unstandardized beta coefficient was *B* = 0.01. Empirical evidence is thus missing from H2.

H2	An increased propensity for risk-taking has a positive effect on attitudes toward the crypto market.	**Not Supported**

4.3.3. Social norms & Attitude toward the crypto market

The results show that the social norms factor was significant (p = <0.01). The unstandardized beta coefficient was *B* = 0.34. This means that a higher social norm score positively affects attitude toward the crypto market. Empirical evidence thus exists for H3.

H3	Social norms have a positive effect on attitudes toward the crypto market.	**Supported**

4.3.4. Grit & Attitude toward the crypto market

The results show that the grit factor was significant (p = <0.01). The unstandardized beta coefficient was *B* = -1.03. This means that a higher grit score negatively affect the attitude towards the crypto market. Empirical evidence thus exist for H4.

H4	An investor's level of grit has a negative effect on attitudes toward the crypto market.	**Supported**

5. Discussion

The purpose of this thesis has been to examine: R1) *What does the typical non-professional crypto investor look like?* And R2: *To what extent do the underlying characteristics of the crypto investors explain their attitudes toward the crypto market?* In this section the results concluded from previous chapters will be discussed.

5.1. Conclusions and implications

5.1.1. Overview descriptive statistics

Demographics
There seem to be a clear bias towards men in the number of respondents in the survey (84%). The relatively low mean age of 29 years could also be explained by younger generations being more technology oriented. Furthermore, the crypto investors seem to be well educated on average, with a clear majority having at least finished a University Degree.

Reasons
None of the reasons for investing in crypto tested in the survey seem to be significant. However, the strongest reasons for investing in cryptocurrencies seem to be the belief that 1) cryptocurrencies are the future and 2) that it is a way to decentralize the financial markets. This makes it likely to believe that investors on average are more interested in real long-term adoption of cryptocurrencies in the current financial system, as opposed to the view of crypto investors being purely short-term speculators with gambling tendencies.

When reviewing the comments received, there seems to be a theme of using cryptocurrency as a hedge against traditional financial markets. Phrases like “seeing crypto as an insurance policy” and “to create a balance” were mentioned. This would align with previous studies stating that the inherent characteristics of the crypto market potentially would make it a great hedge against more conventional financial markets (Charfeddine et al., 2020).

However, comments were received that signaled tendencies for a “Get rich quick” sentiment which is in line with prior findings of crypto trading being correlated with gambling (Mills & Nower, 2019).

News
The most commonly used channels for information gathering used by the crypto investors seem to be social media and crypto focused platforms. The relatively high appetite for social media information is in line with foundlings of prior research suggesting that crypto market information to a large extent is communicated through social media due to the crypto technology being born at the same time as social media started gaining traction (Delfabbro, King, & Williams, 2021). According to the findings of Delfabbro et al. (2021), crypto influencers and advisors communicate through social media to a large extent, which could explain why this was one of the information channels most used for information gathering.

Furthermore, as seen in table 5, one respondent mentioned that the forum Reddit was used as a source of information. The respondent also stated that: ”I sleep a lot better now when I don’t look haha” which could be an implication of the links between problem gambling and risk factors trading in cryptocurrencies, which was found to be linked to anxiety and depression in a study conducted by Mills & Nower, (2019).

Norms

When asked about how respondents perceived the social norms when investing in cryptocurrencies the following comment, found in Table 6, was received: “The crypto scene is not only about profit, it’s also about values: ”Satoshi didn’t primarily develop BTC due to profit, but due to political reasons” signaling that there might be an influence of social norms beyond purely financial incentives to invest in crypto markets.

5.1.2. Overview regression study

Knowledge

The significant correlation of 1.33 found between investors level of knowledge and attitude toward the crypto market indicates that the level of knowledge does indeed have a positive effect on attitudes. This could be an indication that a way to increase people's positive attitudes toward the crypto market would be to educate them, to increase their overall understanding and knowledge about the crypto market.

Risk propensity

Since the correlation of 0.01 between investors risk propensity and attitude toward the crypto market was found not to be significant, we cannot draw any conclusions on a potential relationship between the two variables. However, in the study conducted by (Stix, 2021b) on Australian households, it was found that owners of cryptocurrencies showed a higher tolerance for risk. It is likely that the limited sample size used in this study might be the reason for not finding any significant relationships between risk propensity and attitudes toward the crypto market.

Norms

The significant correlation of 0.34 found between norms regarding investing in the crypto market and attitudes toward the crypto market indicate that norms do indeed have an effect on investors attitude. Several prior studies have found evidence for a correlation between subjective norms and intentions to invest in cryptocurrencies using the Theory of Planned Behavior. One of these studies was conducted by Schaupp & Festa (2018), who found subjective norms to positively influence intentions to adopt cryptocurrency. They also found attitudes and perceived behavioral control to have a positive influence on intentions to adopt cryptocurrency. Based on the findings of this study and the prior studies using the Theory of Planned Behavior, it seems probable that attitudes might have a mediating effect between subjective norms and intentions to adopt cryptocurrency.

Grit

It was found that investors' level of grit was significantly negatively correlated with attitudes toward the crypto market, with a correlation of –1.03. This implies that individuals with low levels of grit are more likely to have positive attitudes toward the crypto market. This finding seems to be in line with prior research suggesting a strong relationship between cryptocurrency trading and problem gambling (Mills & Nower, 2019), as well as a correlation between low levels of grit and problem gambling (Mishra et al., 2019).

Attitude & behavior

It was found that purchase frequency had a negative correlation of -0.25 with attitudes toward the crypto market. This indicates that investors with positive attitudes toward the crypto market tend to invest less frequently. This is an interesting finding that should be studied further in order to fully understand the reasons behind the relationship. The average investor stated that they invest in cryptocurrencies on a weekly basis.

Furthermore, the variable measuring how large a share of the investor's s portfolios was allocated towards cryptocurrency positive correlation of 0.45 with attitudes toward the crypto market. This implies that investors with positive attitudes tend to invest larger shares of their portfolios into cryptocurrencies. The average crypto investor had 25% of their total portfolio allocated towards cryptocurrencies. This is a relatively large number compared to the average hedge fund investing in cryptocurrencies, which normally allocates less than 1% of its AuM toward cryptocurrencies (PWC, 2022).

5.2. Key findings

- The typical crypto investor seems to be a young, high educated man, confirming the findings of prior studies (Ante, Fiedler, Meduna, & Steinmetz, 2022).

- Social media and crypto-focused platforms seem to be the main channels used by crypto investors for information gathering, confirming a potential existence of a strong social media culture (Delfabbro et al., 2021).

- The main reason for people deciding to invest in the crypto market is a belief of crypto being an important infrastructure for future financial markets. Furthermore, it seems common to view cryptocurrencies as a hedge against conventional financial markets. This aligns with the view of (Charfeddine et al., 2020) of cryptocurrencies being a potential instrument for hedging against conventional financial markets.

- The strongest predictor of positive attitudes toward the crypto market seems to be knowledge about the crypto market, indicating that increasing knowledge might be a way to strengthen positive attitudes. However, further research is needed in order to fully understand the relationship between knowledge and attitude toward the crypto market.

- The norm does not seem to be to invest in cryptocurrencies. However, norms seem to be positively correlated with attitudes toward the crypto market, indicating that norms do indeed affect investors' attitudes.

- The same relationship between low levels of grit and problem gambling studied by (Mills & Nower, 2019) seems to apply for grit and attitudes towards the crypto market. This implies that investors with low levels of grit are more likely to have a positive attitude toward the crypto market.

5.3. Limitations

As all other studies, this study has its strengths and weaknesses. Firstly, the small sample size of n = 31 is subject to sampling bias. As explained in 3.4.3. The data collected was subject to data collection and data processing errors which were noticed in the manual cleaning process of said data (Bell et al. 2019).

When checking for internal-consistency of the variables used in the regression analysis, it was found that only the variable grit reached the acceptable level of 0.70 as measured by Cronbach's alpha, (see table 1).

Thirdly, the data collected is based on own-assessed behavior. The implication of this method is that the respondents knowingly or unknowingly risk responding in ways that do not reflect reality when answering the survey (Bell et al. 2019). Furthermore, the purpose of this study was to examine the characteristics of non-professional cryptocurrency investors, however, no measures were taken to make sure that this target group was exclusively reached other than publishing the survey in channels (see 3.4.1.) where it was deemed most likely that these non-professionals would be located.

The test for investors' knowledge was created by the authors of this thesis, hence it was not based on any prior, validated measures for testing knowledge levels. However, the knowledge test was constructed in close collaboration with people with a great experience of the crypto market in order to ensure its validity, and it was created based on topics that were deemed to be relevant to the current state of the crypto market.

5.4. Suggestions for future research

To further increase the understanding of the underlying characteristics of crypto investors it would be interesting to know about other characteristics associated with them and their behavior. One potential attribute to measure would be financial numeracy.

In order to get a better understanding of how to increase individuals' willingness to adopt cryptocurrency, it would be interesting to study what are the main barriers to the adoption of

cryptocurrency. Identifying these barriers would give a better understanding of what market actors need to do in order to increase adoption.

Furthermore, it would be interesting to study wither the types of individuals investing in cryptocurrency change between different cycles of bull or bear markets. Since the crypto market is known for its dramatic bull and bear cycles, looking at the psychological aspects associated with these market conditions could help to further understand the behavior of the market participants.

5.5. Conclusion

The findings in this study could be of use for crypto market actors, mainly those involved in attracting investors, in order to better understand the investors. What has been discussed in this thesis could give insight into who the typical crypto investors are and how to reach them with communication in an efficient manner.

This study has found that crypto investors are typically young, well-educated men. Furthermore, the findings show that social media is likely an efficient channel for communicating with these investors.

The most prominent reason for investors being attracted to invest in cryptocurrencies seems to be a belief that they will be a part of the future infrastructure of financial markets. It was also found that the crypto market in some cases is viewed as a hedge against the conventional financial markets. This could imply that it would be beneficial to put emphasis on these reasons for investing when communicating to potential investors.

Furthermore, the findings in this study imply that a way to increase positive attitudes toward the crypto market could be to influence individuals' perceptions of norms. It was also found that increasing knowledge about the crypto market could potentially have a positive effect on attitudes.

Traditionally, written by Publius Terentius Afer, the Roman playwright Phormio:
Fortune favors the brave

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7. Appendix

Appendix 1
Channel distribution
Table x: Survey distribution

Channels	Reach	Answers (Incl. non-complete responses)	Start/End
Facebook	13 600	10	Oct 24/Nov 14, 2022
Instagram	9 893	28	Oct 24/Nov 14, 2022
Forum	n/a	4	Oct 24/Nov 14, 2022
Email	320	14	Oct 24/Nov 14, 2022
In-person	n/a	24	Oct 28, 2022

Appendix 2
This appendix is a representation of the questionnaire that was distributed to the respondents in its original disposition. No changes have been made to the wording of the questions or the alternatives of answers, the layout of most of the questions has been altered. The layout of the matrix questions have been altered and is thus presented with the question first, followed by the scale points and the statements. The Likert scale that was used is noted with scale point numbers in parenthesis right after the statement. Questions are segmented into blocks with a collective name for the purpose of the block in order to clarify.

Complete survey
Portrait of a Crypto Investor

A warm welcome to our survey,

We are writing our bachelor thesis in the field of marketing where we are investigating what drives people to invest in Crypto markets. As Crypto is a relatively new phenomenon, little research has been made in the area and we hope to contribute to the scientific community with our thesis. Therefore we are excited for you to take part in our work by answering our survey. The project is conducted by Gabriel Dagsánth and Victor White for our Bachelor thesis at the Stockholm School of Economics. This work is a crucial element for our degree, so we kindly ask that you take some time and answer the survey thoughtfully!

This survey will take less than 10 minutes to answer. The questions in this survey regard the Crypto market in Sweden, all answers are anonymous!

We will donate 2 SEK (0.2 EUR) per survey answered to the Cancer Charity in the fight against Prostate Cancer.

Thank you for contributing!

If you have any questions in regards to the study, please contact us through the following email 24313@student.hhs.se (Gabriel Dagsánth)

Consent to GDPR
Consent to participate in the student's survey.

The student's project. As an integral part of the education program at the Stockholm School of Economics, enrolled students complete an individual thesis. This work is sometimes based upon surveys connected to the subject. Participation is naturally entirely voluntary, and this text is intended to provide you with the necessary information that may concern your participation in the study. You can at any time withdraw your consent and your data will thereafter be permanently erased.

Confidentiality. Anything you say or state in the survey will be held strictly confidential and will only be made available to supervisors, tutors and the course management.

Secured storage of data. All data will be stored and processed safely by the SSE and will be permanently deleted when the project is completed.

No personal data will be published. The thesis written by the students will not contain any information that may identify you as a participant in the survey subject.

Your rights under GDPR. You are welcome to visit https://www.hhs.se/en/about-us/data-protection/ to read more and obtain information on your rights related to personal data.

Consent: I have read the information above and consent to participate in this study.
Please click consent if you consent to participate in the survey. By writing today's date and your initials (First name letter, Last name letter) you agree to the GDPR data.

- I hereby consent. (Initials)
- I do not consent (Initials)

Block 1: Knowledge about the Crypto market
We will now ask you some questions in regard to your knowledge of Crypto markets. Please consider to which degree you agree with the following statements surrounding Crypto asset classes.

Q1.1 A _____, is a non-interchangeable digital asset such as a photograph, song or video whose ownership has been authenticated and stored on a database called a blockchain and which can be collected, sold and traded on various platforms.

- Non-Fungible Token (NFT)
- Asset Backed Token
- Utility Token
- Blockchain
- Bitcoin
- None

Q1.2 An _____ derives its value from something that does not exist on the blockchain but instead is a representation of ownership of a physical asset (for example gold or oil). It derives its value based on the underlying asset.

- Non-Fungible Token (NFT)
- Asset Backed Token
- Utility Token
- Blockchain
- Bitcoin
- None

Q1.3 A _____ is a special type of token that helps in the capitalization or financing of projects for startups, companies, or project development groups. A _____ is used as a safeguard for participation in mass sales to raise capital for a project.

- Non-Fungible Token (NFT)
- Asset Backed Token
- Utility Token
- Blockchain
- Bitcoin
- None

Q1.4 A _____ is a system in which a record of transactions made in bitcoin or another cryptocurrency is maintained across several computers that are linked in a peer-to-peer network.

- Non-Fungible Token (NFT)
- Asset Backed Token
- Utility Token
- Blockchain
- Bitcoin
- None

Q1.5 _____ is a physical asset that is mined through industrial practices in countries that are rich in rare earth metals.

- Non-Fungible Token (NFT)
- Asset Backed Token
- Utility Token
- Blockchain
- Bitcoin
- None

Block 2: Trading and investing behaviour

Q2.1 How often do you purchase/invest in the Traditional Financial markets? Meaning Stocks, Bonds, Exchange Traded Funds, Currencies, Options etc.

- I do not invest in traditional financial markets
- Hourly
- Daily
- Weekly
- Monthly
- Yearly

Q2.2 Are you actively and/or passively engaged in the Crypto market? This means that you buy/trade/sell Crypto such as Non-Fungible Tokens (NFTs), Asset-Backed Tokens or Utility Tokens.

- Yes
- No

If yes then survey continues.
If no, the survey respondent reaches the end + Knowledge Quiz Score

Q2.3 Please tick the Crypto that you have purchased/invested/traded in… Multiple answers are allowed.

- Bitcoin (BTC)
- Non-Fungible Tokens (NFTs)
- Etherium (ETH)
- Ripple (XRP)
- Solana (SOL)
- Cardano (ADA)
- Dogecoin (DOGE)
- Litecoin (LTC)
- Cosmos (ATOM)
- Chainlink (LINK)
- Monero (XMR)
- Filecoin (FIL)
- ApeCoin (APE)
- Decentraland (MANA)

Q2.4 How would you describe your investment performance (positive/negative returns) so far?

- Very negative
- Negative
- Somewhat Negative
- Neither positive nor negative
- Somewhat positive
- Positive
- Very positive

Q2.5 When trading/investing in Crypto, what time horizon most accurately describes the amount of time you hold your position before exiting? Please answer which best describes your general time horizon in the format of hours/days/weeks/months or years in numbers. (ex. 4 hours or 6 months).

- Text answer

Q2.6 How often do you purchase/invest in Crypto?

- I do not purchase/invest in Crypto
- Hourly
- Daily
- Weekly
- Monthly
- Yearly

Q2.7 What is the share of your savings/investments placed in Crypto? Please answer in percentages (%).

- Text answer

Q2.8 How many months/years of experience do you have in investing in Crypto? (From the time you first invested/bought Crypto, please enter in numbers, months/years).

- Text answer

Block 3: Attitude (Perception)
We will now ask you questions in regard to how you perceive the Crypto market.

Q3.1 If you think about the Crypto market. Which of the following statements best applies? No answers are right or wrong. Scale: Strongly disagree (1), Disagree (2), Somewhat Disagree (3), Neither agree nor disagree (4), Somewhat Agree (5), Agree (6), Strongly Agree (7)

- Investing in Crypto is a risk I am prepared to take.
- I believe in alternative investments to those provided in the mainstream financial sector.
- I'm happy trading in the Crypto market even though it is largely unregulated.
- I know that at some stage, I will make money out of the Crypto market.
- I regret having invested in Crypto. R

Q3.2 If you have any further comments on your answers above, please write them here.

- Text

Block 4: Risk Propensity
We will now ask you questions about your propensity toward risk, remember that all answers are anonymous!

Q4.1 Indicate to which degree you agree with each of the statements below. No answers are right or wrong. Scale: Strongly disagree (1), Disagree (2), Somewhat Disagree (3), Neither agree nor disagree (4), Somewhat Agree (5), Agree (6), Strongly Agree (7)

- My philosophy with regard to risk-taking in business is simple: you should avoid it. R
- Taking business risk is acceptable if you have first carefully analysed the situation.
- Taking an economic risk is not dangerous - it is necessary in most kinds of business.
- I have almost always had good results from taking economic risks.
- The danger of taking business risks is usually exaggerated.
- You should not be afraid to take an economic risk.

- There is a tempting aspect of excitement and gambling in risk-taking.
- I can judge when a risk is too large to take.
- It is important that you pay attention to this study, please tick "Strongly Disagree".

Block 5: Norms
Below are a number of statements regarding Crypto.

Q5.1 Please select the answers to the statements that best align with yourself. Scale: Strongly disagree (1), Disagree (2), Somewhat Disagree (3), Neither agree nor disagree (4), Somewhat Agree (5), Agree (6), Strongly Agree (7)

- I am taking a stand by purchasing/investing in Crypto.
- Based on my values it would be wrong to buy/invest in Crypto. R
- Decentralisation in finance through Crypto is important to me.
- People whose opinions are valued to me would think that I should use Crypto.
- People who influence me would think that I should use Crypto.

Q5.2 If you have any further comments on your answers above, please write them here.

- Text

Block 6: Grit Scale
We will now ask you about how you deal with everyday situations.

Q6.1 Indicate the degree to which you agree with each of the statements below. No answers are right or wrong. Scale: Strongly disagree (1), Disagree (2), Somewhat Disagree (3), Neither agree nor disagree (4), Somewhat Agree (5), Agree (6), Strongly Agree (7)

- I often set goals, but later choose to follow another. R
- I have been obsessed over an idea or project during a short period, but later lost interest. R
- I have a hard time maintaining focus on projects that take longer than a couple of months to complete. R
- New ideas and projects often distract me from previous ones. R
- I complete whatever I begin.
- Setbacks do not deter me. I do not give up that easily.
- I am diligent and thorough. I never give up.
- I work hard.
- My interests change from year to year. R
- I have overcome setbacks to reach an important goal.

Block 7: Reasons
We will now ask you about your reasons behind investing in the crypto market.

Q7.1 To what degree to you agree with the following statements? Scale: Strongly disagree (1), Disagree (2), Somewhat Disagree (3), Neither agree nor disagree (4), Somewhat Agree (5), Agree (6), Strongly Agree (7)

- I invest in Crypto because I do not believe in traditional financial markets.
- I invest in Crypto because I want to get rich quickly.
- I invest in Crypto because I want to feel part of a community.
- I invest in Crypto because I want to access a more volatile market.
- I invest in Crypto because I believe it is the future.

- I invest in Crypto because it is a way to decentralize the financial markets.
- I invest in Crypto because my friends invest in Crypto.

Q7.2 If you have any further comments on your answers above, please write them here.
- Text

Block 8. News
We will now ask you about which sources of informaton you typically rely on with regard to your crypto investments.

Q8.1 Below we name a few information sources. Please select and rate how often you rely on each one of them in regard to your crypto activities. Scale: Not at all (1), Monthly (2), Weekly (3), Daily (4), Several times per day (5)

- Social media (Twitter, Youtube, Instagram etc.)
- Forums (Substack, Discord, Flashback etc.)
- Mainstream media (Print, TV, Radio etc.)
- Crypto focused platforms (Coinbase, Chainalysis, Coinmarketcap etc.)

Q8.2 If you have any further comments on your answers above, please write them here.
- Text

Block 9. Demographics
In the final question, we would like to know some information about yourself, all answers are anonymous.

Q9.1 What is your gender?
- Male
- Female
- Non-binary / third gender
- Prefer not to say

Q9.2 Please select your highest level of completed education (if you are currently studying and plan to graduate, please select your current educational level).
- Elementary School
- Upper Seccondary School (Gymnasiet SWE)
- University Graduate Degree (Bachelor)
- University Post Graduate Degree (Master)
- PHD

Q9.3 What year are you born?
- Text

Q9.4 Please answer what you thought about our study. Scale: Strongly disagree (1), Disagree (2), Somewhat Disagree (3), Neither agree nor disagree (4), Somewhat Agree (5), Agree (6), Strongly Agree (7)
- The questions were clearly formulated
- The answers were clearly formulated
- The questions tried to affect my answer in a certain direction

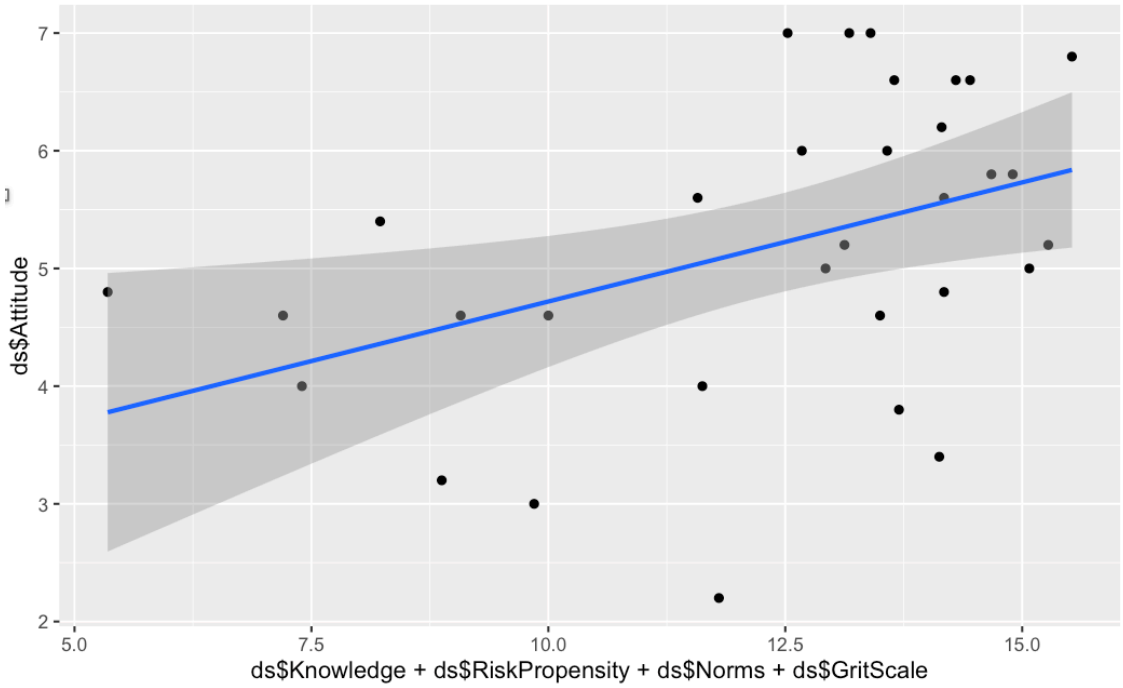
Block 10. End of survey + Knowledge Quiz Score

Thank you for participating in our survey and contributing to the fight against prostate cancer. May you forever have good Karma!

Items marked R were reversed scored.

Appendix 3

Multiple linear regression model as stated in table 8, section 4.2.1.



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