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Could Cryptocurrencies be an Extension of our Self?

A Study on Post-Purchase Behavior

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Dissertation presented as partial requirement for obtaining the master's degree in Information Management, Specialization in Marketing Intelligence

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**COULD CRYPTOCURRENCIES BE AN EXTENSION OF OUR SELF? – A STUDY ON POST-PURCHASE
BEHAVIOR**

by

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ABSTRACT

Cryptocurrencies have been a trending topic for a couple of years, and we either fear it or want to know more about it. A post on Bitcoin surfaces on social media every three seconds, 28,866 posted online daily (Finder, 2021). Bitcoin alone accounts for \$6 billion of daily online transactions, which is surpassed only by two of America's top payment networks – Visa Card and MasterCard (News Logical, 2021).

This study analyzes the post-purchase behavior focusing on Cryptocurrencies, the consumer perceptions and motivations that contribute to a purchase decision, analyzing to what extent does that impact the extension of the Self. The Extended Self, by Belk, is the main theory to support the study's literature review, as it defines the sum of our possessions, memories, experiences, people we know as an Extension of our Self.

This study compares the differences between Investors and Non-Investors and analyzes the point of view and consumer perceptions during all the purchase phases, focusing on the post-purchase behavior. One of the main findings of this study is that Cryptocurrencies can become an extension of the self, and the feelings that derive from a purchase can contribute to future purchases and self-extension.

KEYWORDS

Consumer Behavior, The Extended Self, Cryptocurrency, Fear of Missing Out, Post-Purchase Behavior

RESUMO

As Criptomoedas têm sido um tema de tendência nos últimos anos, o qual tememos ou queremos saber mais sobre ele. Um *post* sobre Bitcoin aparece nas redes sociais a cada três segundos, 28.866 postados online diariamente (Finder, 2021). Só a Bitcoin representa 6 mil milhões de dólares de transações em linha diárias, sendo apenas ultrapassada por duas das principais redes de pagamento dos EUA - Visa Card e MasterCard (News Logical, 2021).

Este estudo analisa o comportamento pós-compra com foco nas Criptomoedas, as percepções e motivações do consumidor que contribuem para uma decisão de compra, analisando até que ponto isso tem impacto no nosso *Extended Self*. O *Extended Self*, por Belk, é a principal teoria para apoiar a revisão bibliográfica do estudo, uma vez que define a soma dos nossos bens, memórias, experiências, pessoas que conhecemos como uma Extensão do nosso Eu.

Este estudo compara as diferenças entre Investidores e Não Investidores e analisa o ponto de vista e as percepções dos consumidores em todas as fases de compra, concentrando-se no comportamento pós-compra. Uma das principais conclusões deste estudo é que as Criptomoedas podem tornar-se uma Extensão no nosso Eu, e os sentimentos que derivam de uma compra podem contribuir para futuras compras e para essa mesma extensão.

KEYWORDS

Consumer Behavior, The Extended Self, Cryptocurrency, Fear of Missing Out, Post-Purchase Behavior

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LIST OF ABBREVIATIONS AND ACRONYMS

BTC	Bitcoin
GDP	Gross Domestic Product
FOMO	Fear of Missing Out
HODL	“Hold on for Dear Life” – Buying and holding into a Cryptocurrency even through market turbulences
WOM	Word-of-Mouth

1. INTRODUCTION

This study will focus on Cryptocurrency from a Consumer Behavior point of view, its relationship with The Extended Self approach (Belk, 1988), considering three different phases of a purchase – pre-purchase, the purchase itself and post-purchase. This chapter will include a background and problem definition, a presentation of the study objectives and how it will be organized.

1.1. BACKGROUND AND PROBLEM DEFINITION

The Extended Self, (Belk, 1988) defines our possessions as an extension of our Self, meaning that our Self is the sum of all that we can call ours (James, 1890). In 2013, Belk applies his previous proposal to the digital context we currently live in, which makes the possibilities for self-extension more substantial than ever. In a time where digital purchases and experiences are growing exponentially, it is important to define and analyze the motivations towards them, as well as their meaning, purpose, outcomes, and how they impact the extension of our Self.

According to Belk (2013), one of the concepts introduced by the Digital World in the Extended Self is Dematerialization (p.478). This concept will be of importance during this research, as Cryptocurrency is an entirely virtual, immaterial, and non-palpable asset.

Other important concept of the Extended Self in a Digital World is Sharing (p. 484). Although sharing has been around for as long as humankind (Belk, 2010), it is a significant part of the online experience, specially through social media. Belk questions if sharing possessions online enhances our individual and aggregate senses of self, which can relate to the extent to how sharing is a starting point for people to buy Cryptocurrency. Sharing is displayed in most news, updates, and considerations about the Cryptocurrency market. For example, just by sharing the word “Bitcoin” on his Twitter biography, Elon Musk contributed to a 20% growth in Bitcoin value (CNBC, 2021).

This concept can be related to FOMO – the Fear of Missing Out (Belk, 2013, p. 484). FOMO was defined by the JWT Intelligence Trend Report (2011, p. 4) as “the uneasy and sometimes all-consuming feeling that you’re missing out – that your peers are doing, in the know about, or in possession of more or something better than you”. According to Przybylsk et al., (2011), it is the fear that others might be having rewarding experiences that one might be absent from. With an increasing of sharing of experiences, thoughts, purchases and possessions, people can feel vulnerable, and start to compulsively check news feeds and posting in social media to appear active and interesting (Belk, 2013). This may also influence consumer behavior and decisions, the outcome feelings of these purchases and, consequently, the possibility of repeating a purchase based on the whole experience. FOMO has been associated with Cryptocurrency, as people may be afraid that they are not being part of the movement, or that they might be missing out on a critical increase in Cryptocurrency markets, which could turn into a profitable investment.

Cryptocurrency was first defined in 2008 by Satoshi Nakamoto – a blockchain developer under a pseudonymous – who posted a paper called “Bitcoin: A Peer-to-Peer Electronic Cash System”. The paper introduced Bitcoin as a decentralized and self-regulated monetary system (Nakamoto, 2008), based on Blockchain, a technology that validates transactions and adds them as blocks at the end of a chain of similar blocks (Von Russon, 2017). Blockchain-based Cryptocurrencies are growing fast in the last couple of years and according to the World Economic Forum, 10% of GDP will be stored in Blockchain by 2027 (World Economic Forum, 2015). The first Bitcoin (BTC) payment happened in 2010, when Laszlo Hanyecz paid 10,000 BTC for two pizzas (Bort, 2014). Those two pizzas would have a value of 637,295,000€ on April 13th, the day when BTC has reached its highest value (CNBC, 2021).

One of the biggest advantages – and disadvantages – of Cryptocurrency is its intense volatility. According to Pelegrín-Borondo et al. (2015), this volatility opens enormous psychological thresholds in prices, which intensifies the desire of some people to own and purchase Cryptocurrency and fear that they might be missing out on a great investment.

1.2. STUDY OBJECTIVES

The main goal of this study is to understand the expanding Cryptocurrency market, its post-purchase behavior and to what extent can it become part of our self, by analyzing the motivations towards a purchase, the purchase itself and its outcomes. To achieve this goal, some specific objectives must be accomplished:

- Analyze Cryptocurrencies from a Consumer Behavior point of view.
- Understand consumers' perceptions on the Cryptocurrency market, considering both experienced and unexperienced consumers.
- Understand and analyze which motivational factors can lead to a Cryptocurrency purchase, considering both experienced and unexperienced consumers.
- Understand how experienced investors feel about Cryptocurrency ownership.
- Analyze the post-purchase behavior, the main outcomes of a purchase and how do they impact future purchases.

1.3. STUDY ORGANIZATION

This study is organized in five different sections: Introduction, Literature Review, Methodology, Results and Discussion, and Conclusions.

The introduction gave a context on the background and the problem itself, as well as the study objectives.

Then, the literature review is focused on discussing the topics that compose the main theme, relating them with each other, and finding a research gap, to where the rest of the study will proceed.

On the methodology chapter, there is a description of the research design, as well as the phases of investigation, qualitative and quantitative data collection and an explanation on how the data will be analyzed. During the data analysis, the collected data will be scrutinized, to reach meaningful conclusions and insights for the study.

On the fourth chapter, I will present the results, the discussion, and findings regarding the previously analyzed data, as well as the hypothesis defined in the beginning of the study.

Finally, the last chapter will highlight the main conclusions and limitations of the study, and some suggestions for future research.

2. LITERATURE REVIEW

The goal of the following chapter is to review the literature, propose a theoretical model and define the hypothesis. In the first place, the different topics are approached and analyzed, according to the existing literature. Then, a conceptual model is proposed, relating the different topics to each other to answer to some research questions. Finally, based on the theoretical model and the research questions, the hypothesis that will be used throughout the study are defined.

2.1. THE EXTENDED SELF IN CONSUMER BEHAVIOR

“We cannot hope to understand consumer behavior without first gaining some understanding of the meanings that consumers attach to possessions. A key to understanding what possessions mean is recognizing that, knowingly or unknowingly, intentionally, or unintentionally, we regard our possessions as parts of ourselves.” (Belk, 1988, p.139).

The Extended Self was proposed by Russel Belk (1988) as an approach on the attachment we have to our possessions and purchases. Before that, William James had defined the conception of self as the sum of all that a person can call theirs: “not only his body and his psychic powers, but his clothes and his house, his wife and children, his ancestors and friends his reputation and works, his lands, and yacht and bank account” (James, 1890, p. 291). This suggests that the conception of self goes beyond the physical and tangible matters, it combines the sum of processes, ideas, persons, places and even memories associated with objects to which a person feels attached (Belk, 1988).

Later, Belk applied his previous approach to the digital context we currently live in. In 2013, in an article called Extended Self in a Digital World, Belk proposes the major changes that occurred in the notion of self-extension on the digital age, which are Dematerialization, Re-embodiment, Sharing, Co-

Construction of Self and Distributed Memory. Three of these topics will be more deeply analyzed, as they are directly related to the main theme of this study.

2.1.1. Dematerialization

Belk defined dematerialization as the transition of our physical possessions to invisible, non-tangible belongings. This includes all types of communications, information, audiovisual content, calculations, data, among others (Belk, 2013).

Belk states that the evolution of dematerialized possessions can raise a series of questions: whether consumers can become attached to these possessions as to material ones; whether consumers can gain status and self-extension from these virtual possessions; whether these possessions are really ours, as a physical one can be and whether the loss of a virtual possession can weaken the sense of self (Belk, 2013).

According to the existing literature, different views on this subject can be acknowledged. Denegri-Knott and Molesworth (2010) suggest that virtual goods are not as relevant and real as physical ones as they lack material substance. According to Slater (1997) and Lehdonvirta (2012), virtual goods are as relevant and real as material ones. Lehdonvirta states that there is no such thing as completely immaterial consumption, as virtual goods satisfy our needs just as material ones (2012). Lehdonvirta also proposes that whether our identities are expressed through material or virtual goods, the sense of self is an imaginary construct or hypothesis in constant reform (2012).

There is evidence that consumers become attached to virtual goods and fear and mourn their loss (Belk, 2013). Nowadays, considerable amounts of our goods are digital – data, information, money, pictures, videos, work, among others. This causes virtual goods to be some of the most valued commodities for cybercriminals (Lehdonvirta, 2012).

In terms of attachment, age can be a relevant factor. According to Cushing (2012), older generations are more likely to be attached to material possessions and regard them as part of their extended self, as they have been born and lived most of their lives in a pre-digital era, with more physical items than digital ones. Nonetheless, younger generations tend to have more attachment to digital goods.

Some authors state what virtual possessions still lack, when compared to material ones. According to Watkins and Molesworth (2012, p. 481) “digital virtual possessions appear to lack some of the characteristics that invite attachment to material possessions. (...) they are intangible, held only within software parameters, (...) easily reproduced (...)”. According to Belk (2013, p. 481), it is difficult to consider a virtual good as unique, nonfungible, and singular, and “while digital possessions can be objects of self-extension, they may not be as effective as material possessions”.

2.1.2. Sharing

“Sharing itself is not new and has arguably been around as long as humankind” (Belk, 2013, p. 484). Nonetheless, it is a significant part of the online experience, as digital devices and platforms help us share more and more broadly (Belk, 2013). According to Schwarz (2010), we have entered a new era of self-portraiture. Through social media and websites, we can express ourselves and share more than we ever had. This led to a higher self-reflection and a higher number of digital bits of the extended self to represent us (Cohen, 2005; Dean, 2010; Papacharissi, 2002; Schau and Gilly, 2003).

According to Belk, the lack of privacy in social media leads users to feel more vulnerable, check their feeds more often, post more frequently and appear active. This has led to social media addiction, as well as an increasing influence of social media on our lives and decisions. This can also lead to FOMO, the fear of missing out (Grohol 2011; Wortham 2011). Further ahead the topics of social media

influence on consumer behavior, FOMO, and the motivations towards a purchase will be addressed and reviewed.

According to Belk (2013), the possibility of self-extension turns into an aggregated sense of self, when it comes to Sharing. Belk states that, in a digital age, joint possessions enhance the sense of community and create an aggregated sense of self, thanks to sharing. Overall, sharing provides a new sense of self-extension, aggregated, and mutually constructed, through online communities and digital platforms.

2.1.3. Co-Construction of Self

Belk proposes that most of our digital actions have a social nature (Belk, 2013), including likes, comments, shares, and others, which take the sharing experience to a whole new level of self-construct. According to Turkle (2011), this is called collaborative self. Belk concludes that, in a digital world, the possibilities of extending the individual sense of self to an aggregated and co-constructed self are more relevant than ever, specially through social media. "All in all, the self is much more actively managed, jointly constructed, interactive, openly disinhibited, confessional, multiply manifest, and influenced by what we (...) do online" (Belk, 2013, p. 490).

2.2. CRYPTOCURRENCY AND CONSUMER BEHAVIOR

Blockchain technology and Cryptocurrencies are growing fast in the last couple of years and according to the World Economic Forum, 10% of GDP will be stored in Blockchain by 2027 (World Economic Forum, 2015). Currently, there are 15,5002 crypto coins on the market, available in 446 exchanges, with a market cap – the total market value of a cryptocurrency's circulating supply; analogous to the

free-float capitalization in the stock market – of \$2,258,407,189,131 (Coin Market Cap, 2021). Bitcoin alone has a market cap of \$929,086,074,296 (data from December 12th, 2021, at 12h20, Lisbon Time).

Since the launch of cryptocurrencies, there has been an adaptation processes from businesses, economies, countries, and consumers, to integrate this recent financial technology into their activities (Arias-Oliva et al., 2019). Nonetheless, the literature on cryptocurrencies is still limited and scarcely explored. Although the exponential growth in the cryptocurrency market in 2017 and 2018 has brought this topic to be covered more than ever through traditional and social media and literature as well, cryptocurrency relevance is still not reflected in social sciences research (Baur et al., 2015).

According to Holub and Johnson (2018), research from 2011 to 2016 mostly focus on the technological aspects of cryptocurrency – development, security, privacy, mining pool behavior and some use cases. Baur et al. (2015), expand the existing research into four streams: Technical, Economic, Regulatory and Social Sciences – which is the least developed stream (Steinmetz et al., 2021). Regarding the relationship between cryptocurrencies and consumer behavior, Faqih (2016) determines perceived risk as consumers' perception of the uncertainty and possible undesirable consequences of a purchase (Arias-Oliva et al., 2019). According to Salisbury et al. (2001), Kannungo and Jain (2004) and Featherman & Pavlou (2003), perceived risk influences purchase intention and can predict the adoption of technology. Perceived usefulness is the most influential factor in the intention to use cryptocurrencies for electronic payments, according to Mendonza-Tello et al. (2018). According to Schaupp and Festa (2018), social influence and perceived behavioral control – how easy it is to use cryptocurrencies – are also significant factors regarding cryptocurrency use and how likely consumers are to use them. (Arias-Oliva et al., 2019). The cryptocurrency motivations and purchase intentions will be scrutinized further ahead.

Cryptocurrencies serve as stores of value, mediums of exchange and, in some cases, have security characteristics (Steinmetz et al., 2021). Cryptocurrency can be used to buy services in goods in the real world (Dostov & Shust, 2014; Guadamuz & Marsden, 2015) as more and more companies have been

accepting cryptocurrencies as a payment method. Through the creation of blockchain technologies and cryptocurrencies, a new financial system was established, allowing decentralized, cheap, and easy transactions, without the need of a third party (Bação et al., 2018; Chapron, 2017; Kfir, 2020; Kolber, 2018; Sudzina, 2018).

Other example of cryptocurrency use is interest and profit earning through trading and yield-farming (Brave New Coin, 2021), which “involves lending or staking cryptocurrency in exchange for interest and other rewards, measure the returns in terms of annual percentage yields (APY). While potentially profitable, yield farming is also incredibly risky.” (Business Insider, 2021).

There are several pros and cons in cryptocurrency adoption. According to Deloitte (2015), cryptocurrencies can solve some of the issues of the current payment system – slow, insecure, inefficient, uncollaborative and non-global, as stated by the Federal Reserve System (2017). In terms of privacy, although all information on cryptocurrency transactions is shared in the network, it allows the disclosure of information about its users, their personal data, and their wallets. There is no inflation, as there is a limited maximum of coins – 21 million in the case of Bitcoin. As it is a peer-to-peer and decentralized network, neither bank nor governments can charge fees or control the exchange of information between users. Cryptocurrencies allow an anonymous yet fully transparent experience, with safety, speed of transaction and possibilities of growth.

In terms of cons, its considerable volatility opens psychological thresholds in prices according to Pelegrín-Borondo et al. (2015). According to Meng and Fu (2020), prices for single coins can increase over 100% percent in a matter of hours and then drop back down again soon after. Illegal activities are a fact, such as tax evasion, money laundering, contraband transactions, extortion, and theft (Bloomberg, 2017). Although cryptocurrency wallets are easy to use, the technology itself is a challenge for many users (Krombholz et al., 2017). Besides the lack of technological know-how, low levels of financial literacy can impact the development and adoption of cryptocurrencies by users. The risk associated with cryptocurrency volatility leads to social perceptions that impact investments.

According to an ING study, 29% of Europeans would never invest in cryptocurrencies, given its risk (Exton and Doidge, 2018).

According to the existing literature and besides Arias-Oliva's et al. (2019) study, there are not many approaches and studies regarding cryptocurrencies and consumer behavior. This study will focus on this research gap, analyzing each phase of a purchase, from its motivations and purchase intentions to cryptocurrency ownership, to the outcomes and consequences of a purchase.

2.3. PRE-PURCHASE BEHAVIOR

The first phase of the purchasing experience happens with the decision-making process that leads to a purchase. According to Babin et al. (1994) and Holbrook (1999), there are three main types of influences regarding consumer behavior: Internal influences – motivations, perceptions, learning, personality, and attitudes; Social influences – social identities, reference groups and opinion leaders; and Cultural influences – cultures, subcultures, and social classes.

In addition to the three types of consumer behavior influences, Babin et al. (1994) proposes a consumer value framework divided into utilitarian values – values that provide a clear rational explanation to purchase and help a consumer accomplish some task – and hedonic values – values that incorporate immediate gratification, are subjective and emotional in nature and are an end itself, instead of a means to an end.

The pre-purchase phase and the decision-making process includes a need awareness, information search, evaluating alternatives and, finally, the purchase decision. The purchase decision refers to the final choice made on which product to buy (Kotler and Armstrong, 2014). The amount and variety of information online has helped consumers in their purchase decisions (Aksoy and Cooil, 2006), and has brought attention to a new, fully virtual, and exponentially growing market – Cryptocurrencies. This

market has taken advantage of social media, sharing and online communities to increase its popularity among investors and consumers, as a considerable amount of the information we find on Cryptocurrencies are online. The internet has helped the expansion of cryptocurrencies regarding its information search stage (Karimi, 2013), and some purchasing factors such as perceived risk, trust, and knowledge.

Social media has influenced consumer behavior, not just from the decision process point of view, but also from a participatory culture point of view, where users network with each other, exchange ideas, preferences and reviews and influence each other (Ashman et al., 2015). According to Voramontri and Klieb (2019), social media is perceived as more trustworthy as a source of information, when compared to corporate advertisements.

2.3.1. Consumer Perceptions

According to Holub and Johnson (2018), research from 2011 to 2016 mostly focus on the technological aspects of cryptocurrency – development, security, privacy, mining pool behavior and some use cases. Baur et al. (2015), expand the existing research into four streams: Technical, Economic, Regulatory and Social Sciences – which is the least developed stream (Steinmetz et al., 2021). Regarding the relationship between cryptocurrencies and consumer behavior, Faqih (2016) determines perceived risk as consumers' perception of the uncertainty and possible undesirable consequences of a purchase (Arias-Oliva et al., 2019). According to Salisbury et al. (2001), Kannungo and Jain (2004) and Featherman & Pavlou (2003), perceived risk influences purchase intention and can predict the adoption of technology. Perceived usefulness is the most influential factor in the intention to use cryptocurrencies for electronic payments, according to Mendonza-Tello et al. (2018). According to Schaupp and Festa (2018), social influence and perceived behavioral control – how easy it is to use cryptocurrencies – are also significant factors regarding cryptocurrency use and how likely consumers

are to use them. (Arias-Oliva et al., 2019). Perceived trust towards cryptocurrency is also an influence on the purchase decision. According to (Steinmetz et al., 2021, p. 5), “it can either relate to the asset’s technological robustness against manipulation, reflect the investor’s ideological mindset, or relate to the asset’s price stability or the capabilities of the project that issued the cryptocurrency”. According to Bearingpoint (2018), the trustworthiness of cryptocurrencies reflects in terms of price stability. When compared to other assets, cryptocurrencies are less trustworthy considering their price stability, according to Bearingpoint’s study (2018). Krombholz et al. (2017) concludes that despite cryptocurrencies increasing popularity, the risk of error is still perceived as a threat. This includes security breaches, personal failures, value fluctuation, wallet vulnerabilities and theft through malware. On the other hand, a study in South Africa by Mahomed (2018) concludes that trust promotes consumer’s intention to use and invest in cryptocurrencies as it positively influences consumer’s estimations on the benefits that cryptocurrencies can bring.

2.3.2. Motivations

Consumer motivations are the inner reasons and drives behind actions that take consumers to address their needs. Besides the advantages of cryptocurrencies that have been addressed before, there are other intrinsic motivations that drive consumers to purchase and invest.

According to the consumer behavior model discussed before, by Babin et al. (1994), Cryptocurrency might have both hedonic and utilitarian values. Babin classifies utilitarian motivation as a drive to acquire products to accomplish thing and maintain homeostasis, and hedonic motivation as a drive to experience something gratifying and emotionally satisfying. Later, in the theoretical model, this hypothesis will be analyzed and tested, to understand if Cryptocurrencies have a predominantly utilitarian or hedonic value.

2.3.2.1. Fear of Missing Out

The fear of Missing Out (FOMO) is starting to diffuse through our social relationships, and acts as an inner motivation to purchase, allied with the external factors that influence a consumer. In an expanding digital world, social media takes a relevant part in influencing consumers in their behaviors, so we cannot be alone anymore. According to Grohol (2011), even when we decide to disconnect, “we still connect just once more, just to make sure”.

FOMO is one of the strongest psychological factors to influence cryptocurrency adoption and use., according to Delfabbro, L. King and Williams (2021). Acting as a motivation to purchase and invest, FOMO drives consumers to feel pressure and possibly regret when confronted with hundreds of coins, that might gain value rapidly, in which they have not invested. That means that consumer might feel that they are missing out on a great opportunity of investment, which also applies to selling decisions. (Delfabbro, L. King and Williams, 2021). FOMO in cryptocurrency trading happens thanks to its strong presence in social networks, both to inexperienced traders and experience investors.

2.3.2.2. Social Influence

Cryptocurrency consumer behavior has a relevant component of social influence. Social influence aims to understand to which extent consumer behaviors are influenced through social relationships and reference groups. Once again, social media has a great impact in interpersonal relationships, as reference groups can easily share opinions, ideas, products, and insights with each other, creating influence.

According to Oyserman (2007 – 2019), identities are constructed in contexts, people engage in identity-congruent actions and identities change the interpretation of difficulty. As we have seen

before, and according to Belk (2013), a new sense of co-constructed, aggregated self is being created thanks to digital platforms. Thanks to sharing and social influence, the possibilities for self-extension and diffusion on Cryptocurrencies are more relevant than ever.

Thanks to social media, the phenomenon of Word-of-Mouth (WOM) – which used to be used in small circles in the offline world – is today an important tool for sharing products, experiences, and reviews within online communities (Chen, 2017). According to Allard, Dunn & White (2020), WOM is now responsible for an evident influence on consumer preferences and decisions, as it is perceived as more credible, authentic, relevant, and unbiased than other types of communications. The cryptocurrency market has benefited from the WOM phenomenon, as a great part of the communication made on this topic happens in online circles and communities.

2.3.3. Ownership

According to *The Chainalysis 2020 Geography of Cryptocurrency Report* (2021), there are over 300 million cryptocurrency users worldwide. The same report presents the top 5 countries with the highest number of cryptocurrency owners: India (around 100 million owners), the USA (around 27,5 million owners), Russia (around 17 million owners), Nigeria (around 13 million owners) and Brazil (around 10 million owners).

The cryptocurrency market includes novice investors, intermediate ones, and experience traders. An article by CNBC (2021) classifies the different investor categories, based on their investing and behavioral profiles:

- **Crypto-Curious Beginners:** Novice investors interested in the cryptocurrency market, probably because of a period of good performance. These investors are aware of the high volatility, are prone to make purchase decisions based on emotions rather than on solid factors and are

usually unaware of the downsides and associated risks of cryptocurrency. Beginners are more vulnerable to misinformation, so it is crucial to invest in education and learning before a purchase decision

- **Crypto HODLers – Long term asset holders:** Investors with some experience in the cryptocurrency market who are known for holding on to their cryptocurrency assets even through market turbulences. These investors are fully aware of the volatility and that the market works in cycles. They believe they will be rewarded in the long term when the value of their assets becomes higher, so they wait for the market highs to liquidate and make profits. However, they are not able to trade as effectively as more experienced investors and still lack the necessary knowledge to make profit on a consistent basis.
- **Crypto Veterans (Traders):** Investors who have been through many highs and lows on the cryptocurrency market, so they know precisely what the market has in store. These investors can identify the right moments to make buy/sell decisions, transact in large volumes, and can also be educators and advisors for the two previous categories, thanks to their vast experience. They can generate sizeable returns in the long term, are updates do maximize their chances of profit and know when to enter or exit their investment. These investors are used to high risk and high return transactions and are comfortable during market downturns.

2.4. POST-PURCHASE BEHAVIOR

The post-purchase phase is the stage when consumers evaluate the product's performance based on their expectations, reaching a state of satisfaction or dissatisfaction (Voramontri and Klieb, 2019). According to Oliver (1977), the expectation confirmation theory explains post-purchase satisfaction as

a sum of expectations, perceived performance, and confirmation of beliefs. The outcomes of a purchase are compared with the expectations and can take one of three forms (Oliver, 1977):

- Positive disconfirmation or satisfaction – performance is better than expected
- Simple confirmation or neutral response – performance equals expectations
- Negative disconfirmation or dissatisfaction – performance is worse than expected.

Consumer satisfaction is a result of experiences during all stages of a purchase, as the outcome in one stage influences the other ones (Karimi, 2013), so it is crucial to analyze each part of the purchase process.

One of the relevant factors during the purchase process, and especially during the post-purchase stage are consumer emotions, as they are closely linked to behaviors. According to Smith and Kirby (2001), the cognitive appraisal theory describes how specific types of thoughts can serve as a basis for specific emotions. There are four relevant types for consumer behavior:

- Anticipation appraisal – focuses on the future and include anticipatory emotions like anxiety or hopefulness
- Agency appraisal – focuses on consequential emotions like frustration, guilt, sadness, or gratefulness
- Equity appraisal – regards how fair some events are and cause emotions like anger or warmth
- Outcomes appraisal – considers how relevant something turned out to be and can cause emotions like satisfaction, sadness, pride, or joyfulness

A common agency appraisal emotion regarding cryptocurrency is regret. According to Miller and Taylor (1995) and Schwartz et al. (2002), many decisions are based on the desire to minimize anticipated

regret. According to the literature, acts of commission – doing something – usually led to stronger feelings of regret than acts of omission – not doing something. According to Delfabbro, L. King and Williams (2021) and regarding cryptocurrency, an act of commission involving regret include situations where a coin is sold only for it to rapidly increase in value. An act of omission involving regret included situations where someone misses out on a great investment because they decided not to invest at a certain time. Both acts are likely to cause regret in purchasing cryptocurrency and serve as influences in purchase decision, although investors can observe the effects of their decisions over long periods of time (Delfabbro, L. King and Williams, 2021).

A consumer who invests time, effort and money into a purchase reflects on whether they made a right decision or not (Kotler and Armstrong, 2014). As cryptocurrency investments take a considerable time to learn and get educated, effort and, of course, money, this cognitive dissonance is very common in the post-cryptocurrency-purchase behavior experience. Although there is not a lot of research yet on the post-purchase behavior on a cryptocurrency environment, this is a research gap that could bring more knowledge to both experienced and unexperienced investors, as well as to people who never had a contact with this market.

2.5. RESEARCH QUESTIONS AND THEORETICAL MODEL

The following section presents the research questions for this study, as well as the theoretical model that will be developed to provide the answers to those questions.

RQ1: Does cryptocurrency have hedonic, utilitarian value, or both?

To understand the motivations that drive consumers to purchase and invest, it is useful to understand if cryptocurrencies lean towards a more hedonic or utilitarian value, and which one of these has a bigger influence in self extension. To answer this question, there must be a focus in the Babin et al. (1994) approach, as well as the motivations that contribute to consumer decisions. In this topic, there will be an analysis of the effects of social media, online communities, the phenomenon of word-of-mouth and the fear of missing out and how these factor impact cryptocurrency consumer decisions.

RQ2: How effective is the post-purchase behavior in influencing future purchases?

As seen before, the post-purchase behavior influences future purchases. According to Voramontri and Klieb (2019), the post-purchase stage is when consumer evaluate their purchase based on the expectations they had established, reaching satisfaction or dissatisfaction. These feelings can influence future purchase decisions, so it is important to analyze the outcomes of each purchase stage as they influence other ones (Karimi, 2013).

According to Smith and Kirby's (2001) cognitive appraisal theory, there are four types of thought that can serve as a basis for specific emotions. A common emotion regarding Cryptocurrency post-purchase behavior is regret – an agency appraisal. According to Miller and Taylor (1995) and Schwartz et al. (2002), many decisions are based on the desire to minimize anticipated regret, which means that a Cryptocurrency purchase decision might be influenced by a fear of feeling regret afterwards. In this study, other types of emotions will be analyzed as influences for future purchases.

To answer this question, the post-purchase behavior should be analyzed as a motivational factor, building a cycle of pre-purchase, purchase, post-purchase, and pre-purchase once again. As we have seen before and will discuss further, this cycle might be evident in cryptocurrency transactions.

RQ3: Could cryptocurrencies become an extension of our self?

According to Belk (2013), the digital world makes the possibilities for self-extension more relevant than ever. On his study, he highlights the changes that occurred in the digital world concerning the extended self. Three of those can be directly related to Cryptocurrency:

- Dematerialization, as it is a virtual and non-tangible asset. There are some studies that defend those virtual goods are not as real and relevant to self-extension as physical ones (Denegri-Knott and Molesworth, 2010), and others that defend them as equally real and relevant to self-extension, as they satisfy our needs just as material ones (Slater, 1997; Lehdonvirta, 2012).
- Sharing, as it is a major influence in Cryptocurrency knowledge and information diffusion. As mentioned before, social media has also brought the possibilities for self-extension to a different level, which has led us to a greater self-reflection and more digital bits of the extended self to represent us (Cohen 2005; Dean 2010; Papacharissi 2002; Schau and Gilly 2003). The phenomenon of WOM (Word-of-Mouth) through social media, has made sharing information and product reviews easier than ever and this information is perceived as more credible, relevant, and unbiased (Chen, 2017; Allard, Dunn & White, 2020). Sharing has created an aggregated sense of self (Belk, 2013), which is useful for online communities and diffusing information on Cryptocurrency.
- Finally, Co-Construction of Self, related to the topic above. Turkle (2011) proposes the concept of collaborative self, thanks to the exponential growth of digital actions with a social nature, which takes the sharing experience to a new level of self-construct. This is useful for Cryptocurrencies, for the same reasons stated in the topic above.

Although there is not any direct literature relating Cryptocurrencies and the Extended Self, this relationship can be approached through analyzing Cryptocurrency from a consumer behavior point of view, establishing the factors that lead consumers to buy it, while focusing on the outcomes of the purchase. When analyzing the different stages of the purchase, especially the post-purchase behavior, we can see a clearer relationship between Cryptocurrencies and to what extent can they become an extension of our self.

These research questions are incorporated in the following theoretical model, organized in three major purchase stages:

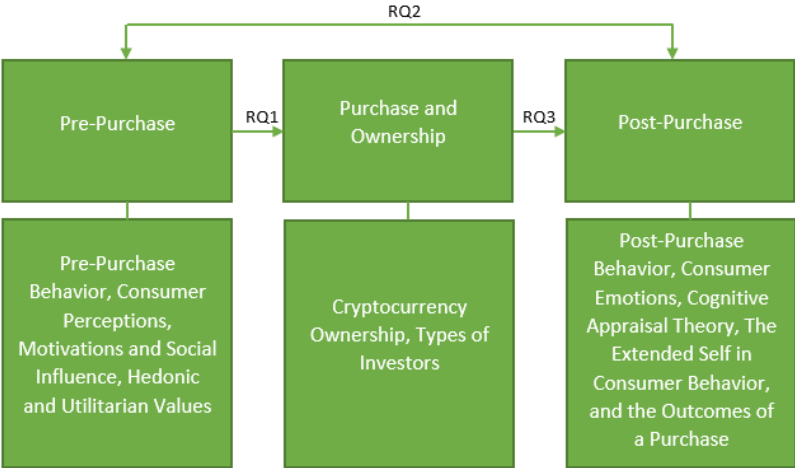


Figure 1: Research Design

2.6. HYPOTHESES

Derived from the literature review and the research questions, some hypotheses were formulated to be measured and tested within two different studies: the qualitative research, through the in-depth interview (Study 1) and the quantitative research, through the survey (Study 2).

H1: Cryptocurrencies have an exclusively utilitarian value.

This hypothesis will follow the Babin et al. (1994) consumer value framework and aims to understand if Cryptocurrencies have an exclusively utilitarian value (providing a clear rational explanation to purchase and help a consumer accomplish some task), or if they also deliver a hedonic value – being subjective and emotional in nature and incorporating immediate gratification.

H2: Cryptocurrency as a possession is as relevant to self-extension as a tangible similar asset.

To test this hypothesis, it is relevant to look to the existing literature, where it is discussed whether a virtual good is as relevant to the extended self as a tangible one (Belk, 2013).

H3: The online experience positively impacts consumer purchase decisions and awareness on Cryptocurrencies.

As seen before, there is not much literature on Cryptocurrencies and consumer behavior yet, so a lot of information on the topic comes from the internet and online communities. This hypothesis aims to understand if the online context impacts purchase decisions and awareness in a positive way.

H4: Perceived trust is more relevant than perceived usability in purchase decisions.

Consumer perceptions towards Cryptocurrency influence their purchase decisions to different extents. As seen in the literature review, factors like perceived risk, perceived trust or perceived usability are decisional factors in the pre-purchase stage and in the purchase decisions itself.

H5: FOMO works as a motivational factor in Cryptocurrency purchase decisions for both experienced and unexperienced investors.

As seen before, the phenomenon of FOMO affects purchase decisions as investors fear that they might be missing out on an important event in Cryptocurrency markets. It can also lead a person who has never invested before to make a purchase decision since they are missing out on a topic that is increasing in popularity online.

H6: The post-purchase phase and the outcomes of a Cryptocurrency purchase are characterized by positive disconfirmation.

According to Oliver (1977), the expectation confirmation theory explains post-purchase satisfaction as a sum of expectations, perceived performance, and confirmation of beliefs. The outcomes of a purchase are compared with the expectations and can take one of three forms: Positive disconfirmation (performance is better than expected), Simple confirmation (performance equals expectations) and Negative disconfirmation (performance is worse than expected).

H7: The feeling of regret regarding Cryptocurrencies is stronger in acts of commission – doing something – than acts of omission – not doing something.

According to the literature, acts of commission – doing something – usually led to stronger feelings of regret than acts of omission – not doing something. According to Delfabbro, L. King and Williams (2021) and regarding cryptocurrency, an act of commission involving regret include situations where a coin is sold only for it to rapidly increase in value. An act of omission involving regret included situations where someone misses out on a great investment because they decided not to invest at a certain time.

H8: The post-purchase feelings contribute positively to self-extension.

As there is not any direct literature that relates the Extended Self and Cryptocurrencies post-purchase behavior, both Study 1 and Study 2 will serve as a test to this hypothesis.

3. METHODOLOGY

The following chapter presents the methodology used to reach the main goals of the study, including the research design, the variables used to answer to the research question and the respective measurement, the data collection and, finally, the data analysis. There is a dual approach, with two different studies, to achieve more complete and diversified data.

3.1. STUDY 1 – QUALITATIVE RESEARCH

3.1.1. Research Design

The qualitative research includes an in-depth interview with a relatively experienced Cryptocurrency investor. This interview analyzes the topics approached in the literature review, through the three purchase stages. The interview is composed by 11 open-answer questions, focused on the various stages of a cryptocurrency purchase. The goal of the interview was to understand cryptocurrency from a consumer behavior point of view, analyzing the post-purchase behavior and how it can impact future purchases. The interview was performed in Portuguese but transcribed and translated to English and the full text is available in the Annexes section.

In all sections there was a short explanation on the theme, based on this study's literature review. The first section introduced the concepts of hedonic and utilitarian value, and its goal was to understand if Cryptocurrencies are considered as hedonic, utilitarian or both. The second section introduced the concept of the Extended Self to understand to which extent can Cryptocurrency be a part of the self, and if there is any difference between Cryptocurrencies and tangible assets. The third section focused on the pre-purchase behavior and the goal was to understand the motivations towards a purchase decision, the consumer perceptions on Cryptocurrency, as well as social media, the online experience,

information, and awareness as influential factors. The fourth section focuses on the post-purchase behavior. The goal is to understand how the outcomes of a Cryptocurrency purchase relate to the expectations established, as well as the outcome feelings and emotions and how they influence future purchases. Finally, the last question tries to understand how effective these outcome feelings are in

Most of the data analysis will be done within the quantitative research, as the qualitative research is more subjective and leads to a more detailed and personal point of view. Both qualitative and quantitative research will be analyzed and compared in the results and discussion further ahead. By using both approaches, it is possible to reach more diversified results, having specific information with a relatively experienced investor, as well as information from a larger number of people who are not necessarily experienced.

1. Which values do you attribute to owning and purchasing Cryptocurrencies? Do you feel like they have a **utilitarian value** – values that provide a clear rational explanation to purchase and help a consumer accomplish some task – a **hedonic values** – values that incorporate immediate gratification, are subjective and emotional in nature and are an end itself, instead of a means to an end, or **both**? Please elaborate and list which utilitarian and hedonic characteristics do you attribute to Cryptocurrencies.
2. Do you feel like your everyday purchases and possessions are an extension of yourself? (Meaning that your self is the sum of all experiences, memories, possessions, ideas, persons, that you feel attached to).
3. Following the previous question, do you feel like Cryptocurrencies are an extension of yourself? Considering Cryptocurrencies as a digital asset/possession, do you feel like they are more, less, or as relevant as a tangible similar one)?
4. Do you consider that the online experience and online sharing has influence on your Cryptocurrency decisions? Explain how.

5. How important do you consider the phase of awareness/information search/education before making a purchase decision? Do you feel like the amount and quality of the awareness/information on Cryptocurrencies is important?
6. What were the first and most relevant perceptions you had before purchasing/investing? (Risk, usability, behavioral control – how easy is it to use, trust, etc.). Which of these has impacted your purchase decisions the most?
7. Which are the main reasons why you purchase/invest in Cryptocurrencies? What motivates you to do so?
8. Do you think FOMO has a positive or negative impact in both experienced and unexperienced investors? Do you see it as a motivation that comes from external or internal factors?
9. How do you describe your post-purchase behavior? What are usually your outcomes compared to the expectations you had established before?
 - **Positive disconfirmation or satisfaction** – performance is better than expected
 - **Simple confirmation or neutral response** – performance equals expectations
 - **Negative disconfirmation or dissatisfaction** – performance is worse than expected.
10. What are the top 5 feelings/emotions you associate with the post-purchase behavior? (Anxiety, regret, hopefulness, frustration, guilt, sadness, gratefulness, anger, enthusiasm, satisfaction, sadness, pride, joyfulness, etc.). Please elaborate on each feeling/emotion and how effective do you consider them in influencing future purchases/investments?
11. How effective do you consider the previous question in contributing to your self-extension?

3.1.2. Data Collection

The data collection was entirely made through an in-depth interview. The interviewee is an experienced investor, who is in the cryptocurrency market for more than two years. The investor has gotten educated and was aware of how the market works before starting to invest, so the experience has taught them to get through market downturns. They have experience with many different coins, and currently owns Bitcoin, Ethereum, Cardano, Solana, XRP, Chainlink, Uniswap and Polkadot. Although they are not an investor for many years, their experience could classify them in-between a long-term asset holder and a Trader – in terms of investor profile.

3.1.3. Data Analysis

The data analysis for the qualitative research was based in interpretation of the answers in the in the interview. As qualitative research has a subjective character and is not a technical exercise as in quantitative methods (Wong, 2008), the data cannot be analyzed through statistic models, but instead have a more dynamic, intuitive, and creative process of reasoning, thinking, and theorizing (Basit, 2003).

The data analysis for this part of the study will be focused on the exploration of values, meanings, beliefs, experiences, and feelings that could be extracted in the in-depth interview, giving it a subjective and personal perspective. By reducing the target to a single interviewee, it is easier to analyze the raw information, identifying significant patterns and find meaning in the data. The questions and answers are categorized into different sections of analysis, defined by the main themes in the Theoretical Model and Literature Review.

3.2. STUDY 2 – QUANTITATIVE RESEARCH

3.2.1. Research Design

The quantitative research was based on a survey, to target a broader audience, that may or not be familiar with the Cryptocurrency market. This complements the qualitative research as using just one approach could not be enough to understand the different consumer behaviors and perceptions in different types of consumers, and will focus on how consumers perceive Cryptocurrencies in terms of a possession and as a hedonic/utilitarian value, whether they are interested or not in investing, whether the possible consumer emotions that derive from a purchase can influence their future purchases, and to which extent can Cryptocurrencies become a part of their self.

The survey was built and published in Qualtrics and is composed by 3 blocks: the first one included a consent agreement; the second one included all the 13 survey questions; the third included 6 demographic questions. The second block divided participants into two groups – investors and non-investors – which led to specific questions directed to each of the groups. It also included common questions for both types of investors. The measure questions are 5-point Likert Scales, further detailed in the table below:

Block	Question	Goal	Directed to	Scale
1	Consent form	Present research and survey goals, duration, data policies and ask for consent	All	N/A
2	Have you ever made a Cryptocurrency purchase?	Divide participants into investors and non-investors	All	Yes/No
	How interested are you in Cryptocurrencies at the moment?	Understand the level of interest in Cryptocurrencies from “Not at all interested” to “Extremely interested”	All	Not at all interested (1) to Extremely interested (5)
	How likely it is for you to purchase Cryptocurrency in the future?	Understand the purchase likelihood from “Extremely unlikely to “Extremely likely”	All	Extremely unlikely (1) to

				Extremely likely (5)
What are your reasons for not purchasing Cryptocurrencies?	Understand the reasons for not purchasing, giving a series of reasons and an extra "Others" text option	Non-investors		N/A
How would you evaluate your perceptions on the Cryptocurrency market in the following aspects?	Understand participants' perceptions on Security, Trustworthiness, Usability, Regulation and Profitability, evaluated in a scale of "Terrible" to "Excellent"	All		Terrible (1) to Excellent (5)
How strongly do you agree with the following sentences?	Understand non-investors' agreement with a series of sentences related to the research question and hypothesis, including possessions and the extended self, FOMO, the effect of WOM, among others	Non-investors		Strongly disagree (1) to Strongly agree (5)
List 3 reasons why you have decided to invest in Cryptocurrencies	Understand the main reasons that led investors to make their purchase decisions	Investors		N/A
How long have you been investing/purchasing Cryptocurrencies?	Measure the investing experience from "Less than 6 months" to "More than 5 years"	Investors		Less than 6 months to More than 5 years
Based on your purchasing experience, how would you evaluate Cryptocurrencies in a utilitarian to hedonic value scale?	Measure how investors evaluate Cryptocurrencies in a utilitarian to hedonic value scale	Investors		Utilitarian (1) to Hedonic (100)
How important do you consider the phase of search, awareness, and education before making a purchase decision?	Understand the phase of search, awareness, and education before making a purchase decision	All		Not at all important (1) to Extremely important (5)
How strongly do you agree with the following sentences?	Understand non-investors' agreement with a series of sentences related to the research question and hypothesis, including possessions and the extended self, FOMO, the effect of WOM, among others	Investors		Strongly disagree (1) to Strongly agree (5)
Choose the picture that best describes the relationship between your Self (S) and Cryptocurrencies (C)	Understand the extent to which Cryptocurrencies become a part of the Self	Investors		N/A
List the top 3 feelings/emotions you associate with the Cryptocurrency post-purchase behavior.	Understand the main feelings that occur after a Cryptocurrency purchase	Investors		N/A

3	What gender do you identify as?		All	N/A
	How old are you?			N/A
	What is your current employment status?			N/A
	What is your highest complete education level?			N/A
	What is your annual household income?			N/A
	In which country do you currently live?			N/A

Table 1: Survey Design

3.2.2. Data Collection

The survey was built on Qualtrics and mainly shared via email and LinkedIn. The goal was to share the survey first within the Nova IMS students, to obtain answers from both possible Investors and Non-Investors. In a second phase, I focused on people I personally know that are investors, to whom I also asked to share within their networks. In a third phase, the survey was shared on LinkedIn, mainly approaching IT, blockchain and technology related-fields professionals. All data was collected from the survey results via export to Excel. The file was uploaded into Power BI, where the data was cleaned, transformed, and analyzed. Some further analyses were made on Excel, such as means, standard deviations and ANOVA. The survey received 224 answers, from which were extracted 171 valid answers after cleaning and transforming the data. Missing values were removed, as well as invalid answers. Text values were corrected to be coherent (for example, replacing Lisbon to Portugal in the Country column).

Below, there is a demographic analysis of the 171 valid survey participants:

Gender	Non-Investor		Investor		Total Age Average	Total Count
	Age Average	Count	Age Average	Count		
Female	31.27	45	31.25	12	31.26	57
Male	36.06	49	32.17	65	33.84	114
Total	33.77	94	32.03	77	32.98	171

Table 2: Age and Gender of survey participants

Country	Non-Investor	Investor	Total
Angola	1	0	1
Brazil	7	3	10
Ireland	1	0	1
Netherlands	0	1	1
Portugal	85	71	156
Ukraine	0	1	1
United States		1	1
Income	Non-Investor	Investor	Total
Less than €10,000	8	3	11
€10,000 - €24,999	35	20	55
€25,000 - €39,999	17	31	48
€40,000 - €54,999	8	8	16
€55,000 - €69,999	6	6	12
€70,000 - €84,999	3	3	6
€85,000 - €99,999	1	2	3
More than €100,000	2	1	3
Prefer not to say	14	3	17
Education Level	Non-Investor	Investor	Total
Bachelor's Degree	26	32	58
High School	6	2	8
Master's Degree	27	17	44
PhD	2	0	2
Post-Graduation	25	16	41
Professional Course	8	10	18
Employment Status	Non-Investor	Investor	Total
Employed	60	63	123
Not currently employed	5	1	6
Self-Employed	8	5	13
Student	13	1	14
Working student	8	7	15
Total	94	77	171

Table 3: Country, Income, Education Level and Employment Status of survey participants

3.2.3. Data Analysis

The data was cleaned, transformed, and analyzed on Power BI, producing visual representations that can be easily interpreted in the results and discussion.

The survey results were analyzed in different sections: first some general findings are presented, and then there is a section that corresponds to each one of the hypotheses, to simplify its testing.

3.2.3.1. Number of participants

The survey results show that from the 171 valid survey participations, 77 are from people who have experience with Cryptocurrencies, and 94 have no experience yet.

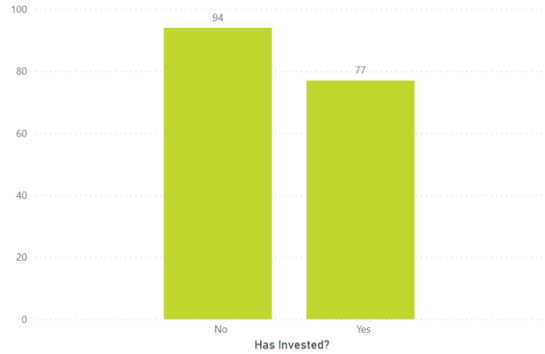


Figure 2: Bar Chart – Number of participants per investor/non-investor

3.2.3.2. Interest in Cryptocurrencies and Purchase Likelihood

When analyzing the participant’s interest using the 1 to 5 scale – meaning that 1 corresponds to “Not at all interest” and 5 corresponds to “Extremely interested”, with 3 as a median – investors show a mean of 3.23, higher than non-investors.

	Mean	Min	Max	St Deviation	Count
Non-Investor	2.17	1	5	1.15	94
Investor	3.23	1	5	1.06	77

Table 4: Statistics: Investors vs Non-Investors: How interested are you in Cryptocurrencies at the moment?

The same can be seen when analyzing purchase likelihood: using the same 1 to 5 scale, investors have a higher mean of 3.82 and are more likely to purchase than non-investors.

	Mean	Min	Max	St Deviation	Count
Non-Investor	2.64	1	5	1.26	94
Investor	3.82	1	5	1.11	77

Table 5: Statistics: Investors vs Non-Investors: How likely it is for you to purchase Cryptocurrency in the future?

3.2.3.3. Reasons for not investing in Cryptocurrencies

When analyzing the main reasons why participants have never invested, the main reasons are high risk, volatility, the difficulty to understand the Cryptocurrency market, the fact that it is considered speculative and the lack of regulation.

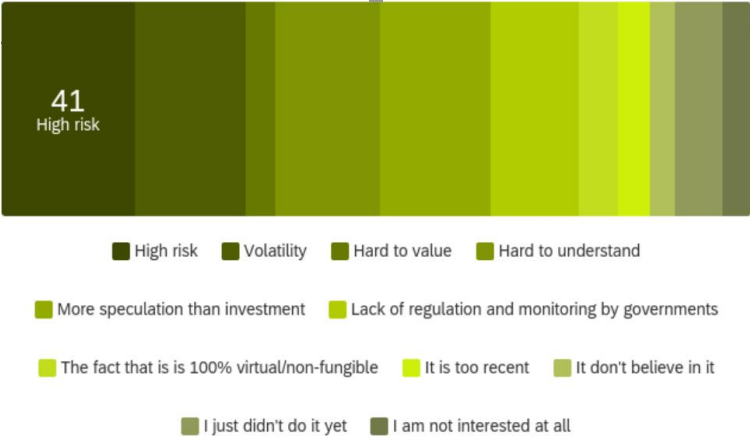


Figure 3 – Breakdown bar – Non-investors by Reasons for not investing

Also concerning the reasons why non-investors have decided to not invest, two questions were asked. When analyzing the responses to “I never invested in Cryptocurrencies because I fear I will regret it”, the mean is 3, with a high standard deviation, showing quite disperse views.

Mean	Min	Max	St Deviation	Count
3	1	5	50.45	94

Table 6: Statistics: Non-Investors: What are your reasons for not purchasing Cryptocurrencies?

Similar results are seen when analyzing the responses to “The fact that many people are entering the Cryptocurrency movement makes me want to do it as well” – a high standard deviation, disperse answers, but a lower mean.

Mean	Min	Max	St Deviation	Count
2.34	1	5	50.45	94

Table 7: Statistics: Non-Investors: The fact that many people are entering the Cryptocurrency movement makes me want to do it as well

3.2.3.4. Consumer Perceptions

An analysis was performed on the consumer perceptions on Cryptocurrencies, considering 5 different aspects: Security, Trustworthiness, Usability, Regulation and Profitability. These 5 aspects are determinant to consumer behavior and determine consumers’ purchase decisions.

Using a 1 to 5 scale, with 3 as the median, there is a tendency to see higher means from investors than non-investors. Comparing the overall results between the 5 different perceptions, Profitability has the highest mean, from both Investors and Non-Investors. Regulation shows the lowest means, from both Investors and Non-Investors.

- **Security:** when measuring the perception of security, non-investors show a lower mean than investors. Investors seem to have a slightly high perception, as their mean is over the median and the standard deviation suggest concentrated answers around the mean.

	Mean	Min	Max	St Deviation	Count
Non-Investor	2.87	1	5	1.15	94
Investor	3.68	1	5	0.93	77
Total	3.23	1	5	1.13	171

Table 8: Statistics: Investors vs Non-Investors: Perception of Security

- **Trustworthiness:** with means slightly lower than the previous perception, trustworthiness shows similar results. Investors have a higher mean than non-investors, slightly above the median.

	Mean	Min	Max	St Deviation	Count
Non-Investor	2.71	1	5	1.05	94
Investor	3.30	1	5	0.99	77
Total	2.98	1	5	1.06	171

Table 9: Statistics: Investors vs Non-Investors: Perception of Trustworthiness

- **Usability:** the means of the perception of Cryptocurrency usability increases a little in relation to the previous one. Both investors and non-investors show means values above the median, with kind of similar numbers, showing the lowest difference between means of all 5 perceptions.

	Mean	Min	Max	St Deviation	Count
Non-Investor	3.03	1	5	1.03	94
Investor	3.40	1	5	1.06	77
Total	3.20	1	5	1.96	171

Table 10: Statistics: Investors vs Non-Investors: Perception of Usability

- **Regulation:** the perception on regulation shows the lowest results of all perceptions. This is the only perception where investors have a mean value below the median. Although the means are higher in investors than non-investors, the values are very similar and show one of the lowest differences between two groups.

	Mean	Min	Max	St Deviation	Count
Non-Investor	2.26	1	4	1.00	94
Investor	2.64	1	5	1.21	77
Total	2.43	1	5	1.11	171

Table 11: Statistics: Investors vs Non-Investors: Perception of Regulation

- **Profitability:** the perception of profitability shows the highest means from both groups. Both investors and non-investors show a mean value higher than the median, suggesting that this is the most relevant perception of all 5.

	Mean	Min	Max	St Deviation	Count
Non-Investor	3.30	1	5	1.05	94
Investor	3.77	2	5	0.91	77
Total	3.51	1	5	1.05	171

Table 12: Statistics: Investors vs Non-Investors: Perception of Profitability

3.2.3.5. Investors Experience

Regarding Investor’s experience, most of them are in the “Between 1 and 2 years” range. Only 9.09% have been investors for more than 5 years.



Figure 4: Bar Chart – Investors by Investing Experience

3.2.3.6. H1: Cryptocurrencies have an exclusively utilitarian value

To test this hypothesis, the following question was asked in the survey in form of a slider selector: “Based on your purchase experience, how would you evaluate Cryptocurrencies in a utilitarian (0) to hedonic (100) value scale?”

In this hypothesis, a 0-100 scale was used to measure participant’s opinion on whether Cryptocurrencies have a more utilitarian (0) or hedonic (100) value. A value of 50 would mean an equally Utilitarian and Hedonic value. According to the results, a mean of 41.4 is presented, suggesting that the hypothesis is not significant, and that Cryptocurrencies do not have an exclusively utilitarian value.

Mean	Min	Max	St Deviation	Count
41.40	0	100	25.15	77

Table 13: Statistics: Investors - Based on your purchasing experience, how would you evaluate Cryptocurrencies in a utilitarian to hedonic value scale?

3.2.3.7. H2: Cryptocurrency as a possession is as relevant to self-extension as a tangible similar asset

To test this hypothesis, three questions were asked to both investors and non-investors and a single extra question was asked to investors.

Both groups were asked to answer to how much they agreed with “A virtual possession is as relevant to me as a physical one”, and the results are presented below. The mean for investors is higher than non-investors’ and higher than the median value. The standard deviation suggests that investors’ answers are concentrated near the mean. Investors seem to regard virtual possessions as relevant as physical ones more than non-investors.

	Mean	Min	Max	St Deviation	Count
Non-Investor	2.80	1	5	1.30	94
Investor	3.66	1	5	1.04	77

Table 14: Statistics: Investors vs Non-Investors - A virtual/non-tangible possession is as relevant to me as a physical one

The groups were also asked to answer on whether they agreed or not with “The Cryptocurrency movement can become part of someone’s identity”. The results show similar means for both groups, with a slightly higher mean on the Investors side. Both groups show a mean higher than the median, meaning that this variable has significance to the hypothesis.

	Mean	Min	Max	St Deviation	Count
Non-Investor	3.31	1	5	1.08	94
Investor	3.47	1	5	1.04	77

Table 15: Statistics: Investors vs Non-Investors - The Cryptocurrency movement can become part of someone's self and consumer identity

The final question for both groups was to show how much they agreed with “My purchases and possessions are an extension of my self”. Again, the results seem to show similar views from both groups and mean values higher than the median, translating into a significant variable to test this hypothesis.

	Mean	Min	Max	St Deviation	Count
Non-Investor	3.46	1	5	1.15	94
Investor	3.55	1	5	1.06	77

Table 16: Statistics: Investors vs Non-Investors - My purchases and possessions are an extension of my self

A question was asked to Investors only, asking them to select the picture that better showed the relationships between Self and Cryptocurrencies. Evaluating the images in a 1 to 6 scale, where 1 means the biggest distance between Self and Crypto and 6 means an overlapping of Self and Crypto, the results are lower than the median. The 2.74 mean show that Investors tend to regard Cryptocurrencies as being a part of their selves, but to a short extent.



Figure 5: Investors answering to the multiple-choice question “Choose the picture that best describes the relationship between your Self (S) and Cryptocurrencies (C)”

Mean	Min	Max	St Deviation	Count
2.73	1	6	1.24	77

Table 17: Statistics: Investors - The Cryptocurrency movement is an extension of my self

3.2.3.8. H3: The online experience positively impacts consumer purchase decisions and awareness on Cryptocurrencies

Both groups were asked to evaluate whether the online experience, social media and word of mouth impact their purchase decisions. Both show mean values above the median, but investors show a slightly higher result, suggesting a higher influence of the online experience in purchase decisions.

	Mean	Min	Max	St Deviation	Count
Non-Investor	3.19	1	5	1.08	94
Investor	3.47	1	5	1.26	77

Table 18: Statistics: Investors vs Non-Investors - The online experience (social media, communities, news and updates, word-of-mouth) has a positive impact on my purchase decisions

When asked to evaluate the importance of the search, learning and awareness phase before a purchase decision, both groups regarded this phase with a high importance, with a mean of 4.56 and a standard deviation, showing results concentrated around the mean and that this variable has significance to test the hypothesis.

	Mean	Min	Max	St Deviation	Count
Non-Investor	4.56	2	5	0.72	94
Investor	4.56	2	5	0.69	77

Table 19: Statistics: Investors vs Non-Investors - How important do you consider the phase of search, awareness and education before making a purchase decision?

3.2.3.9. H4: Perceived trust is more relevant than perceived usability in purchase decisions

In this hypothesis, there will be a comparison between the results of the perception of trustworthiness and usability, that were analyzed in a previous section. Overall, the perception of usability is higher than trustworthiness, showing higher means and mean values over the median. According to the investors, both perceptions seem to impact the purchase decisions is similar extents but considering that the means of perceived usability are higher and also the literature review, perceived usability seems to be more relevant than trustworthiness, meaning that it has more significance to this hypothesis.

Trustworthiness

	Mean	Min	Max	St Deviation	Count
Non-Investor	2.71	1	5	1.05	94
Investor	3.30	1	5	0.99	77
Total	2.98	1	5	1.06	171

Table 9: Statistics: Investors vs Non-Investors: Perception of Trustworthiness

Usability

	Mean	Min	Max	St Deviation	Count
Non-Investor	3.03	1	5	1.03	94
Investor	3.40	1	5	1.06	77
Total	3.20	1	5	1.96	171

Table 10: Statistics: Investors vs Non-Investors: Perception of Usability

3.2.3.10. H5: FOMO works as a motivational factor in Cryptocurrency purchase decisions for both experienced and unexperienced investors

In order to analyze the main motivators for a purchase decision, a word cloud analysis was made on Qualtrics. Profit and diversification are the most common reasons.



Figure 6: Word Cloud – the most common reasons for a Cryptocurrency purchase

Both groups were asked to evaluate the effects of FOMO in their purchase decisions. According to the results, investors show a mean value slightly above the median, suggesting that they are moderately impacted by FOMO in their purchase decisions. They also show higher means than non-investors.

	Mean	Min	Max	St Deviation	Count
Non-Investor	2.84	1	5	1.31	94
Investor	3.06	1	5	1.26	77

Table 20: Statistics: Investors vs Non-Investors - FOMO (fear of missing out) has an influence on my purchase decisions

A question was asked only to non-investors (on whether they agreed with “The fact that many people are entering the Cryptocurrency movement makes me want to do it as well”), and the results confirm that non-investors are not strongly influenced by FOMO as a motivational factor to enter the Cryptocurrency movement, with a mean lower than the median.

Mean	Min	Max	St Deviation	Count
2.34	1	5	1.14	77

Table 21: Statistics: Non-Investors - The fact that many people are entering the Cryptocurrency movement makes me want to do it as well

3.2.3.11. H6: The post-purchase phase and the outcomes of a Cryptocurrency purchase are characterized by positive disconfirmation

Not tested in the quantitative research.

3.2.3.12. H7: The feeling of regret regarding Cryptocurrencies is stronger in acts of commission – doing something – than acts of omission – not doing something

When asked to evaluate the agreement with the following sentence “I more often regret an act of omission than an act of commission”, investors show mean values higher than the median, suggesting that they feel regret more often in acts of omission, meaning that this is a significant variable to test the hypothesis.

Mean	Min	Max	St Deviation	Count
3.34	1	5	1.36	77

Table 22: Statistics: Investors – I more often regret an act of omission than an act of commission

3.2.3.13. H8: The post-purchase feelings contribute positively to self-extension

A word cloud analysis was made on Qualtrics to understand what are the main feelings that appear in the post-purchase phase. Happiness, excitement, hope, and confidence appear as positive outcomes and fear and anxiety appears as negative.

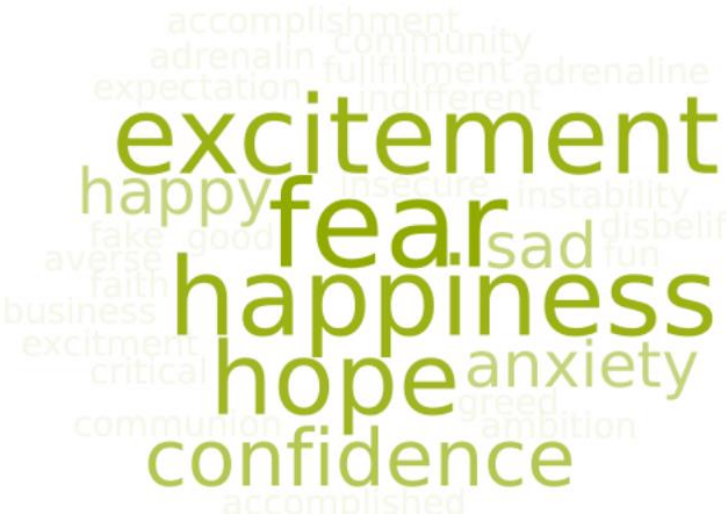


Figure 7: Word Cloud – the most common feelings after a Cryptocurrency purchase

These feelings were listed as positive, neutral, and negative in an analysis, and attributed a score of 1-3, meaning that 1 corresponds to negative, 2 to neutral and 3 to positive. In order to evaluate the overall feelings after a purchase, some statistics were made around the answers. 210 feelings were considered as valid and the mean of 2.28 show a tendency to evaluate the post-purchase phase with more positive feelings.

Mean	Min	Max	St Deviation	Count
2.28	1	3	0.95	210

Table 23: Statistics: Investors – Feeling analysis

Two more questions were asked to the investors. When asked whether these feelings affect their future purchase decisions, investors show a mean of 3.53, higher than the median.

Mean	Min	Max	St Deviation	Count
3.52	1	5	1.22	77

Table 24: Statistics: Investors – How effective are the previous feelings/emotions in influencing your future purchase decisions?

When asked whether they agree that the Cryptocurrency movement is an extension of their selves, the mean is slightly lower than the median, being similar to the findings in the previous section 3.2.3.7.

H2: Cryptocurrency as a possession is as relevant to self-extension as a tangible similar asset.

Mean	Min	Max	St Deviation	Count
2.53	1	5	1.29	77

Table 17: Statistics: Investors – The Cryptocurrency movement is an extension of my self

4. RESULTS AND DISCUSSION

This chapter presents the main results of both studies as a base to test the hypotheses and answer to the research questions.

4.1. STUDY 1 – QUALITATIVE RESEARCH

4.1.1. Cryptocurrencies have both utilitarian and hedonic value

According to the interview, Cryptocurrencies do not have an exclusively utilitarian value. The position of the interviewee is clear: it does have a utilitarian value in the long term, as one of the main goals in purchasing Cryptocurrencies is to earn profit in the future, so it works as a means to an end. On the other hand, there is an associated hedonic value as well. Purchasing Cryptocurrencies can lead to feelings of gratification and belonging in the short term. According to the interviewee, it can make investors feel exclusive and special, as they believe in something that is relatively new and not 100% regulated. The interviewee considers Cryptocurrencies have many associated emotions before, during and after the purchase, so they have **both utilitarian and hedonic values**.

4.1.2. Cryptocurrencies are relevant to self-extension, but have some limits

According to the interviewee, a more hedonic value – that reflects your personality, has an inherent emotion or attachment – is more relevant to self-extension than an exclusively utilitarian one. When measuring a virtual possession as relevant to self-extension in comparison to a tangible similar asset, the interviewee compares Cryptocurrencies to gold: “both have a subjective value attributed by society, both have a utilitarian value which we cannot do anything with except transactions. (...) I feel like they are equally real and equally relevant to extend the Self”. In terms of self-extension, a virtual good as music streamed in a platform can fulfil its purchase as well as a CD. On the other hand, a virtual

good such as an NFT, is made to substitute art, but does not fulfil its purchase as well as a painting that you can hang on your wall, for example, so it is less real. In sum, according to the interviewee, Cryptocurrencies can contribute to self-extension, but have some flaws.

4.1.3. Information and the online experience can improve consumer behavior with Cryptocurrencies

The interviewee agrees that the online experience positively impacts consumer purchase decisions and awareness, as almost all information on Cryptocurrencies is online and in social media. Even though it is a new topic, the information on the internet is not necessarily questioned just because it is not presented in literature. The interviewee points out the existence of real-time up-to-date information available in various platforms, which provides security. Information, awareness, and education is very important, as there is time and money invested in a market with such risk and volatility, not fully protected and regulated by financial authorities. There is a lot of information online, official, and unofficial, so it is important to filter and select information from reliable and legit sources. In sum, getting informed is positive for the consumer behavior experience and can increase awareness on Cryptocurrencies.

4.1.4. Perceived Trust is a decisive factor before a purchase decision

The interviewee points out perceived trust as more important than other perceptions before the purchase decision. Both perceived usability and easiness to use were seen as not critical. Perceived risk was seen as inherent to the intense volatility and risk of Cryptocurrencies, which are some of its major characteristics. Perceived trust was decisive to the purchase decision in his opinion, as before purchasing there was an idea of lack of security since the entities that allow purchases were not yet

regulated. From the moment these authorities began to be regulated, the investor gained the necessary trust to invest.

4.1.5. FOMO can be a motivational factor for more inexperienced investors

The main motivations for this investor are the possibility of earning potential gains which can be bigger than the invested value, in a decentralized, innovative, inviting, and risky market. The interviewee does not seem to be affected by FOMO, which can mean that it affects more inexperienced investors, who might be looking for instant gratification and fitting in, which can have a negative impact, since things cannot go as they planned. The interviewee sees FOMO as an external factor, as these investors often think they can become rich overnight and regret that they might miss on an opportunity, “which a lot of people are talking about online”.

4.1.6. Simple confirmation is a common outcome of a Cryptocurrency purchase

Although it is difficult to calculate because of the intense volatility of the performance, the interviewee considers the performance and the satisfaction grow together, so the better the performance, the more satisfaction. The interviewee considers that the performance matches to the expectations - The performance usually matches to the expectations, as I try to not establish many expectations before the purchase – **Simple confirmation or neutral response** – although he claims it is important to not set too many expectations.

4.1.7. In Cryptocurrency purchases, acts of omission are more common than acts of commission

The 5 top feelings the interviewee associate with the post-purchase behavior is Adrenalin – “It influences future purchase as it becomes a little bit addictive, and I will feel like buying more”; Frustration – It influences future purchases as I get to learn more about market fluctuations and have a reinforced conscious when making a new purchase, thanks to the empirical experience I have been through”; Confirmation – “I become more rational and move away from momentary feelings and learn how to deal with the market fluctuations”; Worry – “. This influences my future purchases as it forces me to be more conscious and alert about all new information and nuances in the market, legislation, etc.”; and Regret – “influences my future purchases as I try to find patterns in the market and learn how to take risks and decide to invest or sell instead of choosing not to do so”. The interviewee feels a stronger feeling of regret in acts of omission than with acts of commission, by feeling regret for not taking a risk instead of losing an opportunity.

4.1.8. Cryptocurrencies can positively contribute to self-extension

According to the interviewee, although there are some flaws in Cryptocurrencies when regarding them to self-extension, they contribute positively towards it, as the feelings mentioned above “come down to a greater willingness to invest, learn how to read and trust the markets, so I believe it could overcome the flaw of not trusting 100% in the banks and lack of regulation, by believing in the liability of the coins, the prosperity of the technology, and knowing when to risk or not to risk”.

4.2. STUDY 2 – QUANTITATIVE RESEARCH

4.2.1. Interest in Cryptocurrencies and Purchase Likelihood

When analyzing the participant's interest, it is clear that investors tend to have more interest in Cryptocurrencies. Investors are also more likely to make a purchase than non-investors, which suggests that they might be having a good purchase experience with Cryptocurrencies and want to keep doing it. Although a lot less non-investors are likely to purchase, there are a considerable amount who would become an investor. We can say that Interest and Purchase likelihood are related and happen in similar proportions.

4.2.2. Reasons for not investing in Cryptocurrencies

As seen in the analysis, the main reasons for not investing are high risk, volatility, the fact that it is considered speculative and the lack of regulation.

According to the analysis, the mean of 3 might suggest that some participants fear they might regret investing, but overall the sentiment is medium, which shows that regret works an obstacle for making a purchase decision to some extent. On the other hand, they do not seem to be very affected by the fact that many people are entering the Cryptocurrency movement, which suggests that FOMO does not act very strongly as a motivational factor for non-investors.

4.2.3. Consumer Perceptions

Comparing the results of the 5 perceptions on cryptocurrencies – Security, Trustworthiness, Usability, Regulation and Profitability – both groups seem to have a worse perception on Regulation. This is

understandable, since Cryptocurrencies are a decentralized and non-regulated asset, and many people might regard it as a dangerous investment. On the other hand, Profitability shows the highest means which might be justified by the high potential gains over time.

Overall, there is a tendency to see better perceptions from investors than non-investors. This could be motivated by a higher knowledge on the subject, more confidence on the markets and a higher level of interest and purchase likelihood.

4.2.4. H1: Cryptocurrencies have an exclusively utilitarian value – not confirmed

According to the quantitative research, the 77 investors consider that Cryptocurrencies' value is almost Utilitarian as it is Hedonic, with a tendency of being more Utilitarian. To the results, a mean of 41.4 is presented, suggesting that the hypothesis is not significant, and that Cryptocurrencies do not have an exclusively utilitarian value.

4.2.5. H2: Cryptocurrency as a possession is as relevant to self-extension as a tangible similar asset - confirmed

Both investors and non-investors seem to have similar views on whether their purchases and possessions are an extension of their selves. Thus, this variable is significant to test this hypothesis. When considering virtual possessions as relevant to self-extension as a physical one, investors tend to agree that a virtual possession is as relevant as a tangible one. When it comes to Cryptocurrencies being part of someone's identity and an extension of their selves, the views of investors and non-investors do not differ much, so both agree that Cryptocurrencies can become part of the self to some extent. Investors seem to regard virtual possessions as relevant as physical ones more than non-investors, which is probably justified by their open-mindedness in risking in an innovative and completely virtual asset. This

variable is significant to test the hypothesis. When regarding the Crypto movement becoming a part of someone's identity, both groups seem to have similar views, with a slightly higher mean from Investors – justified by their experience in the field. This variable can also be significant to test this hypothesis. When regarding Cryptocurrencies as an extension of an investor's self, the results show a tendency for Cryptocurrencies to be part of the Self, but only to some extent, not showing much significance to the hypothesis. Analyzing all the variables, we can confirm this hypothesis.

4.2.6. H3: The online experience positively impacts consumer purchase decisions and awareness on Cryptocurrencies - confirmed

The study shows that a large percentage of both investors and non-investors thinks that the online experience has a positive impact on their purchase decisions. Their vision seems to be similar, but the Investors have a higher mean, probably justified by their openness towards online communities and influence before and during their purchase decisions. In terms of search and learning importance before a purchase decision, the opinions seem to be very similar, and both give these processes a high importance level. Both variables are significant to test the hypothesis. In sum, the online experience positively impacts awareness, search, and the Cryptocurrency purchase decisions.

4.2.7. H4: Perceived trust is more relevant than perceived usability in purchase decisions – confirmed for non-investors, not confirmed for investors

Comparing the results of the perception of trustworthiness and usability – which were analyzed in a previous section, we can see that the perception of usability is higher than trustworthiness. Trustworthiness seems to be perceived better from investors than non-investors, which also proves

that Investors are a lot more receptive and confident about Cryptocurrencies. Usability seems to be perceived as good by both groups and impact purchase decisions in different extents. Although there is an evaluation for the perception itself, there was not made a comparison between them on the way they impact a purchase decision. On the non-investors group, there could be said that even though they perceive Cryptocurrencies as having good usability, trustworthiness is not so well evaluated and thus, contribute more highly to their decision not to purchase. Contrarily, investors do not seem to distrust Cryptocurrencies and so usability seems to impact their purchase decisions more highly.

4.2.8. H5: FOMO works as a motivational factor in Cryptocurrency purchase decisions for both experienced and unexperienced investors – confirmed

A word cloud analysis was made on Qualtrics to understand what are the main reasons that lead to a purchase decision. Profit and diversification are the most common reasons. When analyzing FOMO, investors are more susceptible to be influenced on their purchase decisions when they fear they might be missing out. The fact that they seem to constantly check for news, updates, networking, and exchange of experiences online about the topic might expose them more strongly to pressure, leading to fear of missing on opportunities, new coins, and rapid market fluctuations. Non-investors seem to be sensible to FOMO as well, but to a relatively lower extent. The fact that many people are entering the Cryptocurrency movement and how it affects non-investors does not seem significant to confirm this hypothesis alone. However, it can be said that both groups can feel FOMO to different extents, and it seems to work as a motivational factor for both experienced and unexperienced investors, affecting investors more strongly. It would be interesting to analyze if becoming an investor raises the probability to feel more FOMO, as the data seems to hint that.

4.2.9. H7: The feeling of regret regarding Cryptocurrencies is stronger in acts of commission – doing something – than acts of omission – not doing something – not confirmed

According to Study 2, investors seem to feel more regret in acts of omission than acts of commission, which means that it is more likely to feel regret when an investor has not made a purchase/selling decision, rather than regretting the opposite. This suggests that Cryptocurrency users and investors are not very risk averse and rather take an action than not doing so and regret later losing an opportunity. In sum, this variable is not significant to confirm this hypothesis, as investors are more likely to feel regret in acts of omission than the other way around.

4.2.10. H8: The post-purchase feelings contribute positively to self-extension – confirmed

A word cloud analysis was made on Qualtrics to understand what are the main feelings that appear in the post-purchase phase. Happiness, excitement, hope, and confidence appear as positive outcomes and fear and anxiety appears as negative. When coding the feelings in positive, neutral, and negative, it is visible that the outcomes are leaning more towards the positive side. Maybe this is what leads investors to keep purchasing. When analyzing the impact of feelings in future purchase decisions, more than a half of investors agree that they do have an impact. It would be interesting to further analyze the effect of positive and negative feelings in future purchase decisions and compare them. Finally, when analyzing cryptocurrencies and self-extension, the means are slightly below the median, which shows that investors do regard cryptocurrencies as an extension of their selves, but in a short degree. Even so, we can conclude that the post-purchase feelings have an impact in both purchase decisions and in self-extension, although in a slight extent.

5. CONCLUSIONS

To conclude the study, the three research questions will be answered.

RQ1: Does cryptocurrency have hedonic, utilitarian value, or both?

According to the qualitative research, Cryptocurrencies have both hedonic and utilitarian value. Although there is a clear utilitarian value of reaching a means to an end – earning profit in the medium/long term -, there is also a utilitarian value of gratification and emotional reactions, like adrenalin and others. According to the quantitative research, Cryptocurrencies are almost equally a hedonic and utilitarian value, tending a little bit more to the utilitarian side. Both values seem to contribute to self-extension, but the hedonic value seems to have a more relevant influence.

RQ2: How effective is the post-purchase behavior in influencing future purchases?

According to the research, the post-purchase behavior in Cryptocurrencies is effective in influencing future purchases. This influence is not only clear on the feelings and emotions that lead to a bigger will to purchase, but also on the feelings that lead to search for more education, information and awareness and create more experienced investors, who know the right moments and amounts to purchase and sell. The post-purchase behavior also influences future purchases in the extent of a performance that usually matches the expectations, which is the best scenario. In a scenario of performance usually exceeding expectation, investors would probably feel confident all the time, and in case of a market downturn would get disappointed. Likewise in a scenario of underperformance. According to the qualitative research, the most common feelings after a purchase are happiness, excitement, hope, confidence, fear, and anxiety, and according to investors, they do have an influence and impact in their future purchase decisions. Also, according to the qualitative research, investors

feel more regret after an act of omission than an act of commission, which can also be a motivational factor for future purchases. In sum, the post-purchase behavior positively influences future purchases, their quality, and the awareness towards them.

RQ3: Could cryptocurrencies become an extension of our self?

According to the qualitative research, Cryptocurrencies can become an extension of our self to the extent that both digital and tangible assets can become relevant to our self, have a certain hedonic value and meaning and become our extension. Although there are some flaws – the security and trustworthiness are still not as relevant as in a tangible similar asset like gold and the experience and purpose of digital assets like NFTs could not be fulfilled as much as in a tangible good, like a painting, - there is still a contribution to the extended self when regarding Cryptocurrencies. According to the qualitative research, it seems more consensual that Cryptocurrencies can become an extension of the self and a part of someone's identity. This feeling is experienced differently by each investor, but it is visible in many of them.

5.1. LIMITATIONS AND FUTURE RESEARCH

One of the biggest limitations in the study was the fact that a plan was made at the beginning, and it did not allow much change throughout the study. For example, after the survey was closed and while the analysis was being performed, there was a need to further analyze some questions that had not been asked to the participants. In this phase, it was not possible to repeat the survey and ask new questions to all the participants.

Other limitation concerned the order of the studies. After finishing both, I think it would be more interesting to do the qualitative study after the survey, as new questions could be asked to the

interviewee and have some more depth and insights. I also think it would be interesting to have another perspective from a qualitative point of view and include another interview, with another experienced investor.

The last limitation was on the consumer perceptions and the way that topic was explored in Study 2. Although there was made an evaluation of perceptions itself, there was not done a comparison between them on the way they impact a purchase decision. Again, as the survey was already closed, there was not a solution for the lack of flexibility of the study plan.

In terms of future research, it would be interesting to improve the points in the limitations, except for doing a new qualitative interview. Doing a new interview would allow to use new approaches and ask all the questions that were not asked in this phase of both studies, but it would not make much sense to have 2 interviews with a different framework and approach.

It would be interesting to analyze the relationship between investors and FOMO and if being an investor increases the likelihood of experiencing FOMO towards Cryptocurrencies. It would also be relevant to further analyze the effect of positive and negative feelings in future purchases and compare them and their impact. Finally, there could be a reconsideration of the way the consumer perceptions are being analyzed. As we have seen, investors and non-investors perceive certain variables in different ways, but there was not made an analysis on how those variables and their perceptions truly impact the consumer and purchase experience.

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7. ANNEXES

In-depth Interview – Could Cryptocurrencies be an Extension of our Self?

Date: January 3rd, 2022

Researcher: Anna Carolina Faria

Participants: A cryptocurrency investor, who will remain anonymous, with more than two years of experience in the cryptocurrency market.

The interview was originally in Portuguese. I wrote all the answers and notes on the interview and translated it to English. For every question there was a brief introduction on the theme, based on the literature review.

1. Which values do you attribute to owning and purchasing Cryptocurrencies? Do you feel like they have a utilitarian value – values that provide a clear rational explanation to purchase and help a consumer accomplish some task – a hedonic values – values that incorporate immediate gratification, are subjective and emotional in nature and are an end itself, instead of a means to an end, or both? Please elaborate and list which utilitarian and hedonic characteristics do you attribute to Cryptocurrencies.

I would say Cryptocurrencies have both hedonic and utilitarian value, it depends on the short, medium, and long terms. It has a utilitarian value when we analyze it in the long term, as users usually invest with the goal of earning interest in a future perspective. In short, there is a goal of earning more money in the future, so it feels like a means to an end, which we do not necessarily use right after purchasing. On the other hand, Cryptocurrencies are a relatively new topic, so there is a hedonic value associated with it as well. In a shorter term, the component of instant gratification and feeling of belonging is common, especially when investors are less experienced and “follow the stream”. This feeling of

belonging is accompanied by a feeling of believing in something which is relatively new and other might have not experienced yet, so it can feel exclusive and special. There is also a fear of missing out on the opportunity, so I would say there are many emotions associated before, during and after the purchase. In sum, I consider Cryptocurrencies have both utilitarian and hedonic values.

2. Do you feel like your everyday purchases and possessions are an extension of yourself? (Meaning that your self is the sum of all experiences, memories, possessions, ideas, persons, that you feel attached to).

Yes, especially when we talk about things that you really want to buy. Taking the previous question, I consider that a more hedonic value can add more to my self-extension than an exclusively utilitarian one. For example, when buying a car, a house, clothing, you might experience more than just a means to an end. You can feel pride, joyfulness, buy something that matches to your personality, the image you want to show to others, reach a lifetime goal, or buying something that brings you memories, and may other emotions and feelings. That can translate into a part of your Self.

3. Following the previous question, is there any difference when considering Cryptocurrencies? Do you feel like Cryptocurrencies are an extension of yourself? Considering Cryptocurrencies as a digital asset/possession, do you feel like they are more, less, or as relevant as a tangible similar one)?

Considering some products, the experience is equally real, so I believe they equally contribute to self-extension. For example, owning a CD or listening to the album on a streaming platform will feel the same and I will experience both in the same way. Cryptocurrencies can often be compared to gold: both have a subjective value attributed by society, both have a utilitarian value which we cannot do anything with except transactions. However, I feel like they are equally real and equally relevant to

extend the Self. The only flaw Cryptocurrencies have when related to gold – when measuring how real and relevant they are – is in the eventuality of a failure in the Cryptocurrency banks and exchanges. The other flaw regards NFTs, which are currently growing in popularity. They are made to substitute art, which I personally do not agree, as I cannot have a non-tangible digital painting as decoration in my wall, so it is less real and does not serve the purpose it was made for. In opposition, digital music serves the same purpose as CD music, so I believe Cryptocurrencies can contribute to self-extension, but have some flaws when relating to similar tangible assets.

4. Do you consider that the online experience and online sharing has influence on your Cryptocurrency decisions? Explain how.

Yes. Almost all information on Cryptocurrency is online and in social media, especially by being a relatively recent and unexplored topic. As Cryptocurrencies are not yet fully regulated and explored, I would not personally consider the information more relevant by being in literature and physical books, so I trust some information that comes from the Internet as reliable, trustworthy, and significant. The existence of real-time up-to-date information available in various platforms influences my purchase decisions as it transmits security.

5. How important do you consider the phase of awareness/information search/education before making a purchase decision? Do you feel like the amount and quality of the awareness/information on Cryptocurrencies is important?

It is very important to obtain information, awareness, and education in any theme where you are going to invest your time and money on, especially in a good and market which are not fully protected and regulated by financial authorities and entities, providing a higher risk. There is a lot of information online, and as it is a recent topic it is difficult to measure the results on the moment, so instead we

analyze the results in the long term, where there is a bigger set of results. There is official and unofficial information, so it is crucial to filter and select awareness from reliable and legit sources, and not trust everything we read online, especially in social media.

6. What were the first and most relevant perceptions you had before purchasing/investing? (Risk, usability, behavioral control – how easy is it to use, trust, etc.).

Which of these has impacted your purchase decisions the most?

In the beginning, I had a perception about lack of security, as the entities that allow purchases were not regulated and I feared they kept my money without giving the serviced they promised. From the moment these authorities began to have some regulation, I perceived them as more trustworthy and became comfortable to invest. As it is a recent and little explored market with an associated risk of volatility, the risk is even higher when we consider investing our money – which is a regulated and centralized asset – into an unregulated and decentralized entity and technology. For me, the perceived risk is already an inherent factor, considering the intense volatility of Cryptocurrencies, so it did not affect my purchase decisions. The perceived usability was not critical, as I always perceived Cryptocurrencies to obtain profit in the medium/long term. The easiness of use also did not affect my purchase decisions. Trust was the factor that did impact my purchase decisions the most.

7. Which are the main reasons why you purchase/invest in Cryptocurrencies? What motivates you to do so?

Most traditional investments in a declining world economy made these new types of investments – with a higher associated risk – become more inviting. One of my motivations is obviously the potential gains, which can become disproportionate to what was invested (take the first Bitcoin purchase of two

pizzas which today would be valued in millions of dollars, for example), but also the fact that investing in a risky, innovative, decentralized asset is fun and gives some adrenalin.

8. Do you think FOMO has a positive or negative impact in both experienced and unexperienced investors? Do you see it as a motivation that comes from external or internal factors?

It depends on the amount of money invested and the lack of knowledge in the market. If it is an unexperienced investor who is just looking for instant gratification and fitting in, it can have a negative impact, as thing cannot go as they are planning. I see it as an external factor, as these investors may have the thought of becoming rich overnight and regret, they might be missing out on an opportunity, which a lot of people are talking about online.

9. How do you describe your post-purchase behavior? What are usually your outcomes compared to the expectations you had established before?

- **Positive disconfirmation or satisfaction – performance is better than expected**
- **Simple confirmation or neutral response – performance equals expectations**
- **Negative disconfirmation or dissatisfaction – performance is worse than expected.**

As the performance is very volatile, it is difficult to calculate. The better the performance, the more satisfaction. The performance usually matches to the expectations, as I try to not establish many expectations before the purchase.

10. What are the top 5 feelings/emotions you associate with the post-purchase behavior? (Anxiety, regret, hopefulness, frustration, guilt, sadness, gratefulness, anger, enthusiasm, satisfaction, sadness, pride, joyfulness, etc.). Please elaborate on each feeling/emotion and how effective do you consider them in influencing future purchases/investments?

- Adrenalin – when I make a purchase, the risk and the volatility involved creates a sense of adrenalin. It influences future purchase as it becomes a little bit addictive, and I will feel like buying more.
- Frustration – it can be frustrating when the purchase we made, associating the expectations, the result, and the intense volatility, does not go as we wish, so the value of my purchase and the value of the money I have invested is lower than what I invested. So, it is frustrating when the performance does not match to the expectations. It influences future purchases as I get to learn more about market fluctuations and have a reinforced conscious when making a new purchase, thanks to the empirical experience I have been through.
- Conformation – after some time after the purchase, and thanks to the intense volatility, I understand that it is not sustainable for my well-being to have emotions that also accompany that volatility – feelings in function of the market. So, I become more rational and move away from momentary feelings and learn how to deal with the market fluctuations.
- Regret – sometimes I regret missing out on a certain opportunity when I chose not to invest or to sell and then there is a market ascent or descent that could be profitable. This kind of regret influences my future purchases as I try to find patterns in the market and learn how to take risks and decide to invest or sell instead of choosing not to do so.

- Worry – in situations when I am already frustrated, I worry that a bad performance will last for a long time, turning into a bad purchase, which would lead to other kind of regret – a regret of investing. This influences my future purchases as it forces me to be more conscious and alert about all new information and nuances in the market, legislation, etc.

11. How effective do you consider the previous question in contributing to your self-extension?

Besides the two flaws that I pointed out before, I think these feelings make me want to get more educated and involved into the Cryptocurrency movement. All these feelings come down to a greater willingness to invest, learn how to read and trust the markets, so I believe it could overcome the flaw of not trusting 100% in the banks and lack of regulation, by believing in the liability of the coins, the prosperity of the technology, and knowing when to risk or not to risk. In sum, I believe they could contribute to self-extension.

Survey - Could Cryptocurrencies be an Extension of our Self? - A Study on Post-Purchase Behavior

Dear participant,

The following questionnaire aims to understand and analyze the relationship between Cryptocurrency purchases and Self-Extension, from a Consumer Behavior perspective. The present study is carried out within the scope of a Master's Dissertation in Information Management with a specialization in Marketing Intelligence, from Nova IMS.

The following questions and answers will be used exclusively for academic purposes, being treated in a completely anonymous and confidential manner. The questionnaire takes around 5-10 minutes to complete.

If you have any questions regarding this study, please contact me at:
m20200427@novaims.unl.pt

Thank you!

Informed Consent Form:

I declare that I am at least 18 years old and that I agree to participate in this study. I declare that I have been informed that my participation in this study is voluntary, and that I can withdraw from it at any time without penalty, and that all data collected is confidential.

Yes, I agree

No, I don't agree

Have you ever made a Cryptocurrency purchase?

Yes

No

How interested are you in Cryptocurrencies at the moment?

Not at all interested	Slightly interested	Moderately interested	Very interested	Extremely interested
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How likely it is for you to purchase Cryptocurrency in the future?

Extremely unlikely	Somewhat unlikely	Neither likely nor unlikely	Somewhat likely	Extremely likely
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What are your reasons for not purchasing Cryptocurrencies?

High risk
Volatility
Hard to value
Hard to understand
More speculation than investment
Lack of regulation and monitoring by governments
The fact that it is 100% virtual/non-fungible
It is too recent
It don't believe in it
I just didn't do it yet

How would you evaluate your perceptions on the Cryptocurrency market in the following aspects:

	Terrible	Poor	Average	Good	Excellent
Security	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Trustworthiness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Usability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Regulation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Profitability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How strongly do you agree with the following sentences?

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
My purchases and possessions are an extension of my self (self=the sum of all experiences, memories, possessions, ideas, persons, that you feel attached to)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A virtual/non-tangible possession is as relevant to me as a physical one	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
FOMO (fear of missing out) has an influence on my purchase	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The fact that many people are entering the Cryptocurrency movement makes me want to do it as well	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The online experience and Word-of-Mouth positively impacts my purchase decisions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I never invested in Cryptocurrencies because I fear I will regret it	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Cryptocurrency movement can become part of someone's self and consumer identity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

List 3 reasons why you have decided to invest in Cryptocurrencies

1	<input type="text"/>
2	<input type="text"/>
3	<input type="text"/>

How long have you been investing/purchasing Cryptocurrencies?

<input type="checkbox"/>	Less than 6 months
<input type="checkbox"/>	Between 6 months and a year
<input type="checkbox"/>	Between 1 and 2 years
<input type="checkbox"/>	Between 2 and 5 years
<input type="checkbox"/>	More than 5 years

Utilitarian values - values that provide a clear rational explanation to purchase and help a consumer accomplish some task;

Hedonic values - values that incorporate immediate gratification, are subjective and encourage an emotional attachment;

Based on your purchasing experience, how would you evaluate Cryptocurrencies in a utilitarian to hedonic value scale?

Utilitarian Both Hedonic

How important do you consider the phase of search, awareness and education before making a purchase decision?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Not at all important	Slightly important	Moderately important	Very important	Extremely important

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
My purchases and possessions are an extension of my self (self = the sum of all experiences, memories, possessions, ideas, persons, that you feel attached to)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A virtual/non-tangible possession is as relevant to me as a physical one	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The online experience (social media, communities, news and updates, word-of-mouth) have a positive impact on my purchase decisions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
FOMO (fear of missing out) has an influence on my purchase decisions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I more often regret an act of omission - not making a purchase/selling decision - than an act of commission - making a purchase/selling decision	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My post-purchase feelings and actions influence my future purchases	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Cryptocurrency movement can become part of someone's self and consumer identity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Cryptocurrency movement is an extension of my self	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Choose the picture that best describes the relationship between your Self (S) and Cryptocurrencies (C)



List the top 3 feelings/emotions you associate with the Cryptocurrency post-purchase behavior.

1	<input type="text"/>
2	<input type="text"/>
3	<input type="text"/>

What gender do you identify as?

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

How old are you?

What is your current employment status?

Student

Employed

Self-Employed

Working student

Not currently employed

Retired

What is your highest complete education level?

High School

Professional Course

Bachelor's Degree

Post-Graduation

Master's Degree

PhD or higher

What is your annual household income?

Less than €10,000

€10,000 - €24,999

€25,000 - €39,999

€40,000 - €54,999

€55,000 - €69,999

€70,000 - €84,999

€85,000 - €99,999

More than €100,000

Prefer not to say

In which country do you currently live?

Figure 8: Screenshots of the survey questionnaire