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CRYPTO AS A CHOICE OF PAYMENT

PERCEIVED CHALLENGES FROM THE USER PERSPECTIVES

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Abstract

Cryptocurrency is a new payment choice using blockchain technology that has recently seen a considerable upswing in financial popularity. Crypto payment is perceived as an alternative to traditional payment enabling users to exchange goods and services digitally. This thesis investigates the use of cryptocurrencies as payment from the user perspective, as well as other factors that influence the pace of crypto payment adoption on a wide scale. Although previous scholars have increasingly explored cryptocurrencies, there is always a call for more investigation into the provisions and implementation of cryptocurrencies and their acceptance. This thesis applies the Stimulus-Organism-Response conceptual framework as a foundation to examine users' perceived challenges when using crypto as daily payment. Asking "What are perceived challenges for crypto users to normalize crypto as a choice of payment?," this thesis identifies the challenges that crypto users confront when normalizing cryptocurrencies as a form of payment on a large scale. Employing qualitative content analysis, the authors conducted in-depth semi-structured interviews to collect crypto users' insight on the concept of crypto payment and the corresponding challenges. The thesis finds that the balance between advantages and disadvantages determines users' confidence or non-confidence in their choice of accepting or avoiding crypto payments, which is the main perceived challenge. Overall, the thesis' findings offer in-depth and direct insight from user perspectives on the topic of crypto adoption. In addition, the thesis supports product-service providers who are associated with cryptocurrency as a means of payment as well as regulatory institutions paying attention to cryptocurrency and its implementation.

Table of Contents

List of figures

List of tables

CHAPTER 1. Introduction

This chapter will provide a general introduction to cryptocurrency in addition to any relevant information that should be noted to the readers. General points that the research is attempting to address are specified below.

1.1. Background Information

Cryptocurrency is an alternative payment method that represents a new payment technology using blockchain technology which enables users to exchange goods and services digitally. The blockchain, also called distributed ledger technology, is a peer-to-peer network software protocol which allows users to conduct digital assets transactions without the need for a third-party agency (Edwards, Hanley, Litan, and Weil, 2019). As such, it helps the financial industry digitize its services such as identifying users' credit records, restructuring the financial market credit system, and accelerating cross-border payment efficiency (Luther, 2016; Zhang et al., 2020). Given the benefits of cryptocurrency and the more direct form of transactions, crypto as a new type of digital currency has rapidly gathered interest and momentum internationally.

Bitcoin is a major cryptocurrency that has gained widespread popularity in the financial market in the last five to ten years. According to Alshamsi & Andras (2019), experts and researchers estimate that active Bitcoin users are going to reach about 5 million, and the transaction rate will increase by 50% by the end of 2019. The authors further stated that the Bitcoin payment system has many advantages compared to traditional payment systems such as payment by credit/debit cards. From the data collected from people who are using crypto as payment, they argue that the most important characteristic of crypto as a method of payment was decentralization; the transaction process is controlled not by any authority but by machines that process transactions and mine coins function together in the form of a network.

Users have been found to lack understanding and acceptance of the blockchain technology and its related products (Zhang et al., 2020). As a consequence, determining which sort of blockchain financial goods, such as which brand of cryptocurrency, would be efficiently used and accepted in the current market, is a challenging process. While blockchain remains an alternative technology to the mainstream and more conventional ones, ordinary consumers are

still in the avoidance phase and still prefer traditional means over cryptocurrency. This is especially crucial for cryptocurrencies since customers are currently unwilling to accept cryptocurrency as payment and instead choose traditional payment methods.

Overall, cryptocurrency relies heavily on trust between the two parties during the transaction because there is a lack of physical evidence, unlike traditional cash, because cryptocurrencies are decentralized and nearly all of the cryptocurrencies in the market are not supported by any central organizations (Smith & Kumar, 2018). As a result, gaining investor support and trust is critical. Similarly, Ferrari (2020) stated that when new and disruptive technologies emerge in the financial industry, regulatory bodies must examine the risks and implement necessary laws to adapt to the many interests that innovation would involve. As a result, regulatory measures to prevent fraud and illicit activities by government agencies are required in order to create confidence among institutional investors. European advisory bodies and Member States have begun various actions to explore blockchain's potential in the finance market (Ferrari, 2020). For example, Riksbank planned to join Switzerland, Hong Kong and Singapore to host the BIS innovation hub for cryptocurrency. In addition, Riksbank also implemented a digital token CBDC and it intended to set the infrastructure for citizens to use digital currency as a form of payment. These policies from Riksbank provide a positive environment for preparing and implementing crypto into society (Freeman Law, 2022).

This thesis will explore the challenges and difficulties when implementing crypto as a general payment method in the public sphere. In order to make cryptocurrencies such as Bitcoin and Ethereum to be considered as a currency for transactions, there are some characteristics that must be covered: Payment method, unit of account and store of value. Thus, there is a need for discussion of the value of cryptocurrency and the perspective of the general public on implementing crypto as a general payment option.

1.2. Problem Definition (Research Gap)

This thesis investigates the use of cryptocurrencies as payment from the standpoint of consumers as the primary group of users, as well as other variables that influence the pace of crypto payment acceptance on a larger scale. Currently, there are significant study gaps on the true frequency of Bitcoin ownership, usage, user sociodemographic, purchasing motivations, and cryptocurrency popularity and knowledge that have not been thoroughly investigated (Stix, 2021). In short, the core problem that demands additional research is about users and their experience with cryptocurrency.

Although prior research has highlighted the importance of trust involved with cryptocurrencies transactions (Steinmetz, von Meduna, Ante & Fiedler, 2021; Sun, Dedahanov, Shin, & Li, 2021; Senner & Sornette, 2019) because trust, knowledge, and ownership intricately interact with one another. the lack of understanding on users' knowledge and experience causes great difficulties in comprehending the complete crypto experience (Alshamsi & Andras, 2019; Tarkhanov et al., 2020).

Therefore, this thesis aims to understand the crypto users' insight from their crypto journey in response to the concept of crypto payment. Correspondingly to the following source; Tarkhanov, Fomin-Nilov, & Fomin (2021) recommended investigating more appealing provisions and implementation for cryptocurrencies. While also focusing on Park (2019)’s suggested the expansion of future studies on cryptocurrency as the payment means; for example, under the form of NFC and QR codes. Hence, the research gap our group wants to fill in is user perspective - how crypto users perceived crypto as a form of payment based on their previous experience within their crypto journey.

1.3. Purpose (Objectives)

Based on the observation of different challenges and problems in the current crypto market, the research question for this thesis is "What are perceived challenges for crypto users to normalize crypto as a choice of payment?" This thesis is going to identify the challenges that users, products and service providers face when normalizing cryptocurrencies as a form of payment in the current financial market. The goal of this research is to make a contribution to the payment sector and provide insights to improve the existing crypto payment system and develop it into even more consumer-centric payment services. This research aims to achieve the following objectives:

(1) Identify factors that affect consumers who use crypto as a payment or form of transaction when purchasing products/services

(2) Examine the reaction and confidence level of crypto users towards the possibilities of crypto payment concept

(3) Identify foremost challenges users face when using crypto payment in their daily life

1.4. Research Question

What are perceived challenges for crypto users to normalize crypto as a choice of payment?

1.5. Definitions

Some recurring terms which may be unfamiliar to the reader are defined here. The majority of the definitions have been retrieved from *investopedia.com*

Blockchain: blockchain is a sort of shared database that varies from traditional databases in the way it is stored: data is stored in blocks, which are then connected together using cryptography.

Cryptocurrency is referred to as a digital/virtual currency. Cryptocurrencies can exist outside the jurisdiction of governments and central authorities because of their decentralized nature.

Peer to peer (P2P) network refers to the direct exchange of an asset between individuals without the intervention of a central authority.

Coins: cryptocurrencies are also referred to as "coins" and operations on the blockchain which act as a form of money (what you are cable of owning) which can also be "mined" or created by users.

Tokens: this form of digital assets (what you own) an example is NFTs, you are cable of buying tokens with coins, not the other way around.

Crypto wallet: a digital wallet where cryptocurrency is stored and allows users to trade, move, and covert digital currencies like coins and tokens.

Decentralized finance is the removal of any third-party intervention in order to make financial transactions (no government or bank intervention is involved when making transaction). Your money is held within a digital wallet which acts similar to how banks hold your money.

Mining: the process involves the creation of new coins created in the blockchain system which also verifies transactions added to the blockchain. This process can also be referred to as "solving a puzzle" that creates a block which can be added back into the blockchain system.

Volatility: volatility is a measure of returns from a market index. This usually relates closely to the price fluctuations which happen within the financial markets i.e., stock and crypto markets. A market is only deemed volatile if they fall or rise more than 1% in a continuous period.

Stimuli: crypto users' perception and understanding of cryptocurrencies and of the crypto environment (risk, benefits, and regulations).

Organism: emotional response to cryptocurrency as a payment (disappointed, excited, etc.)

Response: respondents' avoidance behaviors of using cryptocurrency as a first choice payment based (confidence/approach or no confidence/avoidance).

User perspective refers to the users' point of view on cryptocurrency. This usually includes their opinions and beliefs.

User perceptions refers to how the users understand cryptocurrency, this is related to their knowledge about crypto this can include past experiences, thoughts and feelings.

User journey is related to the starting point of when users first invested or took interest in the current point. Additionally, this includes the thesis' respondents' description of their experience, engagement and activities with cryptocurrency.

CHAPTER 2. Frame of References

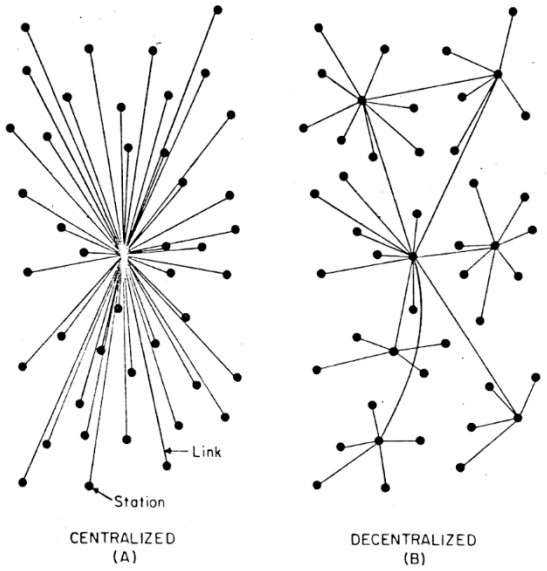
This chapter will provide insight into the various research that is relevant to this thesis. Firstly, it reviews cryptocurrency and the factors influencing the adoption of cryptocurrency. Secondly, it introduces the Stimuli-Organism-Response (SOR) model as the theoretical framework with which the thesis evaluates and analyzes our original data focusing on users' perspectives.

2.1. Literature Review

2.1.1. Cryptocurrency overview

Cryptocurrency is closely connected to blockchain technology. A crypto asset is a digital asset designed to work as a medium of exchange and a store of value that typically uses a blockchain to enable all participants to transact with each other (Edwards, Hanley, Litan, and Weil, 2019). The blockchain ledger contains a history of all verified financial transactions and controls the creation of additional units, constituting the databases of financial accounts (Smith & Kumar, 2018). Put differently, cryptocurrencies are intangible digital currencies which are electronic signals and records that act as a track record for transactions that happen within the blockchain. As an alternative asset, crypto became popular with ordinary citizens with the rise of Bitcoin - one of the major cryptocurrencies, which has since attracted more people to the world of digital money and transactions. According to Al-Yahyaee, Mensi & Yoon (2018), an individual or a group with the pseudonym 'Satoshi Nakamoto' created Bitcoin back in 2009. Since then, this new type of digital currency has rapidly gathered interest and momentum internationally, and the price of Bitcoin underwent historic increases compared to other cryptocurrencies such as Ethereum. Over the last five to ten years, cryptocurrencies have attracted significant social and economic interests that revolve around the most distinctive features of the crypto market: steep price increases and high volatility (García-Monleón, Danvila-del-Valle & Lara, 2021). The trading volume in the major cryptocurrencies has surged tremendously, and as liquidity has increased, so have prices (Tran & Leirvik, 2020). However, blockchain-based financial applications and economics in many nations are still in their infancy due to a lack of relevant research and significant hurdles throughout the implementation process (Zhang et al., 2020).

Figure 1. Centralized and Decentralized finance systems



Retrieved from Baran, 1964

A key strength of cryptocurrency is its decentralized nature which is distinctive from more traditional forms of currency. The traditional method of Internet transaction mostly involves three parties namely the payer, the payee, and the bank or other transaction agencies. Making bank deposits, for example, are liabilities for banks, and they must follow laws such as passing through accounting and auditing departments to manage and evaluate transactions (Smith and Kurmar, 2018). Consequently, the traditional method creates a dependency of the payer and payees on the third party, which can in fact undermine the security of both the payer and payee within the transaction (Alshamsi & Andras, 2019). On the other hand, cryptocurrency through its blockchain technology directly performs a peer-to-peer transaction without a middleman, creating a sense of trust and security for the payer and payee within the transaction. Blockchain technology empowers the unbanked and underbanked to develop their own financial alternatives in a scalable and efficient manner, while simultaneously offering faster transaction confirmation and lowering counterparty risk (Zhang et al., 2020). As a result, cybersecurity can possibly be a great reason that accelerates blockchain adoption because blockchain technology can be able to do transactions directly without having to go through any third-party agencies and use of personal data. If trust resides in the computational network system, accelerating blockchain adoption could address cybersecurity problems (Zhang et al., 2020). In other words, the benefit of cryptocurrency transactions lies in the fact that they bypass third-party institutions in any transaction between payer and payee, thus eliminating additional costs or appropriations of the third party (banks and governments) in the transaction (Edwards, Hanley, Litan, and

Weil, 2019). Additionally, the existence of the cryptocurrency turns the crypto market into a competitor of the traditional centralized financial market that has increasingly become monopolistic. Albeit a form of high-risk investment, cryptocurrency provides easy access to investors of different brands and trading platforms, suggesting new investment opportunities which in turn trigger investor enthusiasm (Sun, Dedahanov, Shin, & Kim, 2020).

Despite the absence of centralized support, the European Central Bank documents in the Virtual-Currency Act that cryptocurrencies perform the same role or are extremely comparable to fiat currencies in numerous nations. While lacking the basic qualities of the fiat, cryptocurrencies as a new type of money - private money - may perform the function of official/fiat currencies (Garca-Monleón, Danvila-del-Valle, & Lara, 2021). Whether cryptocurrencies could eventually replace fiat currencies remains a controversial question that cannot yet be answered.

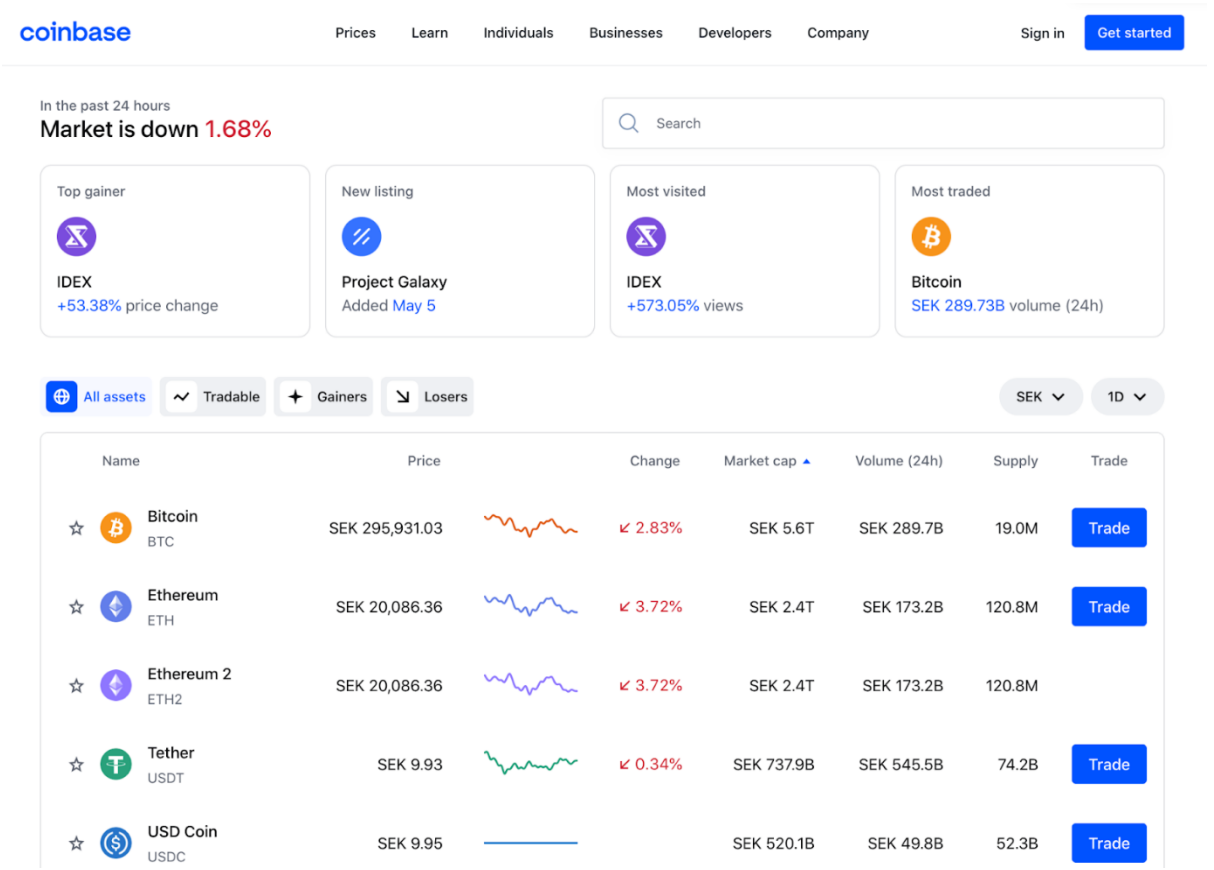
2.1.1.1. Crypto wallet - Universal wallets

Digital wallets, also known as “universal wallets,” existed prior to the development of blockchain. To process a highly intelligent environment, crypto wallets must be automated, allowing the wallet to operate as a proxy for ordinary interactions. The crypto wallet is a virtual wallet that serves as storage for cryptocurrencies, and the wallet has a unique access key for each user (Chu, 2018). Digital wallets are created specifically for new digital payment methods, such as "tokens," or NFTs. As a new addition to existing digital wallets, crypto wallets provide a safer environment for accessing blockchain and completing digital transactions (Jørgensen & Beck, 2022). Currently, Bitcoin holders can select between "noncustodial" and "custodial" wallets. Noncustodial wallets allow users to store their digital assets and freely move their cryptocurrency, whereas custodial wallets are typically utilized by brokerages who function as a middleman between the individual and cryptocurrencies (Telis Demos, 2021)**.**

2.1.1.2. Crypto platforms

One of the most popular crypto exchange platforms is Coinbase. An article from The Economist (2018) states that Coinbase is one of Silicon Valley's rapid growing start-ups in crypto exchange, and it functions as an online brokerage that trades different types of cryptocurrencies. Singer (2021) reports that Coinbase as a platform of a cryptocurrency exchange has over 43 million verified users worldwide and its market value is worth more than $66,9 billion in January 2021 on the FTX-operated futures market before Coinbase's initial public offering. This platform provides easy access for individual investors as anyone can create an account and start investing in different brands of cryptocurrencies directly without going through the permission of a broker or a bank. According to Salzman (2021), besides trading cryptocurrencies on Coinbase, this platform offers other functions for users such as staking allowing crypto owners to lend their crypto assets and profit from gaining interest.

Figure 2. Website interface of Coinbase



Retrieved from Coinbase, 2022

Table 1. Top 10 cryptocurrency exchange platforms by trading volume

(Top Cyrptocurrency Spot Exchanges)

1. Binance	2. FTX
3. Coinbase Exchange	4. Kraken
5. KuCoin	6. Huboi Global
7. Bitfinex	8. Gate.io
9. Gemini	10. Binance.US

Retrieved from CoinMarketCap, 2022

2.1.1.3. Crypto payment and transaction

Cryptocurrencies utilize the blockchain algorithm. The Bitcoin system, for example, operates via a peer-to-peer network, i.e., blockchain, that allows online payments without involving the central ledgers of financial institutions or the intervention of the government (Alshamsi & Andras, 2021; Ahamad et al, 2021). Transactions of cryptocurrency through blockchain technology suggest trust-building between the two direct parties i.e., buyers and sellers. The absence of a centralized intermediary makes digital cryptocurrencies comparable to traditional fiat money such as dollar notes or gold coins (Smith & Kumar, 2018). Additionally, crypto transactions do not require central clearing authority which significantly reduces the possibility of transaction delays and quickens the reconciliation between transacting parties (Ahamad et al., 2021).

The usage of cryptocurrency with blockchain technology can help the financial industry automate their transactions accurately by identifying users' credit conditions, restructuring the financial market credit system, and improving the efficiency of cross-border payment (Zhang et al., 2020). Blockchain technology can improve the payment system by providing a solid platform for cross-border transactions, removing expensive intermediary costs, and progressively weakening or changing the business model of the existing payment industries.

2.1.2. Influence factors on crypto adoption

2.1.2.1. User perception - Environmental factors

2.1.2.1.1. Legalization of crypto

Cryptocurrencies such as Bitcoin and Ethereum have gained popularity as payment methods in 2018 (Hacker & Thomale, 2018). Not tied to any single jurisdiction, Bitcoin remains uncontrolled in approximately 110 countries wherein local legislation did not enable people to adjust to crypto development in reality (García-Monleón, Danvila-del-Valle & Lara, 2021). Owing to the risks they pose to central bank institutions, governments in several nations have begun to prohibit cryptocurrencies. Currently, nine nations, including China, have prohibited the usage of cryptocurrencies indefinitely beginning in November 2021 (Yen & Cheng, 2021; Chohan, 2017). Nevertheless, as shown in the period after 2017, while short-term liquidity declined due to irregular returns resulting from China's crypto ban, long-term liquidity impacts remain consistent for larger cryptocurrencies such as Bitcoin, Ethereum, Ripple, and so on (Zhang & Gregoriou, 2020).

Given the increasing prevalence of cryptocurrencies, regulatory authorities have acknowledged the need for governmental bodies to implement regulations monitoring the crypto market aimed at ensuring financial innovation development and providing escorts for blockchain finance and economics (Zhang & Gregoriou, 2020). At the same time, regulations are needed to prevent cryptocurrencies from getting into the grey zone beyond the operation of the law and to maintain a fair market with low crime rates and great protections for investors (Ferrari, 2020). This coincides with Parashar & Rasiwala's study in which 80.7% of respondents agree that if government regulations were in place, users' willingness to invest in crypto would notably increase (2019). However, countries adopt varied attitudes towards legalizing and regulating cryptocurrencies. Only a few countries such as Japan, Germany, and the US recognize the legal status of Bitcoin. (Yen & Cheng, 2021). In short, the creation and implementation of regulatory policies would also significantly improve the crypto market efficiency and attract potential investors (Bouri, Gupta & Roubaud, 2019).

The European Union (EU) has created and revisited regulations for cryptocurrencies (Hacker & Thomale, 2018). In order to maintain inside trading and other forms of market manipulation, the regulatory body has formed the Market Abuse Regulation, which prohibits trading with

companies and managers as a form of market manipulation (Hacker & Thomale, 2018). The European Central Bank has legally stated that cryptocurrency is a convertible decentralized virtual currency; while the European Court of Justice rules that Bitcoins - regardless of its undefined legal status - should be used only as a payment, and that trading Bitcoins in EU countries would include value-added-tax (Shestak, Kiseleva & Kolesnikov, 2021). Estonia, Sweden, Germany and the United Kingdom (UK) legally refer to cryptocurrencies as financial assets (Kablan, 2019). The German Finance Ministry regards Bitcoin as a legal currency and treats it as a financial tool or an accounting unit tradeable in the financial market and transactions with permission from the Federal Financial Authorization (Kablan, 2019). However, the Finance Ministry and the Estonia Central Bank do not define cryptocurrencies as a currency but regard them as alternative payments, which means the trading of Bitcoin is legal and can be used as an alternative payment for businesses (Kablan, 2019).

In the US, the New York Department of Financial Services has introduced a regulation BitLicense which oversees exchanges between cryptocurrencies and fiat currencies. The Internal Revenue Service (IRS) decided unequivocally that crypto-asset transactions are taxable transactions just like any other property (Edwards, Hanley, Litan & Weil, 2019)**.**

2.1.2.1.2. Taxation on different government

According to Kablan (2019), the regulatory system and taxation of cryptocurrencies are still undefined because of the difficulty in categorizing or defining cryptocurrencies for taxation. For example, in the European Union, profits from cryptocurrency investments are not obligated to value-added tax; countries such as Switzerland, Israel, and Bulgaria apply tax on cryptocurrencies as a financial asset; and income tax applies to cryptocurrencies in countries such as Spain, Denmark and Argentina (Kablan, 2019). Similarly, Broumas (2021) states that crypto-assets regulation about taxation in the EU is still uncertain for regulators and crypto holders, and they take a wide range of approaches for different EU member states. The Court of Justice of the European Union (CJEU) 2015 ruled that Bitcoin is a form of virtual currency that cannot be seen as a current nor a deposit account, a payment, or a transfer. Shestak, Kiseleva & Kolesnikov (2021) points out that the European Court of Justice ruled that other kinds of cryptocurrency transactions such as capital gains tax and income tax should be imposed. The taxation of cryptocurrencies and their related activities of it should be regulated by the individual national laws of each country in the EU. As a result, the taxation laws of crypto have

to be formed in order to avoid tax evasion. Kablan (2019) pointed out that crypto-assets have the essence of tax havens because their profits of it are not bound by taxation laws and it is hard to identify the identity of the crypto owners.

Despite the unclear regulatory approach to taxation of crypto, there are countries that passed laws in an attempt to regulate crypto assets and give clearer jurisdictions for crypto users. According to Zulauf & Ingold (2022), the Association of Swiss Tax Administrations and the Swiss Federal Tax Administration announced in December 2020 their regulatory framework on how to tax cryptocurrencies and related activity in terms of non-fungible tokens, asset-backed tokens, utility tokens, and debt tokens. Kablan (2019) points out that countries such as Finland, Denmark, Brazil, and Bulgaria also have placed taxes on revenue from owning Bitcoin; Singapore is looking into adding value-added-tax from any form of shopping paid by Bitcoin as it is an asset or product in its definition. Since the US is the leading country in cryptocurrencies with the largest volume of trade, other countries are looking for guidance from the US on the kinds of legislation they would have for crypto assets (Kablan, 2019).

2.1.2.2. Criminal activity

Criminal activity provokes governmental prohibition of cryptocurrencies. With minimal security, Bitcoin as a major cryptocurrency is often vulnerable to theft or hacking, as well as technical glitches and errors (Castonguay & Stein Smith, 2020). In 2013, the increase in high-profile crypto trading hacks caused investors in the United States (US) and other countries to lose millions of dollars (Edwards, Hanley, Litan, and Weil, 2019). Likewise, in 2016, the hacking of Ethereum significantly increased uncertainty for those considering investing in cryptocurrency. According to Europol, Bitcoin has been involved in illegal activities, including money laundering (estimated at roughly EUR 1.5 billion (USD 1.7 billion) being moved in cryptocurrency), cybercrime, and tax evasion (2021). The US Department of Justice Drug Enforcement Administration noted that "virtual currencies, such as Bitcoin, enable transnational criminal organizations (TCOs) to quickly move illegal gains overseas" (2017). High possibilities of data breach from hacking necessitate the evaluation and address of technical risks in blockchain development underlying cryptocurrencies (Zhang & Gregoriou, 2020). Since information is irreversible in the cryptosystem, recovering important private information becomes even more difficult.

2.1.2.3. The volatility of cryptocurrency

There are three common elements that are relevant to the cryptocurrency market, specifically the market factors, volatility factors, and momentum factors. Cryptocurrencies are sorted based on their market value; those with similar market values are categorized together (Liu, Liang & Cui, 2020).

Cryptocurrency is heavily built around pricing theory and thus lacks policies in place for blockchain technology that has accelerated the creation of new cryptocurrencies with varying degrees of volatility (Senner & Sornette, 2019). Due to the absence of centralized systems in the crypto environment, volatility issues dominate trades within the cryptocurrency market (Makarov & Schoar, 2020). In 2021, Ethereum dropped 44.97% of its original price value in just 11 days, demonstrating the great volatility of cryptocurrencies (Bonifazi, Corradini, Ursino & Virgili, 2021). At present, cryptocurrency does not have the capacity to replace fiat money and still needs to progress in many areas such as the "trust" system and the stability of prices in order for individuals to willingly invest in it (Steinmetz, von Meduna, Ante & Fiedler, 2021).

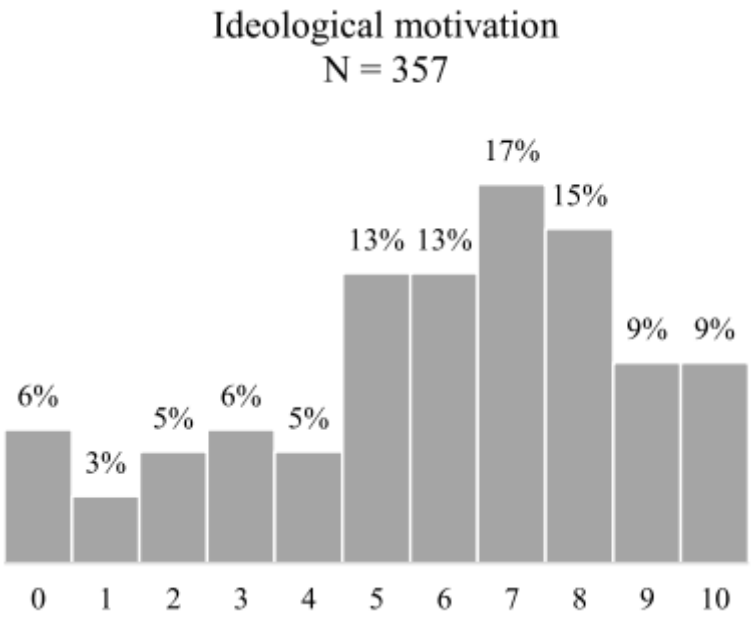
The cryptocurrency market includes smaller cryptocurrencies and is interdependent with them (Granger, 1969). Since smaller currencies fluctuate more than major currencies like Bitcoin, smaller coins are projected to have a significant influence on the overall cryptocurrency market dependent structure and will be a major driving factor in the cryptocurrency market (Huynh, Nasir, Vo & Nguyen, 2020). As liquidity and market efficiency are closely linked, market efficiency varies over time and is highly dependent on the currency itself, resulting in phenomena such as volatility spill-over, volatility co-movement, etc. (Tran & Leirvik, 2020).

2.1.3. Personal factors

2.1.3.1. User's profiling

As of 2022, over 300 million across the globe own cryptocurrency with approximately 18,000 companies that currently accept it as a form of payment (Tomas, 2022). Ideologies may influence users' intention to invest in crypto. Steinmetz, von Meduna, Ante & Fiedler (2021) reported crypto users' ideological motivations in owning cryptocurrency based on a scale of 0-10 demonstrated below.

Figure 3. Ideological motivations of crypto users

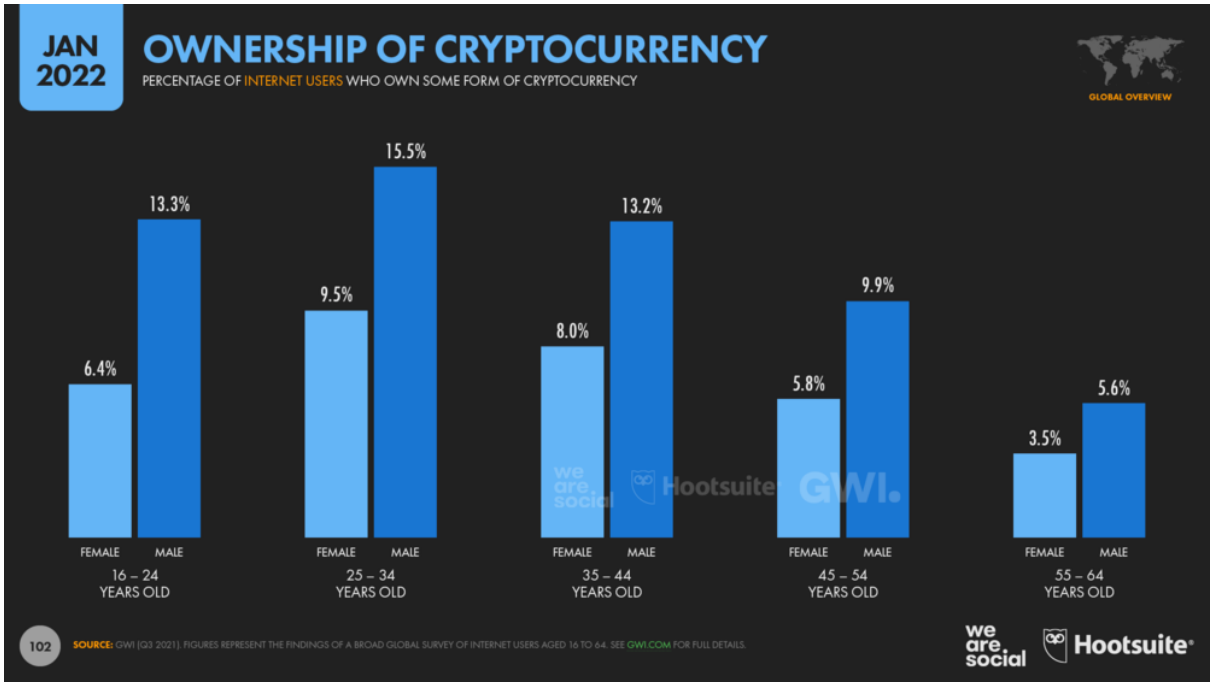


Retrieved from Steinmetz, von Meduna, Ante & Fiedler, 2021

As reported by Hootsuite statistics, a key demographic feature in the crypto market is males whose number is nearly double that of female users of different age groups as shown in the figure below.

Figure 4. Ownership of cryptocurrency

(Hootsuite Digital 2022 Global Overview Report)



Retrieved from Kemp, 2022

Behavioral wise, Aspembitova, Feng & Chew (2020) proposed four main user types (Optimist, Pessimist, Positive, and Negative). While Optimists actively invest to accumulate crypto coins, Pessimists only sell coins with negative balances; Positive traders buy and sell coins with positive balances, and Negative traders buy and sell coins with negative balances.

Table 2. User types and their trading behavior

User type	**Optimist**	**Pessimists**	**Positive traders**	**Negative traders**
Trading behavior	Users who actively invest in crypto with attempts to **accumulate coins**	Users who ONLY sell Bitcoin with a **negative** balance	Users who buy and sell Bitcoin with a **positive** balance	Users who buy and sell Bitcoin with a **negative** balance

Adapted from Aspembitova, Feng & Chew, 2020.

Sun, Dedahanov, Shin, & Kim study users' transition from traditional banking to cryptocurrency and propose three factors that affect users' decisions when deciding to purchase (2020).

- **Perceived risk**: investors transition to crypto when they perceive financial risks in traditional investments such as in stock trading and monopolistic institutions.
- **Reward sensitivity theory**: investors are sensitive to rewards in the form of higher returns which serve as significant incentives encouraging investors to make the transition.
- **Knowledge**: the specific areas of knowledge that investors are specialized in (such as in data, trading, tools, etc.) could assist investors transition to cryptocurrency (Stix, 2021).

Adapted from Sun, Dedahanov, Shin, & Kim, 2020

2.1.3.2. Incentives

The majority of users who own cryptocurrency have a more concrete understanding of the risks involved on the financial side than those that do not own cryptocurrency (Durham, 2020). Users are highly dependent on trusting the transaction as there is no physical evidence for cryptocurrency; given the decentralized cryptosystem, whether users are willing to take risks investing in high-risk assets, and whether they find problematic the lack of stability in banks determine users' decision of owning cryptocurrency (Durham, 2020; Stix, 2021).

Individuals' cultural background as well as income and economic situation, purchasing patterns, personal privacy, situation and functional risk also influence users' intentions in the crypto market (Sun, Dedahanov, Shin, & Kim, 2020). Grassman, Bracamonte, Davis, and Sato find that the Swedish focus on the notion of autonomy via blockchain, whilst Japanese emphasize the role cryptocurrencies may play in their financial situations (2021). Since crypto systems depend largely on the peer-to-peer blockchain network, users need to prioritize mining, which is a difficult process requiring specific hardware configurations and the use of multiple software (Senner & Sornette, 2019).

A lack of awareness and understanding of cryptocurrency could also relate to uncertain opinions on whether Bitcoin could replace other cashless payment options. Parashar & Rasiwala (2019) note that 45.6% of the respondents felt there is a lack of willingness to accept the change in payment methods and hence responded with "don't know," however, some were open to the

idea (29.8%) and stated that Bitcoin in some ways could replace monetary transactions in global markets.

2.1.4. User responses - perspectives of cryptocurrency

Sun, Dedahanov, Shin, & Li (2021) identified factors that attract institutional investors to add cryptocurrency to their portfolios. Institutional investors' investment intentions are heavily influenced by their trust in secure and reliable trading service providers like cryptocurrency businesses and cryptocurrency trading platforms (Petukhina, Trimborn, Härdle & Elendner, 2021). Due to service fees, currency rates, and trading systems fluctuating significantly across cryptocurrency businesses and cryptocurrency trading platforms in different countries, only a real-time updating and high-efficiency trading system can satisfy investors' price sensitivity (Baur & Dimpfl, 2018). Users' perception of a specific cryptocurrency influences the pricing of the coin. Kim et al., (2016) find that Bitcoin's price fluctuations were significantly correlated to users' positive comments; negative user comments adversely impacted the prices of other cryptocurrencies. Banks are already creating uncertainty for their users, making them more likely to migrate to cryptocurrencies. The lack of tangible proof and rules to protect cryptocurrencies like Bitcoin makes people apprehensive about investing (Smith & Kumar, 2018). Moreover, the issue that causes consumers to avoid cryptocurrency due to some cryptocurrencies are more unstable than others (Bonifazi, Corradini, Ursino & Virgili, 2021).

2.1.5. Observation

Despite the wealth of insights in the existing literature, apparent gaps exist in terms of researching the real prevalence of cryptocurrency ownership, usage, user sociodemographics, buying motivations, cryptocurrency popularity, and users' understanding of the nature of crypto. While trust has been featured as a crucial factor in the cryptocurrency systems, the interrelation between users' knowledge, trust, and ownership in the crypto market deserves additional investigation (Steinmetz, von Meduna, Ante & Fiedler, 2021; Sun, Dedahanov, Shin, & Li, 2021; Senner & Sornette, 2019). Given the prevalence of risks involved in cryptocurrency, research has shown users' preference for increased regulations toward heightened transactional safety (Parashar & Rasiwala, 2019; Senner & Sornette, 2019).

However, specifically what users believe should be done about regulation, i.e., which aspect of the cryptosystems should be regulated and monitored, remains under-researched.

As a result, this thesis will aim to fill these gaps by researching components that might possibly normalize and expedite the usage of cryptocurrency as a method of payment, as well as prospective regulatory actions that could be enacted. Trust, fluctuations in pricing, asset benefits from investing in crypto, and the risk associated are all important elements to consider when deciding whether to invest in crypto. We will utilize the above elements to guide us in investigating users' views and behaviors so as to better understand the issues that users face and how cryptocurrencies may eventually be used as a cashless payment option.

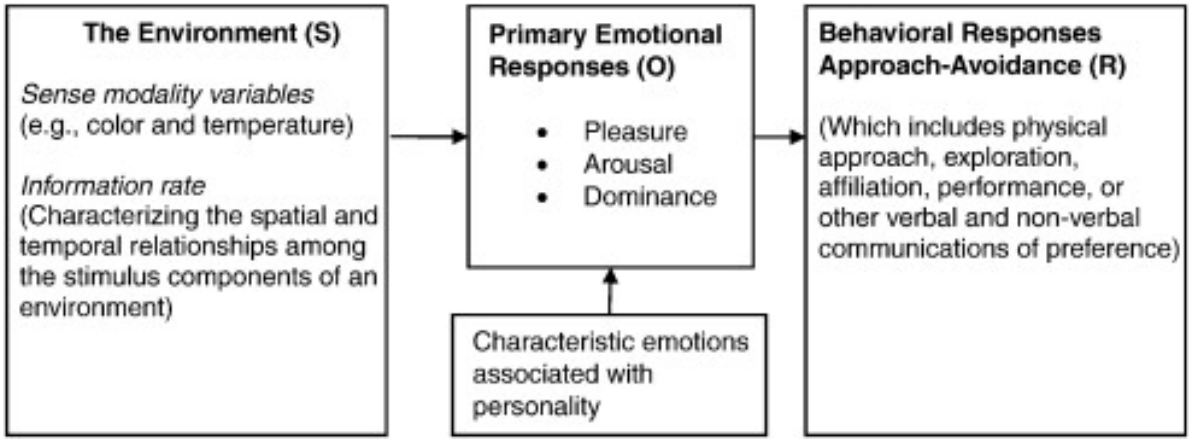
2.2. Conceptual Framework

In this section, we propose the stimulus-organism-response (SOR) model to explore the current customer experience of cryptocurrency as payment. The SOR model indicates that stimuli (S) from the environment would impact individuals - organism (O), explaining the influence factor of one's approach or avoidance behaviors (R) (Mehrabian and Russell, 1974).

2.2.1. The stimulus-organism-response (SOR)

The stimulus-organism-response model was originally established upon the classical stimulus-response theory and developed by Mehrabian and Russell in 1974**.**

Figure 5. S–O–R framework



Retrieved from Mehrabian and Russell, 1974

Regarding the improved model, the questions that need to be addressed are what is included in response and stimulus, and what occurs within an organism between response and stimulus (Mehrabian and Russell, 1974; Donovan and Rossiter, 1982). The concept of the organism between stimulus and response was integrated, illustrating external stimuli such as environmental and informational cues influencing an individual's internal cognitions and emotions. These internal factors act as the organism that drives an individual's behavioral intentions. In short, the environment containing stimuli (S) would firstly cause changes or adaptations to people's insight (O) and continuously lead to responses, such as approach and avoidance (R) (Mehrabian & Russell, 1974)**.**

2.2.2. The implementation of the SOR model

Belk (1975) revised the model and decided to involve it in the retail environment and consumers' behavioral responses. Since then, the SOR model has been adopted by many scholars to study the customer experience (Mollen & Wilson, 2010; Zhang, Gupta & Zhao, 2014; Lucia-Palacios et al., 2016; Kumar & Malhotra, 2018; Fan, Ning & Deng, 2020). A stimulus has multiple definitions under different circumstances, which is defined as environmental load - the amount of environmental novelty and complexity (Donovan & Rossiter, 1982). In which, novelty describes the knowledge of (or, how well) an individual understands the environment and is able to predict its future (Mehrabian, 1977). Complexity relates to modifications that happened within that environment (Russell & Mehrabian, 1977). Additionally, variation in stimuli takes place within the environment is information rate or load. The higher rate of the environment, the more unpredictable, and complex it is (Donovan and Rossiter, 1982). Regarding the organism, this element is identified as the emotional reactions that vary depending on an individual experiencing a daily situation (Mehrabian, 1977). Last but not least, response (R) is categorized as approach and avoidance behaviors that result from the pleasure or level of arousal experience respectively (Russell & Mehrabian, 1977). This starts with the desire of an individual that whether or not they are interested in exploring the environment, keeping interactions with actors that make up the environment (Donovan & Rossiter, 1982). An environment that proposes a better pleasure, or more convenience, would attract greater satisfaction and positive response such as re-visiting intention.

Adapted model

This thesis applies the SOR model to investigate users' responses to cryptocurrency as a method of payment, focusing on emotional reactions of confidence or lack of confidence in crypto payment. Accordingly, perceived challenges caused by prior unpleasant experiences would influence present responses to crypto services, especially crypto payment. For the purpose of the present thesis, the application of the S–O–R model is as follows:

- (S) is represented by user perception and understanding of cryptocurrencies and of the crypto environment (risk, benefits, and regulations)
- (O) refers to emotional reactions of crypto users
- (R) is the decision of approach or avoidance behaviors of using cryptocurrency as a first choice payment based (confidence/approach or no confidence/avoidance)

CHAPTER 3. Methodology

In this section, we will provide justifications as to which methods we have decided to use and why we have chosen this method. We will also discuss research quality and ethical issues which we may encounter throughout the research.

3.1. Research Methodology

According to the Oxford dictionary (2016), interpretivism is referred to as an "umbrella term" which covers a variety of academic approaches to the interpretation of social reality that differs from scientific positivism by emphasizing understanding over prediction and explanation, contingency over universal principles, and reflexivity over objectivism. This includes ethnomethodology, symbolic interactionism, social constructionism, and social semiotics, as well as phenomenological and hermeneutic methods.

Since this paper attempts to understand the challenges that cryptocurrency users have when using cryptocurrency as a form of payment and how this issue may be solved to help accelerate the process of normalizing cryptocurrency as a regular form of payment. As a result, this is strongly related to an interpretivism approach. The phenomenological method, namely, through studying user experience. The phenomenological approach is the heart of the meaning technique and is founded on assumptions. This is because phenomenology is concerned with how individuals comprehend and explain their experiences (Wilson, 2015). The majority of our methodologies are significantly based on the respondents' own cryptocurrency experience and assumptions

When it comes to understanding and explaining the notion of cryptocurrency, most individuals, particularly those who are deeply invested in cryptocurrencies, are still relatively new to the phrase and concept. There is no one explanation or experience that can describe cryptocurrencies because it has no physical existence and only exists in digital form (Milutinović, 2018). Hence using interpretivism with a phenomenological approach as we as researchers can delve deeper into cryptocurrency user's experiences on something that can seem alien to most people, additionally, many cryptocurrency users have different experiences and

reasoning as to why or how they use cryptocurrency which can help our research and future research into a topic which is still relatively new.

3.2. Research Approach

According to Thomas (2006) the main goals of using an inductive approach is to (a) reduce large text into a brief, summary format; (b) create clear links between the evaluation or research objectives and the summary based on the gathered data; and; and (c) create a framework for understanding the complexity of the experiences or behaviors seen in the gathered data. The inductive method offers a simple and systematic set of processes for examining qualitative data that can yield accurate and valid results. Inductive methods are usually used in qualitative research. Furthermore, inductive research often begins with a research question and is followed by the collecting of empirical data, which is then utilized to produce hypotheses and theories.

Therefore, for the purpose of this research, an inductive approach will be used in order to contextualize the respondents' responses into understandable results. Additionally, this approach can help develop hypothesizes and existing theories or new theories. Since the majority of the data collected are primary and consisted purely of the respondents' experiences, this approach would fit the best for the purpose of this research.

3.3. Research Design

To be aligned with interpretive philosophy and inductive approach, qualitative research was chosen. According to Denzin & Lincoln (2011), the qualitative research design is associated with interpretivism. In addition, qualitative research with an inductive approach is implemented for exploring an in-depth perspective based on the existing theoretical framework (Yin, 2018).

Qualitative content analysis is a method that enables a systematic description of the collected qualitative data (Schreier, 2014). The authors selected qualitative content analysis based on three main characteristics: the ability to reduce data, systematics and flexibility. With qualitative content analysis, the authors were able to build a coding frame to organize and categorize collected data with common patterns, as well as interpret the meaning of the patterns. This design allowed researchers to prioritize the aspects of meaning that are most relevant to the overall research question, which is the feature to reduce data. The meaning of the passage,

including some slightly different passages, all would be grouped into one category, which refers to a higher level of abstraction. This method is systematic since it follows a certain sequence of stages, regardless of the exact research question and the order from raw data. Researchers are required to examine carefully the raw data to pick out any passage related to the research question. Another advantage of qualitative content analysis is its flexibility. According to Krippendorff, 2013 and Schreier, 2014. It is flexible in a way that the coding frame is data-driven. Therefore, a part of the categories is always matched to the collected data.

3.4. Research Strategy

3.4.1. Data gathering

The thesis conducted 13 interviews of one on one online interviews and one joint interview. Since the cryptocurrency payment system is still in its infancy and requires user education (Alshamsi & Andras, 2019), there are potential struggles to answer accurately because of respondents' unfamiliarity with cryptocurrency (Walton & Johnston, 2018). The most suitable sampling method for our research is criterion sampling, this is the most appropriate sampling for our research. The sample population is those who are familiar with cryptocurrency, including crypto users owning it as assets or investment. The authors selected this sample population based on the focus on user perspectives to explore the perceived challenges of crypto payments. Interviews were conducted online. The interview lasted approximately 20 mins to more than 1 hour and all interviews are recorded using an audio and video capture. Since we prioritized accuracy when decoding interview transcriptions, we chose English as the primary language for our interviews. Our sample was English speakers that can be any English speakers. To gather primary data, a semi-structured interview was carried out. Semi-structured interviews help the authors to dive deeper into the topic of cryptocurrency as semi-structured interviews allow the freedom to ask questions relating to topics that are not prepared. Moreover, respondents have the ability to expand and express their values in depth as there are no restrictions on questions, allowing researchers the discovery of new ideas and themes of user perception grounded in using crypto payment intention.

3.4.2. Data analysis

The content analysis will be used in order to analyze the gathered data. Content analysis is based upon tracking the frequency of words or phrases which are then categorized in order to strengthen interpretations (Janowitz, 1968). Generally, content analysis is a broad concept that is then narrowed down to a single term. By using content analysis we can then measure and evaluate; relationships, specific words, themes and key patterns which arise within our interviews. Once a common theme or pattern is identified we are then able to make inferences by identifying specific characteristics of the message portrayed by the respondent and connect any key correlations and patterns (Janowitz, 1968).

Since cryptocurrency is an area within the hobbies and interests for the interview respondents, using content analysis would be the most ideal in this situation would be content analysis. Likewise, respondents' responses based of their own personal experience, meaning not all responses are the same as some users may respond positively towards cryptocurrency while others negatively. Using content analysis allows us the freedom to analyze data that are significantly different from one another. However, some limitations will occur is the lack of theoretical foundation as most of the data are based on relevant generalizations about the relationships. Additionally, there could be issues with disregarding context from the original text.

3.5. Research ethics

To avoid ethical difficulties a code of conduct should be taken into consideration. To meet this guideline, every research should be performed in such a way that respondents are aware of all procedures, and aims and are comfortable participating. In addition, participants should give written or verbal consent to participate in the study and should be informed that their personal information will be treated with care and utilized solely for the purpose relating to the study (Johansen and Frederiksen, 2021). According to Roche et al., (2017), it is ethically challenging for researchers when conducting human-related research due to it requires ethical guidelines. Similarly, Johansen & Frederiksen (2021) pointed out that perceptions like honesty and accountability are debatable in research ethics.

Hence, to remain ethical and fair when collecting and evaluating data for this study, several parts of research ethics are followed when conducting interviews for the aim of this research.

For example, it is critical to ensure that the elements of anonymity and ensure participants understand that we will not disclose their personal information and details of insights without participants' permission. Informed consent is obtained from participants prior to the start of the interview process and participants' understanding of the research, and voluntary participation for the interviewees of this research paper are present, some participants verbally consented to the study while some gave written consent.

Additionally, the respondents in this study were given the choice to disagree with anything they were uncomfortable with and all respondents' requests were respected throughout the research. All the respondents' names have been excluded in this research with only their occupations, the country they reside in and relevant information has been shown within the research.

Transparency has remained prevalent throughout the research, respondents' have been kept informed about the research's developments in addition to having the opportunity to read through the final thesis before submission (Nair, 2020). Respondents were also informed that all interviews will be recorded and only used for the purpose of transcription and data analysis, at the end of the thesis all their interviews will be deleted and not stored in any database.

3.6. Research quality

Since quality assurance is the most important phase in any research process, ensuring that the whole research process is dependable and trustworthy can greatly boost the credibility of one's study (Yusof & Ali, 2011). Generally, qualitative research is concerned with the trustworthiness of researchers' findings while quantitative research assesses internal validity, generalizability, reliability, and objectivity. Thus, in order to ensure research quality, Lincoln and Lincoln & Guba, 1985 presented three primary quality standards in qualitative research and strategies to increase research quality, as shown in the image below:

Figure 6. Trustworthiness criteria in qualitative research

Box 1. Trustworthiness: definitions of quality criteria in qualitative research. Based on Lincoln and Guba [4].

Credibility	The confidence that can be placed in the truth of the research findings. Credibility establishes whether the research findings represent plausible information drawn from the participants' original data and is a correct interpretation of the participants' original views.
Transferability	The degree to which the results of qualitative research can be transferred to other contexts or settings with other respondents. The researcher facilitates the transferability judgment by a potential user through thick description.
Dependability	The stability of findings over time. Dependability involves participants' evaluation of the findings, interpretation and recommendations of the study such that all are supported by the data as received from participants of the study.
Confirmability	The degree to which the findings of the research study could be confirmed by other researchers. Confirmability is concerned with establishing that data and interpretations of the findings are not figments of the inquirer's imagination, but clearly derived from the data.
Reflexivity	The process of critical self-reflection about oneself as researcher (own biases, preferences, preconceptions), and the research relationship (relationship to the respondent, and how the relationship affects participant's answers to questions).

Retrieved from Korstjens & Moser (2018)

Figure 7. Strategies to ensure trust worthiness in qualitative research

Box 2. Definition of strategies to ensure trustworthiness in qualitative research. Based on Lincoln and Guba [4]; Sim and Sharp [5].

Criterion	Strategy	Definition
Credibility	Prolonged engagement	Lasting presence during observation of long interviews or long-lasting engagement in the field with participants. Investing sufficient time to become familiar with the setting and context, to test for misinformation, to build trust, and to get to know the data to get rich data.
	Persistent observation	Identifying those characteristics and elements that are most relevant to the problem or issue under study, on which you will focus in detail.
	Triangulation	Using different data sources, investigators and methods of data collection. • *Data triangulation* refers to using multiple data sources in time (gathering data in different times of the day or at different times in a year), space (collecting data on the same phenomenon in multiples sites or test for cross-site consistency) and person (gathering data from different types or level of people e.g. individuals, their family members and clinicians). • *Investigator triangulation* is concerned with using two ore researchers to make coding, analysis and interpretation decisions. • *Method triangulation* means using multiple methods of data collection.
	Member check	Feeding back data, analytical categories, interpretations and conclusions to members of those groups from whom the data were originally obtained. It strengthens the data, especially because researcher and respondents look at the data with different eyes.
Transferability	Thick description	Describing not just the behaviour and experiences, but their context as well, so that the behaviour and experiences become meaningful to an outsider.
Dependability and confirmability	Audit trail	Transparently describing the research steps taken from the start of a research project to the development and reporting of the findings. The records of the research path are kept throughout the study.
Reflexivity	Diary	Examining one's own conceptual lens, explicit and implicit assumptions, preconceptions and values, and how these affect research decisions in all phases of qualitative studies.

Retrieved from Korstjens & Moser (2018)

To address credibility difficulties in this research, we employed a triangulation method, which means that the data was not collected all at once; some interviews were performed weeks apart at various times. Moreover, all three researchers contributed to the coding, analysis, and interpretation of the collected data. Because 13 of the respondents differed greatly in key interview questions, the coding method required more than one researcher because respondents were interviewed by various researchers. In addition to triangulation, each author ensured that they provided feedback based on their interpretations and analyses, allowing for multiple perspectives on the obtained data which reduces any researcher biases.

The strategy used to increase the transferability is through a thick description is used in order to describe cryptocurrency users' experience with cryptocurrency as a payment. This means understanding the concept under the surface which is decoded into understandable and meaningful for the reader. When comes to dependability/ confirmability and reflexivity was significantly supported by respondents' responses and not configured from our “imaginations”. In addition, as authors, we must exclude any biases before conducting the research, we must address our explicit and implicit assumptions to reduce any possibility of researcher bias.

3.7. Research Limitation

This study article has certain drawbacks. For example, one of the drawbacks to consider with semi-structured interviews is that certain questions may be biased and misleading. As a result, we attempted to minimize as much prejudice as possible when asking questions and also allowed participants to answer questions freely and without interruption, but in a way that directed them to answer the specified questions. We developed the questions to be simple and direct in order to avoid any potential misunderstanding between interviewers and participants.

Another limitation to consider with semi-structured interviews are that some questions may end up being biased and misleading; therefore, we have attempted to eliminate any bias as much as possible by allowing participants to answer freely while also attempting to redirect respondents to our key questions. We structured the questions to avoid any potentially misleading questions.

Several of the respondents selected for the interviews have a basic grasp of cryptocurrency. Some respondents have an educational background in finance or IT related degree and experience in investment. The limitation is that most of our interviewees are professionally related to our team and they are contacts and professionals through LinkedIn. Also, the

participants in this research are mostly Europeans and the investigated academic journals and articles were published in English, thus the result may be prone to a Western-centric narrative. This is a network limitation from the selection of interviewees, there would be a greater variety of results and interpretations with more variables.

Our inexperience with cryptocurrency is both an advantage and a limitation in conducting this research. Given our limited understanding of the topic, our reporting of the respondents' answers is influenced less by a priori biases. We committed to reporting and analyzing the answers as were given to us from the interviewing questions. At the same time, we could not make comments on whether there is a correct or more accurate understanding of cryptocurrency, and thus, we could not evaluate the extent to which respondents truly understood crypto or not. This latter point is a noteworthy topic for further research.

CHAPTER 4. Findings and Analysis

This chapter will cover the study findings gathered from 13 semi-structured interviews. The foundation for our results and analysis is mainly based on the previously described SOR model. Moreover, this section will provide an in-depth analysis of respondents' general knowledge, perception and confidence in cryptocurrency. Although the model may appear unique for the notion of cryptocurrencies, the primary focus of this thesis is only on user replies and so is the most appropriate in judging respondents' responses.

4.1 Stimulus (S)

4.1.1. Basic perception on cryptocurrency

The interview began with asking respondents several questions on the basic perception of cryptocurrency, including the importance of money, as well as the definition of crypto in simple language. The respondents firstly answered questions regarding the importance of money, which provided insights to the respondents' attitudes towards money. Answers for the importance of money provided insights into the respondents' attitudes toward money. Three different opinions were distinguished, namely "importance", "necessity" and "freedom of choices". The majority of respondents emphasized the great importance of money: As respondents 1 and 8 explained, money is "important to everyone, even to people who deny it." Corroborating this statement, other respondents emphasized the fact that money is "highly important for everyone's life" as humans "can't really survive without it," and as such it is "more important…than perhaps other things." To this group of opinion, money emerges as a foundational fact of life regardless of individuals' recognition of its importance.

Differing slightly, some respondents maintained that money is a necessity that is itself essential but not of utmost general importance. Respondents 2 and 5 agreed that, "money is not very important" but "mainly necessary for the daily functions…to keep [life] [1] more of an order." In

[1] Square brackets are to enclose the additional wording that does not belong to the original quote to make clear its meaning.

other words, money serves as a necessary tool in life's orderly functions, but it is not as important as the previous group said.

Nonetheless, both the "importance" and "necessity" groups share the perspective that money provides "freedom of choices." This freedom results from money acting as "a tool in helping…achieve higher degrees of security" - the "surplus of money" allows respondents to be "free" in "help[ing] other people, help[ing] yourself…experienc[ing] things" because money itself is "a vehicle to obtain resources" and "makes life easier in a lot of ways." Apparent in the responses is the common understanding between the uses of money and how such uses allow individuals to be free in their actions. Whether as an important fact of life or as a necessary element for an orderly life, money associates with freedom because it provides the means to secure more resources which in turn allows people to act in certain ways.

This freedom of choice is most closely connected to the financial independence that results from individuals' engagement in crypto activities. On one hand, financial independence or "financial freedom" results from respondents' ability to earn "passive income" from crypto and thereby reduces their dependence on traditional employment "where [they] don't earn [enough] money." On the other hand, crypto could be a source of active income for someone who had already quit traditional employment - "this [crypto] is my livelihood." Crypto enables users to freely do whatever they desire without being tied to any location or time. Whether it is "passive income" or active income, respondents unconsciously compared the money gained from crypto with the earnings from their official jobs. The money gained from crypto can be an additional amount of money that improves the earnings alongside their main employment or replace the regular income of traditional employment. This extra money can help a person to retire early, "pay off debt", improve their savings, and "earn funds for [entrepreneurs]".

Notably, respondents often mentioned benefit of crypto in "monetary gains" which is the cornerstone with which they understood and defined cryptocurrency. As an "alternative investment" to "get rich quick," all respondents initially perceived crypto as a form of investment aimed at improving their financial situations. While six respondents focused on short-term positive returns and the other seven put more stress on long-term gains, all respondents defined cryptocurrency based on the financial and monetary benefits that crypto provides them. According to respondent 12, even the respondent's friends seemed to define crypto in the same manner - "it's the same for them…the monetary gain."

An interrelated benefit that respondents mentioned was personal development attained throughout their individual crypto journey. Specifically, crypto "[extends] respondents' "existing knowledge" by motivating them to "learn more" due to "craving for information". As a result, respondents "broaden [their] perspective", for example, "about financial markets". Respondents consider crypto as a topic to be learned; gaining the knowledge about and relevant to it helps construct a sense of "security" in one's self and financial environment. By extension, the "freedom" to do more things based on the acquired knowledge forms the basis of personal achievement.

4.1.2. Explanation on crypto journey

"Crypto journey" is the term which the respondents used to describe their experiences with crypto activities. During the interviews, respondents answered questions on the duration of their crypto journey, which specific activities they engaged in, and their intention of engagement.

The journey of seven out of thirteen respondents lasted for over five years. One respondent's journey began 8 years ago when Bitcoin was first introduced as a cryptocurrency. Other respondents had experienced crypto for under 5 years, with the shortest term being one year of active engagement. In general, respondents' crypto engagement included the following activities: reviewing daily news updates, mining, trading, and educating crypto users at the beginner level.

To describe whether their role is active or passive at the moment, respondents reflected on the activities throughout their crypto journey. Some of them could be very active at the beginning or "back then;" participating in different crypto activities and events. However, with time, some respondents' active engagement "changed," being "a bit less active'' or "depends" on the occasion as they only maintained some core activities. Although a majority stayed up to date with daily crypto news, five respondents identified themselves as a passive user who would only engage in news updates and crypto investments. Respondents who used to mine Bitcoin reported to have stopped this activity; nevertheless, the experience with Bitcoin seemed to be prevalent amongst the respondents, for it signified their beginning in crypto mining using their "own hardware" with "a few graphic cards" in "the student dorm on the balcony." Respondents who used to be Bitcoin miners did not give further explanation on why they dropped this

activity, only provided their motivation was to try out. The definition of their role as being active or passive is not depending on whether respondents engage daily on crypto, but more likely refers to the number of activities they take part in.

While mining fluctuated with the passage of time, trading crypto remained part of the core activities of many respondents. Often mentioned when asked about the duration of crypto usage or their choice of crypto platform, respondents recounted their engagement in "swing trade instead of day trade," general "trading," or trading with a deep understanding of "the infrastructure or the underlying system." Trading here could be understood as involving two distinct areas: one involving the currency i.e., moving funds "from one currency to another" upon favorable ratios; another involving the underlying system of the currency. Based on the overall answers, respondents seemed to engage more in trading the currency rather than trading the infrastructure - the latter activity required more knowledge about the foundation of cryptocurrency structures and operating systems.

Educating is an advanced activity that only respondents 1 and 6 participated in. They both had been experienced in this space for around 6-7 years. Respondent 1 worked full-time in the cryptocurrency industry as a manager in one of the largest crypto companies. He had all of his savings and personal finances running on crypto and had not been owning any bank account for years. Meanwhile, respondent 6 had a background of eight years in capital markets and banking. He had written three books on crypto and some others on blockchain technology and the use of NFTs. In this case, educating is the most complicated activity which requires individuals to have a deep understanding of the crypto space before they could deliver to novice crypto users accurate knowledge about this field.

Contrary to the interviewers' expectations, respondents most frequently mentioned daily crypto news updates as their core activity. Seeing prices "go up and down" in the markets through "graphs" of "price levels" does not take much time; as such most respondents made reviewing news updates a basic activity in their daily life.

The corresponding finding is that the "updating news" activity is the factor that caught respondents' attention and prompted them to try out other crypto activities such as trading, mining, and investing. Curiosity and interest were the main pathways with which respondents began their crypto journey. Twelve out of thirteen respondents pointed out that curiosity and interest actually are identical, having no contradiction. All included both two factors in their

answer alternatingly, except respondent 4 who emphasized curiosity over interest. Respondents were asked for further explanations, whether they were interested or curious about the financial or technological aspects of crypto.

Ten out of thirteen respondents answered that they were interested in the financial aspect of cryptocurrency. These ten respondents included people who considered improving their personal financial status, and those who expressed their genuine interest in finance, or both finance and technology as a field of knowledge. Respondent 6 was deeply involved in capital markets and banking, which indicated his passion for the finance field. Respondent 3 also had "a strong background in finance;" his endeavors with informational technologies prompted him to look into crypto as a combination of both finance and IT. This point was confirmed by respondent 1 who identified cryptocurrency as "exactly [belonging] in computer science and economics." respondent 13 differed slightly from the previous respondents, stating his interest only in technology - the decision to enter cryptocurrency resulted from his stockbroker's suggestion. In general, respondents' crypto journey was influenced by their interest in finance, technology, or a combination of both. The nature of crypto as a virtual currency necessarily correlates to the prevalence of these interests amongst the respondents.

Financial wise, respondents saw crypto in light of the incentives for personal financial improvement. Either as a way to "protect [one's] savings," or "a potential opportunity…[to] make a profit," the majority of respondents emphasized the relative speed of earning "money" in crypto. Phrases such as "to earn some fast money" and "make a quick buck" or "get money fast" were repeated throughout the different answers. "The crypto market very fluctuates", so respondents who take advantage of this volatility felt that it was beneficial to them in the way of potentially earning lots of quick money.

Technological wise, crypto emerges as something "interesting" to three of the respondents. While not providing details for why they were interested in the crypto technology, the respondents repeatedly used the words "interest" and "interesting," suggesting that technology plays a part in attracting crypto users.

Between past incentives for starting the crypto journey and present motivation to continue it, respondents primarily highlighted personal financial improvement as the main motivation for their ongoing journey. For some, crypto was their "personal finance" in which they "have no choice" but to continue to "invest" as most of their wealth was "in the form of digital assets."

For others, the lack of regulation meant that crypto was “an easier way of collecting funds for any project.” Yet another respondent mentioned the utility of crypto in real-life applications such as “to pay off loans” and “buy a bigger apartment.” In other words, whether respondents were initially attracted to crypto by financial or technological aspects, users decided to stay in the crypto world predominantly for financial reasons. Respondent 5 summarized the overall reason well: “Good motivation is money.”

Interrelating with the financial motivation were the respondents’ considerations of their personal future. Respondent 1 continued with crypto activities in hopes of changing his “career track…[to] work in the cryptocurrency industry”. For respondent 2, cryptos was “a better form of money”, but right now “banks are too big to fail.” Respondents 4 and 6 collectively focused on the future that cryptocurrency may bring about - while respondent 4 thought of crypto as “a way to see the future before its coming,” respondent 6 perceived crypto as the means for people to “escape crazy inflation” so as to “[save] the world exchange”. Whether for a change of career or a change in world exchange and transnational transactions, respondents perceived crypto as greatly significant and impactful to the future of personal and worldwide finance.

To address the research question: "What are perceived challenges for crypto users to normalize crypto as a choice of payment?," a set of questions around the notion of how users perceived crypto payment was the most crucial section for all interviews. Given the nature of semi-structured interviews, responses on whether or not respondents have experienced crypto payment were more likely to come across in different questions and composed under the patterns of "experience" or "inexperience". There were only four out of thirteen respondents who had experienced crypto payment. Respondent 1 shared that he was using crypto as a payment method for a long time both “online and offline”, and that it was a part of “[his] regular life” that he used crypto as a form of payment. Respondent 2 approached crypto payment only via “online platforms”. Nevertheless, he was only able to pay for some specific products i.e., “some online account for some shares online or software” with only specific providers registering cryptocurrency. Moreover, a crypto user can be the buyer who “[purchases] tokens” with cryptocurrency or the seller, converting crypto to tokens for others. While respondent 4 shared his experience as a token buyer with crypto in gaming, respondent 9 played the role of the seller, “[selling] NFTs [using] Ethereum as the payment method.” Other respondents were inexperienced in this field. Overall, respondents 3, 6 and 8 "[preferred] crypto as an investment." However, respondent 6 was distinct from the two others that he acknowledged

“there are a number of people who do use crypto for payment," and crypto payment was "in its infancy stage." Respondents 5, 7, 11 and 13 underlined they "have not tried it so far". Specifically, respondent 11 expressed his confidence in the impossibility of crypto payment at the moment, while respondent 13 tried to explain that it was due to "lacking approval for crypto payment in the market", so he "barely [had] opportunities to approach it." Whether respondents with or without experience in crypto payment, there was barely a commonality among the two groups; all experiences were distinguished.

4.1.3. User knowledge on regulations on crypto and perception on crypto payment

To get a better understanding of user perspectives on crypto payment, the interviewer prepared in-depth questions to investigate user knowledge on regulations related to crypto. On one hand, most respondents considered that they were "unaware" because they felt the regulations were "somewhat undefined" due to the lack of "specific regulations", so users considered the regulation as "a jungle around the globe". On the other hand, respondents 1, 2, 5 and 8 believed that each country had its own legalization and regulations. They believed that it was "different from country to country" with "a variety of regulative setups" and mostly "[depending] on the country." Additionally, the banning of crypto was another issue that gained attention among all respondents. Respondents expressed their concerns about governments which were strict about cryptocurrency, and "tend to forbid cryptocurrency [or] make it illegal." For example, "China banned cryptocurrencies and prosecuted [Bitcoin users]".

Tax liability was a more specific aspect when it came to regulations on crypto. According to the respondents, tax liability required the accuracy of tax declaration, including the proof of work and proof of stake when making use of cryptocurrencies. Respondent 3 and respondent 7 - who were living in Sweden, pointed out that it was complicated work. Especially, respondent 7 listed out how the tax worked on crypto in detail:

> *"If you sell crypto there is a tax to the Swedish government. By using crypto directly buying the product you don't have to pay the tax for selling your crypto. By Swedish law it counts as property so the tax rate is 20 % if you are mining it yourself and 30% If you are buying and selling crypto (Trading)."*

Meanwhile, respondent 4 expressed that tax liability depended on "where [one] pays the taxes" - "the country [that person] is living". Respondents 1 and 9 as well acknowledged the duty of taxes on crypto but their answers focused on reminding the necessity of understanding how crypto was taxed by governments. Overall, the way respondents perceived crypto in the form of payment was associated with the fundamental knowledge of cryptocurrency. As a result, the answers for their perception on crypto payment were derived from their knowledge and understanding of cryptocurrency.

To clarify their perception further, respondents analyzed the advantages and disadvantages of crypto payment primarily based on their understanding of crypto regulations. The concern on taxes once again emerged when respondents talked about the disadvantages; it was such a hassle "without clarified instructions". Respondents 1, 4 and 5 briefly answered that "tax is one of the largest disadvantages". To explain the lack of supportive instruction on crypto, respondent 2 - who was "using a lot of different assets [on crypto]", provided an explicit example in terms of crypto assets by sharing his previous unpleasant situation with taxation and how he tackled this problem. Although he did contact a tax office for further guidelines, it was vague and time-consuming still:

> *"It depends on if you're earning interest depends on if you give your coins into custody to earn interest or not, and some of the stuff is very unclear. And so I try to read a lot about it [...] I recently had contact with a tax official that is responsible for, let's say, controlling my tax activation, I was also asking questions if they have guidelines. It was said that there are some internal guidelines but not enable to share them and the hassle is that you have to get the information from the internet [...] I use a provider called coin tracking that I use because it's really helpful to make tax declarations. But tax is a very complicated issue, I spent like two weeks on it full time on my tax declaration."*

Limited constructive guidance on taxation raised to some respondents the question of whether this was due to the "little control" of official "responsible institutions behind the infrastructure system". Having no responsible institutions became the shortcoming in users' perspective of crypto payment, for crypto may be potentially misused for "sinister purposes". The lack of transparent tax regulation was related to the absence of responsible institutions. As such, it is necessary that "the [payment] system [from the use of crypto] should be regulated" because of "[the] connection between the old system and the new system [that] to exchange [crypto] coins into fiat currencies", which would put the "central banks itself" into "the threat of inflation"

when normalizing crypto as daily payments. A corresponding consequence is that users "have [to] take responsibility for [any] mistake" without support from the customer service of the responsible institutions. Respondents perceived this users' "security" issue as the defects of cryptocurrency safety. "Crypto is good in [the way] that it is minimal government"; however, this also emerged as a defect of which criminals could take advantage - in other words, they are "trying to play the system". Therefore, "from a safety perspective", respondents believed that "regulation is the only way [to] secure the crypto payments at the moment".

Regardless of the defects of the institutional security aspect, volatility (price fluctuations) of crypto remained the most significant difficulty to the respondents when considering the drawbacks of using cryptocurrencies as a means of payment. Volatility entailed respondents being unable to utilize it as a means of payment, specifically due to high pricing. Because cryptocurrencies were extremely volatile, the value of one coin might plummet dramatically on the following day, leading respondents to be more confident using traditional money that had been more stable and preferable. In the words of the respondents, "its volatility…makes it unattractive…for adoption" because the exchange rate of cryptocurrency was "always going up and down… very fast, changing everyday", creating a sense of random "luck" that was not "sustainable." One respondent provided an example:

> *"Let's say someone who wants to buy an apartment, right? And they have an opportunity to pay with Bitcoin today. So maybe the cost of that apartment, [...] they pay for [it] a Bitcoin, then two years later, the cost of that apartment is half a Bitcoin."*

Given the high cost of one Bitcoin, the difference between a full coin and half a coin meant a significant amount that may exceed even the worst rates of traditional currency inflation. It was this potential loss of great sums of money which underlined respondents' fear of crypto volatility as well as their perception that the current crypto payment option could not yet be adopted more wide-scale.

On the bright side, many respondents believed that blockchain technology enabled crypto payment to inherit its advanced features, such as "speed and security". Respondents considered these promising features as advantages of crypto payment. The speed of transferring payments and transactions was assumed to be "much faster and cheaper" because of the "[efficiency of] peer-to-peer" networks. Respondents 3 also explained that normally "it [would take] up to two or three days with a bank" to verify the identity of whoever makes the transactions, but peer to

peer networks "cut out the middlemen", and allowed "the sender and receiver of cryptocurrencies to connect directly." Furthermore, the blockchain-styled network of crypto transactions provided a sense of transparency. With “every transaction” being recorded by each block acting as a “distributed digital ledger,” once a transaction had been made, it could not be “hidden, leaving “a trail of evidence" for "enforcement agencies to catch and prosecute [legal violators]." Respondent 3 commented that the crypto networks could be "more secure than the conventional database" due to the "old technology" of the "centralized system". A “big positive” of crypto payment, overall, was the blockchain feature which could ensure the “security” and transparency of crypto transactions.

In terms of transparency, respondent 7 explained briefly that blockchain is a "distributed digital ledger" through "a network of computer systems" connected to each other. Each block is storage that "[records] every transaction", so each time user "makes a new transaction", "[a] record is added to the chain". Respondents 1 and 4 stated that "once the transaction [is made], it is not hidden", which "[leaves] a trail of evidence" for "enforcement agencies to catch and prosecute [legal violators]". As such, it is believed to be "more secure than the conventional database" due to the "old technology" of the "centralized system" - according to respondent 3. Overall, the transparency of this distinct blockchain feature is to "[ensure] crypto payment security", which is “a big positive”.

Table 3. Summarized table of STIMULUS (S) with key categorizes

STIMULUS (S): represented by user perception and understanding of cryptocurrencies and of the crypto environment (regulations, benefits, and risks)
ENVIRONMENTAL FACTORS
BASIC PERCEPTION ON CRYPTOCURRENCY • **Money importance:** insights to the respondents' attitudes towards money - "importance", "necessity" and "freedom of choices" • **Definition of crypto:** investment • **Benefit gained from cryptocurrency:** monetary gain
PERSONAL FACTORS
• **Explanation of crypto journe**y - the term which the respondents used to describe their experiences with crypto activities. o Duration o Intention of engagement o Self-description: users' role of being active or passive in the crypto journey o Specific activities related to cryptocurrency (mining, trading, educating, news updating) o Initial incentives: curiosity, genuine interest in finance, or both finance and technology as a field of knowledge o Current incentives: personal financial improvement and personal future o Experience with crypto payment: Experience or Inexperience • **User knowledge on regulations related to crypto**: legalization, tax liability • **User perception on crypto payment** o Pros: speed, security and transparency o Cons: lacking of guidance on taxation and responsible institutions, and volatility (price fluctuations)

4.2 Emotional Reactions (O)

After directing respondents' attention from cryptocurrency to the concept of crypto payment by questioning its pros and cons, respondents were asked about their expectations for the development of crypto payment and changes in cryptocurrency due to the normalization of crypto as a means of payment method. Given the common concern about crypto volatility, the change that respondents most expected to see with widespread normalization was the stabilization of cryptocurrency's values. Respondent 11 maintained that as crypto became more widely adopted, the price "would stabilize more [because] that's in the interest of the people that want to use it." Respondent 7 agreed that adoption of crypto payment would make crypto "more stable" with less "price fluctuations;" however, he thought that the absence of fluctuations would be "bad for…investors" since they could no longer earn fast return on their investments i.e., buy at very low and sell at very high prices. In other words, while there was the common expectation that prices would be less volatile with crypto payment adoption, respondents differed in their perception of whether the stability itself was a good thing or a bad thing for crypto users.

Considering the perceived association between cryptocurrency and the future, it was not surprising that respondents discussed future prospects of widespread crypto payment adoption. Particularly, respondents expected new opportunities in transactional businesses not only within the country they were living in but also on a "global" scale. Respondent 1 explained that, with crypto payment adoption, one could "send money anywhere," which meant that people could also "do business anywhere [they] can do commerce [and]...also invest anywhere." Respondent 6 discussed specifically the need for crypto to appear in the developing world because "this is an opportunity for them to get in on the future." However, global adoption of crypto payment would create two scenarios in the world: developed nations would find crypto adoption as a "great avenue" to increase their global influence, while the developing countries would find such increased influence something to be "fearful" of. That the adoption could lead to widening rich-poor gaps was also the concern of another respondent. Particularly, respondent 2 explained that:

> "*Even if you will just use the example of Bitcoin. Bitcoin has other disadvantages, Bitcoin has no one that is controlling it, once you are in the [crypto] system. And once you're a very high player, you control pretty much the whole of the currency*."

In other words, regardless of the appearance of no centralized control, the cryptosystem was potentially directed by a hierarchy consisting of high players at the top controlling the rest of the crypto user community. Globalization of crypto payment adoption might mean increasing influence for these top users who would be more likely to reside in developed countries.

Accompanying the expectation in price stabilization and future globalization was the expectation of financial freedom as the result of crypto payment adoption. For respondents 1 and 4, the adoption suggested a way to “democratize access to finance,” making “financial inclusion truly global and available to anyone just like the Internet did for information” - individuals across the world would enjoy the “freedom” of “owning [their] assets” but not without disruptions to the “[present] society built on centralized authorities.” For respondent 6, albeit with consequences, people in developing countries with “crazy…inflation” such as Nigeria, Kenya, Venezuela, or Colombia could “hold onto their money”; this adoption would be “the best way out for them…economically”. Not only the specific type of users, but the very configuration of monetary transactions may change. Respondent 7 expected that crypto payment adoption would “cut out the middlemen who profit using different forms of transactions,” allowing people as buyers and sellers to enjoy “equal treatment.”

While the above discussion focused on expectations regarding the large-scale normalization of crypto payment, other respondents highlighted their expectations towards potential changes in the features of the existing crypto payment. Respondents 3, 5, 9 and 12 did not expect that crypto payment would “change their life" - they considered it as simply “an alternative payment method for cash or cards”. As such, the system of crypto payment should be "as convenient as other current payment methods", or "at least with basic functions". Some respondents expressed their opinions that they expected to make use of crypto payment in "the same way [they would be] using money" on a daily basis for goods and services such as in buying “wheat,” paying, “electricity bills”. “in restaurants," or through popular “mobile payment”.

Respondents raised different opinions concerning the current crypto payment features. Respondents 2 and 6 were concerned about the "[accessibility] of payment gateways" and "platforms". To be specific, respondent 6 listed some popular online platforms such as Binance or Coinbase, which were able to "make regular payments connected to a cryptocurrency balance". According to the expectation of respondent 2, the "[provision for] the basic interface" was also essential, which should be "at least on the same level as bank payments". Similarly, respondent 5 desired a more “comprehensive”, "eas[ily] accessible and nstructive” interface.

Respondent 4 preferred the interface to include a "confirmation after making the transaction on phones", such as "Face ID" or fingerprints. On the other hand, the current payment interface was “not…important" for respondent 1 as a user. Since crypto payment was "a part of [his] daily life", this was no longer a concept or idea but “already [his] reality”. Hence, he expressed his preference for "a physical card" "that interface[d] with crypto wallets”. Respondents 2 and 4 also expressed the same desire of crypto payment "connected to [their] cryptocurrency balance". Moreover, respondent 2 suggested crypto payment should enable "pay[ing] with QR codes or NFC" that users "scan [and pay] from their crypto wallet", which he defined as a "convenient" interface. For respondent 4, convenience meant as long as the interface brought "similar [user] experience like Swish" - the most well-known mobile payment app in Sweden. In short, five out of thirteen respondents focused on payment interface with expectations for comprehensive user experience and convenient features. Whether respondents were with or without previous experience with crypto payment and had different levels of expectation on payment interface, their definition of convenience was identical, that the crypto payment should directly connect to the crypto balance.

Regarding the currency of crypto balance or wallet, the corresponding issue that respondents considered was which coins the payment should make use of. Respondents 2, 6 and 13 agreed that "the volatility of crypto assets [was] too high" and "the fluctuation right now in cryptos, [was] ... still dramatic, wild [and] volatile." There were high chances users would "lose money" if "the next day the [crypto market] crashed", in other words, "the value of [cryptocurrency] was not constant." To "facilitate the transactions", "stable currency", and "stable coins" were highly recommended to crypto payment providers to consider as "the main requirement". It would be better to have "support for some of the more popular cryptocurrencies” namely Bitcoin and Ethereum, or many of ETH’s sub currencies, as well as major “coins” like ADA (Cardano), LRC (Loopring), or even Doge (Dogecoin). With respondents' knowledge on different currencies "[operating] on very different principles", respondents stated their preferences toward stable coins as a solution for the volatility of the nature of cryptocurrencies - a typical issue with cryptocurrency transactions that would prevent users to adopt the crypto payment. As such, “the initial thing” any crypto provider should “start out with” was the “stability exchange rates.”

Table 4. Summarized table of ORGANISM (O) with key categorizes

ORGANISM (O): refers to emotional reactions of crypto users

• **Expectations regarding the large-scale normalization of crypto payment**
  o price stabilization: the stabilization of cryptocurrency's values
  o future globalization: future prospects of widespread crypto payment adoption
• **Expectations towards potential changes in the features of the existing crypto payment**
  o Payment gateways
  o Payment interfaces
  o Direct connection with crypto wallets or balance
  o Making use of stable coins

4.3 Response (R)

In regards to the key question of the interview: “What are the perceived challenges of crypto users as a choice of payment?,” most respondents answered that "tax declaration" was the foremost problem that they were struggling with. Due to the absence of an international regulatory body, tax laws regarding cryptocurrencies differ from one country to another - in the words of respondent 1, "every country has its own set of rules," which complicates tax declarations. European respondents reported that users had to pay taxes from their "crypto transactions,” “crypto payments", and "capital gains", which depended on whether they were "selling crypto assets or digital assets." They also had to pay “tax income” earned from their crypto investment; as respondent 2 claimed, if the coin had been held for at least one year, users could then sell crypto “tax-free.” As someone who was living on funds primarily in cryptocurrency, respondent 4 needed to withdraw money from crypto on a monthly basis and transfer it to his normal Swedish bank account so as to reduce tax declaration on small transactions. A "tax event" took place "every time [users] pay," respondent 4 explained; tax events included every transaction from "converting...crypto to the current local currency" or simply paying for "grocery store," and buying goods from private "merchants." However, respondent 3 noted that crypto payment application developers tended to not understand "how [the] financial system works" i.e., the processes that crypto users underwent to maintain their lives under centralized tax declaration systems. Both the meticulous tax requirements and the crypto payment systems which had yet incorporated real-life financial needs posed significant challenges to crypto as a choice of payment.

In terms of response to crypto payment, "the adoption pretty much depends on the number of people and institutions that support it." - respondent 3 said; this aligned with the majority of respondents' concerns about the lack of acceptance of cryptocurrency. Respondent 1 stated that "regulation" expressed the core issue of legalization in "a broader sense", specifically when "some countries banned payments in crypto". Due to the vague regulations on cryptocurrency, it was a dilemma for "companies [adopting] cryptocurrency" that “nobody was accepting it," leading to the lack of "accessibility". This was "a barrier at the moment", for only a "few places…accepted cryptocurrency as payments." One respondent said**:**

> *"I by myself, have never paid anything in the real world with Bitcoin, anything because there was no choice to do it in Sweden. So if its payment is not beneficial. I mean, the*

most important thing for payment method is always you know, that you have someone who's accepting your points."

Respondents recognized providing crypto payment could be seen as a sort of "flexibility". However, "[whoever] willing to accept it [played] a major role". As far as respondents were concerned, "the lack of providers" turned crypto payment into a challenge, which "didn't make any sense to pay with it."

Throughout the interviews, there were five respondents who insisted on the impossibility of wide-scale adoption of crypto payment. Respondents 3 and 5 believed that crypto payment "was not going to work" and that they could not find any reason that "traditional currency" would be replaced. Respondent 3 expressed his trust in the central bank system, maintaining that cryptocurrency would not be issued as "mainstream in the payment system", or "at least not in the Western countries." Three others (respondents 2, 4 and 11) considered crypto as "an investment" and "a speculative instrument" that "might rise in value". They would "consider spending it" because "[spending their investment] is a big disadvantage." Although respondents 2 and 4 experienced crypto payment, they still belonged to the opposition group. Generally, respondents examined which engagement with cryptocurrency would be more beneficial to them, either as a form of payment or investment. Engaging in crypto activities and not believing in the possibility of wide-scale crypto payment adoption did not necessarily contradict; users could have various ways of evaluating the advantages and disadvantages of cryptocurrency as well as the current system of crypto payment, and come to very different conclusions. Their reflection of which engagement with cryptocurrency was more beneficial represented the lack of confidence in one compared to another, which affected their choice of accepting or avoiding crypto payment.

On the other hand, four other respondents showed their support for crypto as a form of payment. From the perspective of an individual user, respondent 13 expressed most straightforwardly that he "would love to use it daily." Regarding groups or corporate users, respondent 6 considered crypto payment as "a great marketing tool" and that the availability of crypto payment could be included in businesses' "marketing campaigns", such as advertising "crypto furniture store", or "crypto car dealership." Respondents 5 and 6 agreed that it was "only a matter of time" due to people's inadequate attention; sharing the same opinion with respondent 1, they maintained that crypto payment "was not going anywhere" - crypto payment was the "reality." Although crypto had been "around for the past 20 years", respondent 5 observed that the majority of people just

acknowledged it "very little…maybe [in] the past five years." Therefore, respondents who supported crypto payment believed in the reality that crypto payment was in its development stage that needed more popular recognition.

Besides apparent support and opposition, respondents 7 and 8 stated their neutral opinions of the crypto payment adoption that it was "depend[ing] on the market." Elaborating, respondent 7 maintained that if users were "willing to accept", it should be in the light and made use of. The money would not have become more popular if America had not "removed [d] the gold standard in 1971" and adopted money, which respondent 7 believed the development and adoption of cryptocurrency would be comparable. His perspective was that the comparison of cryptocurrency with fiat money at the moment is equivalent to how "money used to be tied to gold". Therefore, the neutral opinion was that crypto payment adoption was decided by the acceptance of the market, which was constructed by users and institutions, also the authority who issues it.

Also with the focus on how the market functions, respondent 1 was an exception with a distinctive perspective regarding the future of crypto payment adoption. Respondent 1 had a strong belief in using cryptocurrency as “money in the near future." He also believed that "anything that can be bought with money would be bought with crypto." Crypto payment was the “reality," given that he possessed "debit cards that interface with crypto wallets." However, his response focused on the operation of the market instead of his personal support for crypto payment adoption. His statement is that the "market decides itself". For further explanation, markets were "where people make voluntary decisions" that defined themselves as “the most efficient, optimal, and most popular way for people to transact value between themselves." The market was how people calling where the activity of exchanging values i.e., buying and selling, took place. This exchange activity was voluntarily undertaken, which indicated the demand and supply of the market. Although his answer and the neutral group shared the commonality of a focus on the market, it differed that the adoption of crypto payment he mentioned was more likely to be the association between demand and supply.

Table 5. Summarized table of RESPONSE (R) with key categorizes

RESPONSE (R): the decision of approach or avoidance behaviors of using cryptocurrency as a first choice payment based (confidence/approach or no confidence/avoidance)

• **STRUGGLES**
  o Tax declaration
  o Lack of acceptance
• **CONFIDENCE**
  o Confidence/approach: support crypto payment
  o No confidence/avoidance: refuse crypto payment
  o Neutrality: “market decides itselft”

CHAPTER 5. Discussion

This chapter highlights the significant findings that are critical to addressing our study question, "What are perceived challenges for crypto users to normalize crypto as a choice of payment?" Again, in order to completely answer our study questions and assumptions, the discussion framework is built on the SOR model.

The findings extracted from respondent answers support the literature by complementing insights from user perspectives of crypto adoption, specifically crypto as a means of payment. Based on the SOR model, the authors examined three main features of the Influence factors: Stimulus (S), Emotional reactions: Organism (O) and Responses (R).

In the context of cryptocurrency and crypto payment, the stimulus (S) includes environmental factors and personal factors on user perception and understanding of cryptocurrencies and of the crypto environment i.e., regulations, benefits, and risks. Concerning environmental factors, respondents' basic perception of cryptocurrency was made up of their perception of the importance of money, their definition of crypto and the benefits gained from crypto in their life. The majority of respondents considered money as a foundational fact of life regardless of individuals' recognition of its importance. They shared the common perspective that money provides the freedom of choices and that money acts as a vehicle to secure their resources and allows their life functions to be more independent. Respondents felt that the benefit of crypto lies in monetary gains, and this forms the basis of their definition of cryptocurrencies - an investment. An interrelated benefit that respondents mentioned was personal development attained throughout their individual experience in the crypto space. This finding confirms Steinmetz, von Meduna, Ante & Fiedler's (2021) argument that crypto owners are positively influenced to acquire more knowledge; personal development is the result of ownership experience gained through learning for broadened knowledge to construct one's life.

Deutsche Postbank reported in 2018 that one of the most important motives for adopting cryptocurrency was the yields from speculation (Steinmetz, von Meduna, Ante & Fiedler, 2021). Correspondingly, respondents were more likely to perceive crypto as a form of investment and agreed that investment from crypto sometimes gained high yields due to its volatility. To the extent of the motive for speculation, Steinmetz, von Meduna, Ante & Fiedler

(2021) found another interrelated motive was to reduce the dependence on traditional currencies. Emphasizing "financial freedom", respondents in our study recognized crypto investment as an earning that adds to or completely replaces the income from their main employment, once again confirming Steinmetz, von Meduna, Ante & Fiedler's argument (2021).

In terms of personal factors, each respondent had their own genuine interest in finance, in technology or both finance and technology. When evaluating crypto payment, respondents utilized their individual knowledge of either finance or technology or both in the construction of their answers. In this sense, knowledge plays an important role for crypto users to evaluate their own activities and the general crypto market in which they participated; as such, crypto users as a whole demonstrated both financial literacy (Arias-Oliva et al., 2019) and technological capability (Steinmetz, von Meduna, Ante & Fiedler, 2021). Crypto users represented by the thesis' respondents appear to fully grasp the nature of cryptocurrency as the interaction space of finance and technology as specialized knowledge. Therefore, cryptocurrency and crypto payment should be understood in light of both fields of knowledge.

Experiences with crypto payments were not identical for every respondent. Only four out of thirteen respondents experienced crypto payment, and each person experienced it differently: daily payments (both online and offline), only via digital platforms and exchanging tokens either as seller or buyer. The motivation for those who did not use crypto payment also varied from one to another. Generally, therefore, all experiences were distinctive. Crypto as a means of payment is currently not popular on a wide scale, so people hardly experience the same service of crypto payment at a more systemic level. Since many respondents who did not use crypto payment showed inadequate knowledge about the service, their emotional reactions were derived from the interpretation of their answers about their knowledge and experience in cryptocurrency. This thesis examined the user perspective on crypto payment through the lens of user perception of cryptocurrency.

Most respondents were unaware of what was happening with the regulation of crypto, but they perceived the disadvantages of crypto payment based on their perception of the constraint of regulation on cryptocurrency. Each respondent experienced a variety of regulative setups on crypto-based on where they were living. This is because the regulatory system and taxation of cryptocurrencies are still undefined due to the difficulty to categorize different cryptocurrencies for taxation (Kablan, 2019). Confirming Kablan (2019), respondents commented on the

inconsistent crypto regulations, noting how countries differed from one another while offering unclear taxation instructions, resulting in a vague and time-consuming process. Furthermore, respondents agreed that crypto payment could be involved in illegal activities such as money laundering, cybercrime, and tax evasion, suggesting that they had a clear understanding of the association between the absence of regulations and cryptocurrency crime use that Europol (2021) and Castonguay & Stein Smith (2020) have previously pointed out.

Besides the institutional security aspect, respondents' paid significant consideration to cryptocurrency volatility (price fluctuations) as a primary difficulty in using cryptocurrencies as a means of payment. For them, the instability of crypto prices made payments using traditional money seem more secure and preferable, demonstrating that as investors, crypto users often have a clear understanding of cryptocurrency insecurity and unpredictability mentioned in Jørgensen & Beck (2022). In this case, the negatives of cryptocurrency and crypto payment were closely connected to knowledge about the financial regulatory system. On the other hand, respondents recognized the advantages of crypto payment and cryptocurrency in terms of transactional speed and transparency, which are interconnected to the underlying blockchain technology. Respondents pointed out that crypto payment inherited the efficiency of peer-to-peer networks which they perceived to be better than the traditional banking network. The positives of cryptocurrency and crypto payment were clearly associated with technological advancements. This suggests that respondents unconsciously utilized both financial and technological knowledge to analyze the pros and cons of crypto payment, supporting the argument presented by Sun, Dedahanov, Shin, & Li (2021) that crypto users acknowledged the potential benefits of cryptocurrencies despite limited regulatory supports of government agencies under the scope of the financial system.

Emotion is a feeling triggered by environmental impact; emotional reactions are generally uncontrollable and influence one's behaviors significantly. Emotional reactions - Organism (O) starts with internal processes based on previous cognition. In the context of crypto payment, user perception of cryptocurrency acts as the stimulus - environmental impact: users' knowledge of cryptocurrency influences their emotions when approaching crypto payment. Since respondents were relatively satisfied with their crypto journey, they expected cryptocurrency and crypto payment to be functioning in certain ways. With widespread normalization, some respondents expected foremost the stabilization of cryptocurrency's values. While more stable cryptocurrencies could improve prospects of crypto as a choice of

payment, the very stability of crypto could negatively impact the benefits of crypto users who had made high and fast returns from cryptocurrency's volatility (Steinmetz, von Meduna, Ante & Fiedler, 2021).

Some other respondents underlined their expectations towards potential changes in the features of the existing crypto payment systems. Since the focus of the interview was crypto as a choice of payment, respondents compared the basic features of crypto payment to other payment methods they used in daily life. As such, respondents expected the system of crypto payment to be at least as functional as the mobile banking payments, and the basic interface of the payment application should be comprehensive. Respondents recommended that crypto wallets should directly connect to payment gateways and enable access to technologies such as NFC, QR codes, etc. In other words, they expected more conveniences and user-friendly configurations in crypto payment applications such that they could connect to current smartphones' technical designs that have been developed to be compatible with traditional debit/credit cards. Regarding the currency of crypto balance or wallet, most respondents preferred stable coins which are primarily used for facilitating trades that enable crypto users to buy coins with fiat money for exchange purposes, i.e., staking, lending and remittances across international borders (Visa Public, 2021). In the context of crypto payment, stable coins may provide a solution for cryptocurrency's volatility - a typical issue with crypto transactions that would prevent users to adopt the crypto payment.

In regards to the key question of the interview: "What are perceived challenges for crypto users to normalize crypto as a choice of payment?," most respondents answered that "tax declaration" was the foremost problem that they were struggling with. The absence of a regulatory body on tax and laws regarding cryptocurrencies prevents respondents from normalizing crypto to daily life. Ferrari (2020) stated that when new and disruptive technologies emerge in the financial industry, regulatory bodies must examine the risks and implement necessary laws to adapt to the many interests that innovation would involve. Crypto payment is a product of a mix of the technological and financial industries; however, it is not under controlled of any authority, and users have no one to examine the security control and basic laws to protect them. Respondents' opinions aligned with the statement of Steinmetz, von Meduna, Ante & Fiedler (2021) and Ahamad et al. (2022) that this issue needed to progress in order for individuals to willingly trust it. The crypto payment systems which had yet incorporated real-life financial needs posed significant challenges to crypto as a choice of payment.

In terms of users' confidence in the normalization of crypto payment, respondents' support for crypto payment is interconnected to the extent that they believe in it. Supportive respondents (acceptance response group) expressed their excitement when discussing the crypto payment, drawing many scenarios about how people could use it in daily life. For them, it is a matter of time before crypto payment would be used widely; it is in the process of development and it would take some time to reach popular recognition. Respondents sceptical of crypto payment (avoidance response group), on the other hand, appear to be more benefit-oriented. They evaluated whether crypto as a form of payment or investment would be more beneficial for them in terms of monetary gains, resulting in their low confidence level in believing in crypto payment. Low confidence in crypto payment leads to the avoidance response - itself the perceived challenge preventing users from adopting crypto payment systems. In general, users could have various ways of evaluating the advantages and disadvantages of cryptocurrency as well as the current system of crypto payment, and come to very different conclusions. Individual reflection of the balance between advantages and disadvantages determines users' confidence or non-confidence in their choice of accepting or avoiding crypto payments.

Extension discussion

Although some replies appeared off-topic or surprising, we believe these are essential topics to explore and are still related to the research question of users' perceived challenges of crypto payment. When analyzing the responses of respondents, three key themes emerged: First, when considering the possibilities of cryptocurrencies, some respondents mentioned commission costs applicable to digital transactions as one difficulty. Respondent 1 compared the fees to PayPal payment - "[in] Paypal, there are still commissions and their limits." Second, compared to traditional banks and PayPal's transaction fees of conventional money, respondents noted that the existing cryptocurrency systems demand comparatively higher transaction fees. Respondent 13 mentioned there is a "10% transaction cost" using common cryptocurrency platforms, so he expected the costs to lower once the crypto payment was normalized on a wider scale. Third, respondents mentioned unpredictable conversion rates that different crypto platforms offered. According to respondent 7, since Coinbase, Kraken and Binance adjust conversion rates based on real-time prices of cryptocurrencies, fees are unpredictable on a daily basis as they often change the moment crypto prices change, and users must "accept whichever conversion rates the applications offer whether they are high or low."

Figure 8. Standard rate for receiving transactions using Paypal Here

Payment Type	Rate
Card Present Transactions	2.70%
Keyed Transactions	3.50% + fixed fee
PayPal Transactions (In Store)	2.70%
QR code Transactions	2.70%

Retrieved from PayPal US, 2022

In this figure, you can see how fees are calculated based on Coinbase:

Figure 9. Pricing tier for conversion fees from Coinbase

Pricing Tier	Taker Fee	Maker Fee
$0 - 10K	0.60%	0.40%
$10K - 50K	0.40%	0.25%
$50K - 100K	0.25%	0.15%
$100K - 1M	0.20%	0.10%
$1M - 20M	0.18%	0.08%
$20M - 100M	0.15%	0.05%
$100M - 300M	0.10%	0.02%
$300M - 500M	0.08%	0.00%
$500M+	0.05%	0.00%

Retrieved from Coinbase, 2022

This response corresponds to the literature on how service fees and currency rates influenced investors' price sensitivity and their decisions to invest. Crypto users would be more willing to invest if handling costs were significantly reduced if not on par with traditional means. If these recommendations were put into place this would also improve or attract more people to consider using cryptocurrency as a form of payment (Baur & Dimpfl, 2018). The complexity lies in

cryptocurrency's high dependence on the market which determines the fees as prices fluctuate in real-time, unlike conventional stocks which are more predictable.

Another issue apparent in the semi-structured interviews is the sustainability and energy costs related to cryptocurrency mining. Only respondent 6 felt that crypto mining was less "wasteful" than normal traditional ban operations. However, respondents 3, 9, and 10 agreed that there was far too much energy being consumed in order to mine cryptocurrency, and this issue should be addressed considering the current climate issues. Although the amount of wasteful energy is not currently noticeable, once crypto becomes "mainstream" this issue will worsen climate conditions due to the increased need of energy either from conventional sources such as coal and gas or greener energy technology whose production wastes remain a controversial problem. Fadeyi et al., 2019 maintain that there may not be a solution at hand for crypto mining to become sustainable in each city. Nevertheless, since 2019, scholars have begun researching solutions by attempting to create business models which could address crypto mining issues. For example, Bitir-Istrate et al., 2021 attempt to reduce the energy boundary's environmental effect while increasing the EPI, hence increasing the profitability of this new form of business.

CHAPTER 6. Conclusion

This thesis goal has been to explore and understand users' perspective of crypto as a form of payment. Although the usage of cryptocurrencies has drawn both academics' and practitioners' attention, crypto users in the context of crypto payment is a novel landscape that demands additional research. Drawing on the SOR framework, this thesis provides empirical details about the various influence factors (stimulus), emotional reactions (organism), and responses that crypto users demonstrate when evaluating crypto as a choice of payment. Apparent in the respondents' answers is the association between users' emotional reactions influenced by user perception on cryptocurrency and their response to the concept of crypto payment.

As discussed in Chapter 1 there are 3 main objectives which we attempted to address in this research:

- Identify factors that affect users who use crypto as a payment or form of the transaction when purchasing a product/service
- Examine the emotional reaction and confidence level of crypto users toward the possibility of the crypto payment concept
- Identify the foremost challenges users face when using crypto payment in their daily life.

When addressing objective number 1 the main factors which were identified when analyzing respondents' responses were based on three factors, perceived risk, knowledge and trust (confidence) which influence users' willingness to use it as a form of payment. Secondly, when addressing assumption number 2 respondents were 50/50 when it comes to emotional reactions to using cryptocurrency as a payment method, although none were opposed to the idea but rather were unsure while others were willing to accept it as a payment method. Lastly, the main challenges have been repeated throughout respondents' responses which include issues like volatility in the market, lack of payment methods available, and conversion and transaction fees are either significantly inconvenient or fees varied too much based on the application you use.

The discussion emphasizes a few key factors when answering the research question of challenges related to cryptocurrency as a method of payment. The majority of the respondents had different experiences with cryptocurrency which were not interlinked, some respondents

consider cryptocurrency already a daily part of their transactional activities while some purely used it as an investment. Therefore providing insight into different areas within cryptocurrency and transactions. The biggest difficulty for the respondents was related to conversion fees from cryptocurrency to their chosen home country currencies (USD, Euros, SEK, etc). When asked how the future of cryptocurrency should go respondents seem to agree that they would like cryptocurrency payment to act and be used just like how traditional credit/debit card works but in some other form such as QR codes for the sake of convenience. The most reoccurring obstacle for users was the volatility issued involved with the crypto market, the huge swings in price make cryptocurrency unstable to be considered as a form of payment and unreliable for users. Additionally, users' felt more comfortable in using cryptocurrency as an investment but not as a payment method due to the price fluctuations, it poses the barrier of being unsure whether they can buy a banana as prices can swing as high as 1,000% in a day.

To answer the research question: "What are perceived challenges for crypto users to normalize crypto as a choice of payment?" The foremost challenge users perceived while adopting crypto payment originated their struggles with tax declaration and the lack of acceptance from business institutions. These struggles result in the non-confidence in the normalization of crypto payment, which is the second challenge preventing crypto users from approaching crypto payment.

Overall, the thesis' results offer in-depth and direct insight from user perspectives on the topic of crypto adoption. It contributes to the literature on public opinion of cryptocurrency and crypto payments, which could serve as the foundation for understanding the crypto market itself. The thesis also supports product-service providers who are associated with cryptocurrency as a means of payment as well as regulatory institutions paying attention to cryptocurrency and its implementation. On one hand, business owners and service-product providers can grasp a more precise picture of their potential users by acknowledging the genuine struggles crypto users face. The perceived challenges from user perspectives enable those who adopt crypto payment to improve their current defects and develop future payment features. Getting a better understanding of user perspectives helps crypto payment providers support thoroughly in order to enhance users' confidence to normalize crypto payment in daily life. Crypto as an alternative payment might be beneficial in attracting a new group of customers for products and services. On the other hand, for authorities, the finding of non-constructive guidance or a regulatory body for taxation on cryptocurrency indicates a necessity for

government support to better clarify and streamline regulations to protect both users and product-service providers in terms of crypto payment.

Last but not least, a limitation of this thesis was the size of its interview sample. The authors decided to choose depth over width and acknowledged that the sample was not representative of the population of all crypto users. Future researchers can conduct research with wide-scale surveys in a specific country or setting to represent the larger population. Another disadvantage of this thesis was the authors' lack of experience in cryptocurrency which precludes the authors from commenting on whether respondents had an accurate understanding of cryptocurrency, or whether they truly understood cryptocurrencies. This latter point can be a noteworthy topic for further research. Future works derived from the second limitation suggest whether or not a higher-level understanding of cryptocurrency influences the confidence level of crypto users to choose crypto as a payment method. The same limitation of inexperience nevertheless allowed the authors to report the respondents' answers without much a priori biases.

Beyond this thesis, a potential consideration could be whether the varied legalization of cryptocurrency in different countries would impact our findings about user experiences of crypto payment. Since the thesis' respondents formed their expectations of crypto payment interfaces based on the model of mobile payment, another pathway of future research could be about the correlation between mobile payment and crypto payment. Is cryptocurrency the new digitalized form of payment in the future? Will the process in which users transitioned from physical payment to digitalized payments be the same for cryptocurrency? These are important questions to address so that developers or product-service providers could grow faster in the field of cryptocurrency and blockchain technology.

APPENDIX 1: Interview questionnaire

Warm-up

- Tell us about yourself
- What do you do? What do you want to be in future?
- Is money important to you?

Participants' background

- Explain briefly what is cryptocurrency? (As simple as possible, imagine that you are introducing crypto to a beginner)
- Are you curious or interested in crypto?
- How long have you used crypto?
- What was your foremost (initial) intention when you approached crypto?
- How do you describe yourself when approaching cryptocurrencies? Are you an active or passive user?
- What is your motivation to keep using crypto?

Current experience with cryptocurrencies (user perception)

- Do you know any current technology trends that relate to crypto at the moment?
- Do you know any part about the regulation relating to cryptocurrencies? Are there any changes in the market happening currently?
- Which crypto platforms do you use the most?
- What do you use crypto for now? How often do you use crypto as a payment method? Explain the circumstance.

Crypto payment pros and cons

- Specific for you, in what way would crypto be beneficial/not beneficial?
- What do you think are the pros of using crypto as payment?
- What are the cons of using crypto as payment?
- Are there any challenges you face when using crypto as payment?

- If crypto is normalized in everyday life, which aspects would impact you most? and Why?

Recommendations as a user

- How would you like crypto to be used in the future?
- Should crypto be used as a payment in the market?
- What do you think would change in a business, such as retailers if it adopts crypto as daily payment?
- Are there any potential services that can use crypto as payment?
- If there is a company carrying out crypto payment as a mobile payment similar to Apple pay, Samsung pay, Paypal, Xoom, etc, is there something you want them to pay attention to? which requirement would you find important to include?

APPENDIX 2: Respondent overview

Table 6. Respondent background

No.	Occupation	Country	Duration in crypto space	Interview	
				Type	Length (mins)
1	Consultant majoring in digital assets industry; Private investor, educator, public speaker, and user in Cryptocurrencies	Estonia	6	1-on-1	70
2	Blockchain data scientist; Tech entrepreneur	Germany	5	1-on-1	65
3	Tech entrepreneur; Game data analyst; Cryptoeconomist	Sweden	5	1-on-1	85
4	Entrepreneur in e-learning; Crypto investor	Sweden	6	1-on-1	67
5	Customer support specialist; Crypto investor	Germany	2	1-on-1	58
6	Coach of the first cryptocurrency e-learning course in Scandinavia; Book writer in startups, trading, and blockchain technology	Sweden	7	1-on-1	68
7	Warehouse worker; Crypto investor	Sweden	3	1-on-1	55
8	Teaching assistant for an undergraduate course; Crypto investor	USA	2	1-on-1	40
9	Security guard for Yale's Rare Book Library, Crypto investor	USA	7	1-on-1	50
10	Manager of Tech company	UK	8	Joint	50

No.	Occupation	Country	Duration in crypto space	Interview	
				Type	Length (mins)
11	University graduate; Crypto investor/miner	UK	2	Joint	50
12	University Student; Crypto investor	Sweden	1	1-on-1	35
13	University Student, Real estate development	Germany	1	1-on-1	30

APPENDIX 3: Adapted SOR model

Table 7. Adapted SOR model

<table>
<tr><th>STIMULUS (S)</th><th>ORGANISM (O)</th><th>RESPONSE (R)</th></tr>
<tr><td></td><td>Emotional reactions</td><td></td></tr>
<tr><td>ENVIRONMENTAL FACTORS</td><td rowspan="4">Expectations regarding the large-scale normalization of crypto payment
Expectations towards potential changes in the features of the existing crypto payment</td><td rowspan="4">Struggles
Tax declaration
Lack of acceptance
Matter of time
Confidence
Confidence/approach: support crypto payment
No confidence/avoidance: refuse crypto payment
Neutrality: “market decides itselft”</td></tr>
<tr><td>Basic Perception On Cryptocurrency
Money importance
Definition of crypto
Benefit gained from cryptocurrency</td></tr>
<tr><td>PERSONAL FACTORS</td></tr>
<tr><td>Explanation of crypto journey
User knowledge on regulations related to crypto
User perception on crypto payment</td></tr>
</table>

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