



Role of Bitcoin in student's finances

Kasra Haji Farajollah

Haaga-Helia University of Applied Sciences

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Abstract

Author(s) Kasra Haji Farajollah
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<p>This thesis investigates the role of Bitcoin as a savings asset for students, focusing on its potential benefits and risks. Bitcoin, a decentralized digital currency, has emerged as a significant investment option due to its unique attributes, including scarcity and decentralization. However, its adoption among students is shaped by various factors such as knowledge gaps, price volatility, and sustainability concerns.</p> <p>A mixed-method approach was employed, combining desktop research as secondary data and a structured online survey targeting university students (n=58) as primary data. Research question of this thesis was divided into three key investigative questions, exploring benefits and risks of Bitcoin, its financial performance and the sustainability aspects. The mixed method approach provided a deeper understanding of student's perspective on Bitcoin investment and contributed to increasing awareness of Bitcoin among students.</p> <p>The study examined Bitcoin's blockchain technology and its inherent benefits, including scarcity, decentralization, and the potential for high returns, alongside its risks such as volatility and influencing factors on price fluctuations. Findings reveal that while students are attracted to Bitcoin for its potential high returns and independence from traditional financial systems, barriers such as lack of knowledge, fear of financial loss, price volatility, and environmental concerns hinder broader acceptance. The research highlights that addressing these barriers through financial education, risk management strategies, and promoting sustainable practices can enhance Bitcoin's appeal as an investment option. Moreover, integrating principles of Modern Portfolio Theory underscores the importance of diversification in managing Bitcoin's volatility.</p> <p>This thesis contributes to understanding Bitcoin's evolving role in student finances, offering practical recommendations for informed investment decisions, and promoting financial literacy. The findings hold implications for students, educators, and financial practitioners aiming to navigate the opportunities and challenges of cryptocurrency investments.</p>
Key words Bitcoin, Cryptocurrency, Students' investment, Sustainability, Risk management

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1 Introduction

This is a research-based bachelor's thesis for the Degree Programme in International Business Administration in the author's major specialization of Financial Management at Haaga-Helia University of Applied Sciences. This chapter will introduce the topic by presenting the background for it, the main research question, the investigative questions to be studied, delimitations, the benefits, and finally, this chapter provides definitions for the key concepts examined for the thesis.

1.1 Background to the topic

In recent years, Bitcoin has captured the world's attention, transforming from a niche digital currency into a mainstream investment option. Initially created as a way to exchange money without the need for banks or governments, Bitcoin is now seen by many as "digital gold." People are turning to Bitcoin not only for its potential to grow in value but also because it operates outside traditional financial systems (Back August 2022, min. 7-9). As of 2024, Bitcoin has become one of the most talked-about assets globally, with a market value that rivals some of the world's largest companies.

The adoption of Bitcoin and other cryptocurrencies has seen exponential growth in recent years. As of June 2024, 617 million people are using cryptocurrencies worldwide. Adoption has increased by almost 20% compared to the previous year at the same time (Statista, 2024). In Finland, cryptocurrency adoption is also on the rise, with approximately 7% of the population owning some sort of cryptocurrency (EY&K33 2024). Different reports and surveys show that adoption popularity is higher among younger individuals. Globally, 34% of cryptocurrency owners are aged between 25 and 34, indicating that students and early-career professionals make up a substantial portion of the user base. (Triple-A 2024).

Environmental concerns associated with Bitcoin mining have become a critical topic of debate. The substantial energy consumption required for mining operations has raised questions about sustainability and environmental impact (United Nations University, 2023). This evolving discourse adds another layer of relevance for students and young professionals who are increasingly conscious of environmental issues and are interested in supporting sustainable technologies.

In this thesis, the author's personal experience as a student and early investor in digital assets helped to develop the idea behind this thesis. Recognizing that students often have the advantage of time and the willingness to embrace risk, I was inspired to investigate how early investment in Bitcoin can catalyze both personal and professional growth.

1.2 Research Question

The research question of this thesis is: What are the potential benefits and risks of Bitcoin as a savings asset for students, and what factors motivate new investors to include it in their portfolios?

This research question is divided into three investigative questions:

IQ 1. What are its potential benefits and risks as a savings asset for students?

IQ 2. How has Bitcoin performed as an asset over recent years, and what does this mean for students considering it for their savings?

IQ 3. How does sustainability affect investing in Bitcoin among student investors?

Table 1 below presents the investigative questions, theoretical framework components, research methods, and results chapters for each investigative question.

Table 1: Overlay matrix

Investigative questions	Theoretical Framework	Research methods	Survey Questions	Outcomes
IQ 1. What are its potential benefits and risks as a savings asset for students?	Understanding Bitcoin- benefits and risks for student investors	Mixed Method	3,4,5,6,7,12	2,4
IQ 2. How has Bitcoin performed as an asset over recent years, and what does this mean for students considering it for their savings?	Bitcoin's historical performance	Mixed Method	5,6,7,8,9,12	2,4
IQ 3. How does sustainability affect investing in Bitcoin among student investors?	ESG framework	Mixed Method	6,7,10,11,12	2,4

1.3 Delimitations

This thesis focuses on the role of Bitcoin in students' finance, specifically examining its performance as an investment asset, its potential as a value-preserving asset, and the factors driving its growing popularity. The study primarily concentrates on Bitcoin as the most prominent cryptocurrency due to its widespread adoption, liquidity, and historical market dominance. While other cryptocurrencies, such as Ethereum or stablecoins, may have relevance in the broader context of digital assets, they are excluded from this analysis to maintain a focused and in-depth evaluation of Bitcoin's unique characteristics.

This thesis does not explore the intricate technical details of Bitcoin's blockchain or cryptographic systems in depth, as one of its main goals is to be accessible to a broad audience. Additionally, aspects related to Bitcoin's security are not addressed. Although these components are essential for grasping Bitcoin's technology, this study primarily concentrates on Bitcoin's financial performance and its application in individual investment strategies rather than its technical framework.

1.4 Benefits

This thesis benefits students and young investors interested in the potential benefits and risks of Bitcoin as a savings asset. By examining its benefits and risks, the study enhances financial literacy and equips students with the knowledge needed to make informed investment decisions. This knowledge empowers students to make informed investment decisions, manage their personal finances more effectively, and consider alternative assets in their portfolios. As Bitcoin becomes increasingly integrated into the global financial system, such insights are important for those looking to navigate the evolving economic landscape.

For the author, conducting this research supports my future career aspirations and advances my professional development. Investigating Bitcoin's role in student finances not only deepens expertise in digital assets but also sharpens skills in investment analysis, an area of growing importance in international business.

1.5 Key Concepts

Blockchain is the underlying technology behind Bitcoin and other cryptocurrencies. It is a shared, decentralized, and immutable ledger system that enables the secure recording of transactions across multiple computers. Each block in the chain contains a list of transactions, which are verified by consensus mechanisms such as proof-of-work or proof-of-stake. Blockchain's key features include transparency, immutability, and decentralization, making it the foundational

technology behind cryptocurrencies like Bitcoin. (Cahyadi, Owen, Ricardo & Gunawan 2021; Bains 2022, 4-5.)

Crypto assets refer to digital assets that use cryptographic technologies to maintain their operation as a currency or decentralized application. (Coinmarketcap 2024b.)

Bitcoin is the first and most prominent cryptocurrency, created by an unknown person or group under the pseudonym Satoshi Nakamoto in 2008. Bitcoin operates on a decentralized, peer-to-peer network, allowing users to make transactions without intermediaries like financial institutions. Its key features include limited supply, divisibility, and the use of blockchain technology to ensure transaction security and prevent double-spending. (Nakamoto 2008, 1; Antonopoulos 2017, chapter 1.)

Diversification is a risk management strategy to spread your investments around so that exposure to any one type of asset is limited. This way, investors can reduce the volatility of their portfolio over time. (Fidelity 2024.)

Proof-of-work (PoW) is the original consensus algorithm in a Blockchain network. This algorithm is used to confirm transactions and produce new blocks in the chain. With PoW, miners compete against each other to complete transactions on the network and get rewarded. (Pwc Switzerland 2023.)

Sustainable Investing refers to a range of practices in which investors aim to achieve financial returns while promoting environmental, social, and corporate governance (ESG) factors in their financial decisions. (Harward Business School 2024.)

2 Understanding Bitcoin-Benefits and Risks for Student Investors

This chapter presents the theoretical framework that serves as the basis for this study, aiming to analyze Bitcoin's potential benefits and risks as a savings asset for students and the factors motivating new investors to include it in their portfolios. The chapter begins by exploring the fundamentals of Bitcoin, including its definition, origin, and underlying technology. It then delves into Bitcoin's utility, historical performance, investment metrics, and sustainability considerations, linking these aspects to the research question and investigative questions of the thesis. The material for this chapter has employed the ChatGPT-4 language model to establish an appropriate framework. The writing has been produced with AI multiple times and through an iterative process. For instance, the prompt "Organize chapter and sub-chapters in an appropriate sequence based on the content" was used.

2.1 Bitcoin

Bitcoin is a peer-to-peer electronic cash system that allows online payments to be sent directly from one party to another without going through a financial institution (Nakamoto 2008). Introduced in 2009 by an individual or group under the name of Satoshi Nakamoto, it represents the dawn of a new era in financial technology. Bitcoin is a distributed public ledger known as blockchain. It's a protocol that allows all participants around the world to come to a consensus on the state of the ledger every ten minutes on average. Anyone with a basic computer and an internet connection can participate in the network as a node operator by running a free and open-source software application. Doing so allows them to send and receive transactions without the permission of any centralized entity. (Amous 2018,169.)

Bitcoin's Journey

Bitcoin's journey from a new digital payment system to a widely recognized asset class underscores the dynamic nature of financial innovation and societal acceptance. In its early years, from 2009 to 2012, Bitcoin was primarily used within tech and cypherpunk communities as an experimental form of money. One of the first known commercial transactions with Bitcoin was the purchase of two pizzas in May 2010, when 10,000 Bitcoins were exchanged for two pizzas. (Popper 2015, 43.)

Between 2013 and 2016, Bitcoin entered a critical stage in its history, beginning to capture public attention, particularly due to dramatic price fluctuations. Bitcoin surpassed a value of \$1,000 for the first time. The rise of cryptocurrency exchanges made it easier for more individuals and entities to engage in Bitcoin trading. Platforms like Mt. Gox played a significant role during this period. The

price volatility attracted traders looking to profit from price swings, but it also introduced substantial risks, highlighting Bitcoin's speculative nature during this time.

Notably, in 2013, the FBI shut down Silk Road, an online dark web marketplace that used Bitcoin for transactions involving illegal goods, which brought Bitcoin under intense scrutiny. This raised questions about its use for criminal activities and its regulatory status. The years 2013–2016 were formative for Bitcoin due to its significant increase in visibility, speculative interest, and the beginning of regulatory engagement. Despite challenges from high price volatility and the Silk Road incident, this period was crucial in transitioning Bitcoin from a digital curiosity to a serious subject of discussion in finance and technology, laying the foundation for its eventual acceptance as a legitimate asset class. (Casey & Vigna 2018, 105-110.)

Blockchain Technology

At the core of Bitcoin is its innovative use of blockchain technology, a distributed, cryptographic, and immutable ledger. This ledger records transactions across multiple computers to ensure security, transparency, and immutability without needing a central authority. Each block contains a list of transactions, a timestamp, and a cryptographic hash of the previous block, which links the blocks together and prevents any alteration of prior records. This structure underpins cryptocurrencies like Bitcoin but has broader applications across various industries, including finance, supply chain management, and healthcare, due to its potential to enhance security and efficiency in data management and transaction processes. (Amous 2018, 265; Zheng, Zie, Dai, Chen & Wang 2017, 557- 564.)

Trustless digital cash has been the most successful implementation of blockchain technology, as it is a clean and simple technological process to operate, resulting in relatively slow ledger growth over time, especially in Bitcoin. While there are many easier methods of recording transactions, blockchain is the only method that eliminates the need for a trusted third party. Once a transaction is committed to the blockchain, many verifiers compete to verify it for profit. Yet none of them is relied upon or trusted for the transaction to succeed. Instead, fraud is immediately detected and reversed by other network members, who have strong incentives to ensure the integrity of the network. In essence, Bitcoin is a system built entirely on cumbersome and expensive verification, eliminating the need for any trust or accountability between parties: it is 100% verification and 0% trust. (Amous 2018, 261.)

2.2 Bitcoin's Benefits

Bitcoin, since its inception in 2009 by the pseudonymous Satoshi Nakamoto, has evolved from a niche digital currency to a significant player in the global financial landscape. Its unique characteristics have sparked debates, innovations, and a reimagining of what constitutes money and value in the modern world. This chapter explores the utility of Bitcoin, delving into its benefits as well as the inherent risks associated with its adoption as a savings asset.

An asset is a resource with economic value that is owned by an individual or entity (Investopedia, 2023). When we think of Bitcoin as a possible savings asset, we are looking at its potential to function as a modern store of value. Bitcoin shares key properties with savings assets, such as scarcity, durability, and divisibility, but also introduces unique characteristics inherent to digital currencies. (Amous 2018, 199-200.)

2.2.1 Bitcoin as a Store of Value

The concept of a store of value is foundational in economics, representing an asset that can preserve purchasing power over time. Traditional stores of value, such as gold, have been valued for their scarcity and resistance to inflation. Bitcoin introduces a new paradigm by offering a digital asset with provable scarcity. The total supply of Bitcoin is capped at 21 million coins, a feature hard-coded into its protocol, making it immune to inflationary pressures that affect fiat currencies. (Amous 2018, 193-198.)

The scarcity of Bitcoin addresses the fundamental misunderstanding of resource limitations. As Julian Simon posited in "The Ultimate Resource," the true scarcity lies not in physical resources but in human time and ingenuity. Bitcoin, by being strictly limited in supply, aligns with this perspective by representing the finite nature of human time invested in its creation. (Amous 2018, 193-198.)

Bitcoin is the first asset in human history to introduce the concept of *absolute scarcity*. Bitcoin represents a revolutionary solution to the store of value problem by introducing the concept of absolute scarcity through its fixed supply cap of 21 million coins. (Nakamoto, 2008.) Unlike physical commodities, Bitcoin's supply is governed by mathematical algorithms embedded in its protocol, making it immutable and predictable (Amous 2018, 193-198). Bitcoin's issuance model is one of the key supporters of its value. Every 210,000 blocks- which at one block per 10 minutes takes four years- Bitcoins network would cut in half the amount of Bitcoin issued by miners; this is known as a "block reward halving." Or "halving" for short. (Burniske & Tatar 2018, 36.) On November 28, 2012, the first halving of the block reward from 50 bitcoin to 25 bitcoin happened, and the second halving from 25 bitcoin to 12.5. bitcoin occurred on July 9, 2016. The third happened four years from that

date, in May 2020, and the earliest happened in April 2024. The process will end once the number of Bitcoins in circulation reaches 21 million. A popular estimate is that it will occur sometime near the year 2140. Currently, the total number of bitcoins in circulation is 19,760,625 bitcoins. (CoinMarketCap 2024a.)

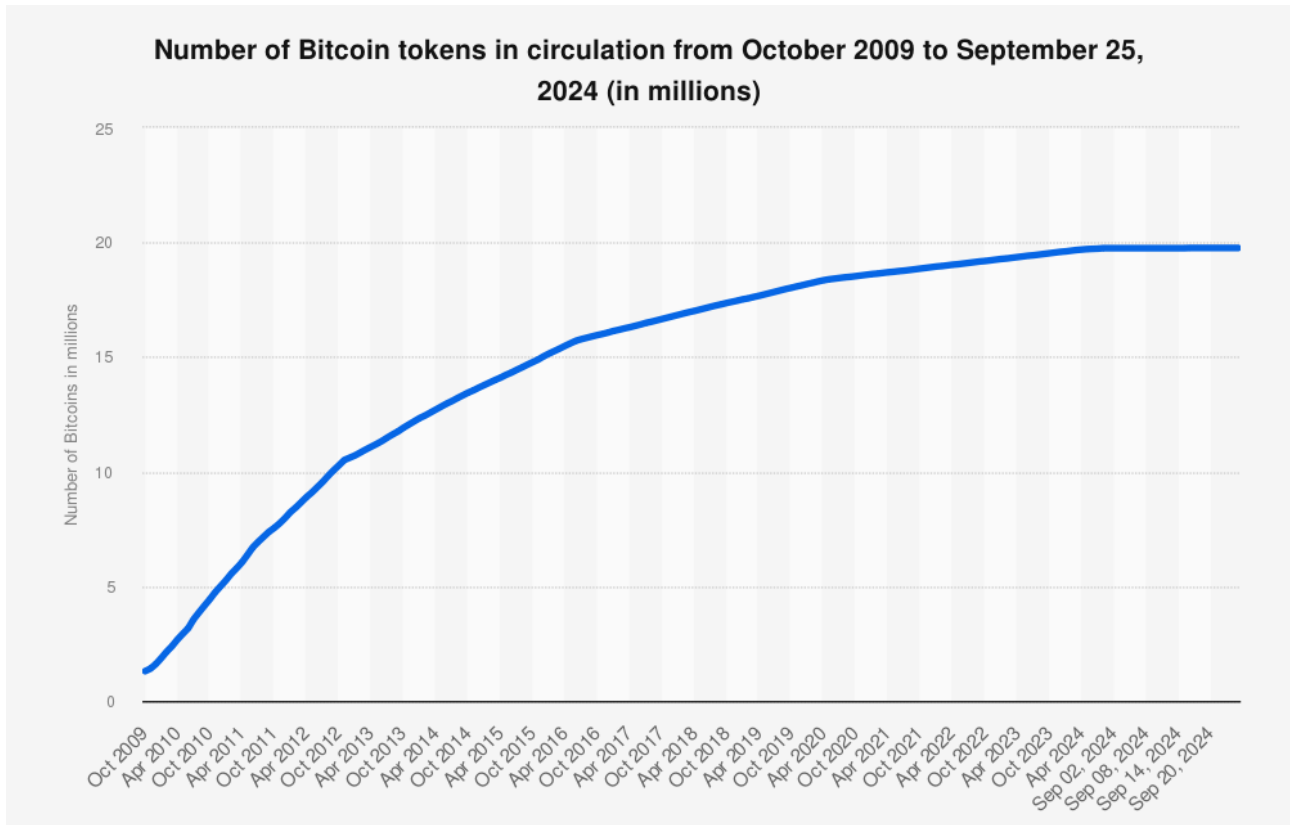


Figure 1. Bitcoin's supply schedule (CCdata 2024)

From a long-term perspective, Bitcoin supply trajectory looks linear (Figure 1). Satoshi understood that for Bitcoin to succeed as a form of money, it needed to have properties addressing the shortcomings of existing monetary systems. By rewarding early adopters with higher mining rewards, Satoshi incentivized participation in the network, creating sufficient support and a base of monetary liquidity necessary for growth. As the network matured and Bitcoin's value increased, the decreasing issuance rate ensured that the supply remained scarce, reinforcing its role as a store of value. (Burniske&Tatar 2018, 37; Nakamoto 2008.)

Empirical data supports Bitcoin's effectiveness as a store of value. Despite its volatility, Bitcoin has shown a significant upward trajectory in value over the past decade. Bitcoin's price has increased from \$0.08 in 2010 to \$70,000 in 2024 (CoinMarketCap 2024a).

2.2.2 Individual Sovereignty, Privacy and Security

Bitcoin's decentralized architecture empowers individuals by providing financial sovereignty and autonomy unprecedented in modern history. Unlike traditional financial systems controlled by central authorities and intermediaries, Bitcoin transactions are peer-to-peer and do not require approval from any central entity (Amous 2018, 200-2004). This feature is particularly significant in contexts where individuals face restrictive governmental policies or lack access to reliable banking services.

Bitcoin transactions can be conducted securely, with users having the option to maintain a high degree of anonymity. This feature protects against surveillance and unauthorized access, offering a level of privacy that is often not possible with traditional financial systems (Möser, Böhme & Breuker 2013). Advanced cryptographic techniques ensure that Bitcoin holdings are secure from hacking and fraud (Bonneau, Miller, Clark, Narayanan, Kroll & Felten 2015).

Bitcoin's resistance to censorship and seizure is not merely theoretical. For instance, in countries experiencing hyperinflation or capital controls, such as Venezuela or Zimbabwe, Bitcoin has provided a viable alternative for individuals to preserve wealth and conduct transactions (BBC News 2019). Moreover, the global nature of the Bitcoin network allows individuals to participate in the global economy without the limitations imposed by national borders or monetary policies.

Bitcoin is a distributed public ledger, and owners of Bitcoin can access and transmit their Bitcoin from one digital address to another digital address if they have their private key, which unlocks their encrypted address. Owners store their private keys on devices, or even on paper or engraved in metal. In fact, a private key can be stored as a seed phrase that can be remembered, and later reconstructed. An individual could memorize their seed phrase, destroy all devices that ever stored their private key, cross international borders with nothing physical, and then reconstruct access to their Bitcoin using the memorized seed phrase. (Alden 2020.)

2.2.3 Bitcoin in International and Online Payments

Traditional cross-border transactions often involve multiple intermediaries, leading to delays, high fees, and counterparty risks. Bitcoin's blockchain technology enables near-instantaneous settlement with finality, reducing reliance on correspondent banking networks and minimizing associated risks. (Binance 2024.)

The decentralized ledger of Bitcoin allows for transparent and immutable record-keeping, which is particularly advantageous for international trade. The ability to audit transactions in real-time enhances trust among parties and reduces the potential for fraud. According to a report by Deloitte

(2020), blockchain technology, exemplified by Bitcoin, has the potential to reduce settlement times from days to minutes, significantly increasing efficiency in international finance.

Bitcoin's borderless nature and resistance to censorship make it an ideal medium for international transactions, especially in regions where traditional banking infrastructure is underdeveloped or unreliable. The Lightning Network, a second-layer protocol built on top of Bitcoin, further enhances its scalability and suitability for small and frequent transactions by enabling faster and cheaper off-chain transactions (Poon & Dryja 2016).

2.3 Bitcoin's Historical Performance and Investment Metrics

Bitcoin's genesis block was mined on January 3, 2009. In the beginning, Bitcoin had no established market price. The earliest known Bitcoin transaction was a peer-to-peer exchange between Nakamoto and developer Hal Finney, with Bitcoin primarily used within a small community of enthusiasts. The first real-world transaction of Bitcoin occurred on October 12, 2009, when Martti Malmi, a developer who worked with Nakamoto, exchanged 5,050 Bitcoins for a mere \$5.02. (Bitcoin Magazine 2023.) Bitcoin Market was announced on Bitcointalk in 2010, and it launched the same year, offering a floating exchange rate for Bitcoin. Buyers could purchase bitcoin by sending another user U.S. dollars via PayPal, while Bitcoin Market would hold the seller's bitcoin in escrow until the seller received their money. In February 2011, BTC's price reached parity with the U.S dollar for the first time, followed by a peak of \$29.60 on June 8, 2011; however, a sharp recession in cryptocurrency markets followed, and Bitcoin's price dropped, closing out the year at about \$5. (Investopedia 2024.)

Bitcoin's price history from 2012 to the present has been characterized by significant volatility, with dramatic price increases, crashes, and recovery periods. Starting in 2012, Bitcoin's price was around \$5-10, but it quickly gained attention as a new financial asset. Bitcoin experienced its first post-halving bull run at the beginning of 2013 then the first major bull run occurred in late 2013, when Bitcoin's price surged to over \$1,000, largely fueled by increased media attention and interest in its decentralized nature (Bitcoin magazine 2023). Bitcoin's infamous volatility was very high in 2014. It started the year above \$1,000, and due to Mt Gox's hack, the price crashed to \$111. Bitcoin continued with fluctuations and closed the year at just over \$300. During 2015, Bitcoin's price ranged from \$314-\$431. The second Bitcoin Halving occurred in July 2016, and throughout the year, the price of Bitcoin was relatively stable, trading between \$350 and \$700 in the summer months, only to hit \$966 at the end of the year. (Bitcoin Magazine 2023.)

Bitcoin's second major rally occurred in 2017, driven by a surge in global interest and the introduction of Bitcoin futures, which brought institutional investors into the market. This period saw

Bitcoin reaching a peak of nearly \$20,000 in December 2017 (CoinMarketCap 2017a). However, the market quickly turned bearish in 2018, with Bitcoin's value dropping by over 80% throughout the year, largely due to regulatory crackdowns and concerns over market manipulation (Bitcoin Magazine, 2023). Despite the crash, Bitcoin's underlying technology continued to gain traction, with developments such as the Lightning Network promising faster transactions. For most of the year, Bitcoin traded within the \$6,000 and \$8,000 range, hitting a bottom of \$3,250 in December and closing the year at just over \$3,700 (CoinMarketCap 2017a). Bitcoin mainly moved sideways during 2019, with a significant spike in June when positive news about institutional investors and wider adoption of cryptocurrencies converged and triggered a positive move upwards. Bitcoin's price ranged around \$3,690-\$7,240 (Bitcoin Magazine 2023.)

In 2020, Bitcoin's price fell sharply to \$4,000 in March as COVID-19 disrupted global markets. The subsequent third Halving event in May helped support a gradual recovery, pushing Bitcoin above \$10,000. Later in the year, institutional interest surged, led by MicroStrategy's significant Bitcoin investments. Additionally, U.S. economic measures, such as increased money printing, drove concerns about inflation, boosting Bitcoin's appeal as a store of value. By December, Bitcoin surpassed its previous all-time high (ATH), closing the year above \$29,000. (Bitcoin Magazine, 2023.)

Bitcoin's 2021 journey began with optimism, reaching a record high of \$64,594 in April, driven by institutional interest, including Tesla's \$1.5 billion purchase. However, China's ban on crypto transactions and mining in May caused a crash, dropping Bitcoin to a low of \$29,970 by July. Optimism returned with El Salvador adopting Bitcoin as legal tender and the launch of the first Bitcoin ETF, pushing the price to a new high of \$68,789 in November. The year ended with a 20% retreat amid COVID-19 concerns, inflation, and expected interest rate hikes. (Bitcoin Magazine, 2023.)

In 2022, Bitcoin faced significant challenges amid global economic turmoil, including the Russia-Ukraine war, rising interest rates, and regulatory pressures, leading to a decline in investor interest. Bitcoin's price fell to \$35,000 in January, fluctuated to \$47,459 in March, but dropped to the \$20,000 range due to ongoing geopolitical tensions. The collapse of Terra's UST stablecoin in May triggered a broader market crisis, leading to the downfall of major firms like Celsius and 3AC. Bitcoin reached a low of \$15,477 in November, closing the year at \$16,537, down 64%. (Bitcoin Magazine, 2023.)

In 2023, Bitcoin's price experienced significant fluctuations amid shifting market dynamics. Early optimism in January led to a 45% rise, while March saw setbacks from Silvergate's collapse and

regulatory pressures like a proposed tax on Bitcoin mining. Despite these challenges, Bitcoin rebounded past \$24,000 after federal reassurances. The year later saw major developments, including the launch of Bitcoin futures ETFs, legal wins for Grayscale, and a notable October rally to \$35,000. The year closed with Bitcoin maintaining above \$40,000, reflecting growing institutional interest and market stability. (Bitcoin Magazine, 2023.)



Figure 2. Bitcoin Price Chart from 2011-2024 (TradingView 2024)

2.4 Absolut returns, Volatility

Bitcoin, as a relatively new digital asset, presents a unique set of characteristics in terms of absolute returns and volatility. In this section, we explore the theoretical underpinnings of these two essential investment metrics, how they relate to traditional asset classes, and how they influence Bitcoin's suitability as an asset for students.

In finance, absolute return refers to the measure of the gain or loss that an asset or portfolio generates over a given period, expressed as a percentage of the initial investment, without comparing it to any benchmark or market index (Body, Kane, & Marcus 2014, 170-180). Bitcoin has shown extraordinary absolute returns since 2011. Starting from 2011, when it first hit \$1, to reaching an all-time high of \$73,750 in March 2024. (CoinMarketCap 2024a.)

In terms of absolute return, the long-term comparison between Bitcoin and other major assets is jaw-dropping. Based on data From January 2014 till August 2024, when this thesis was being written, 6200% is Bitcoin's Absolut return. Similarly, the OMX Helsinki index showed 45%, Nasdaq 100 455%, Gold 101%, and S&P 500 215% return in the same time frame. (Investing.com 2024a-c).

This difference highlights Bitcoin's exceptional potential for growth as an asset, making it an appealing investment option for students willing to embrace risks in pursuit of high returns.

According to Goldman Sachs (2021), Bitcoin is a new investable asset class; therefore, comparison with other major asset classes can be complicated. As a digital asset with unique characteristics, Bitcoin's absolute returns offer a lens into its growth and risk dynamics, providing an understanding of its performance as a stand-alone asset rather than in relation to broader market trends.

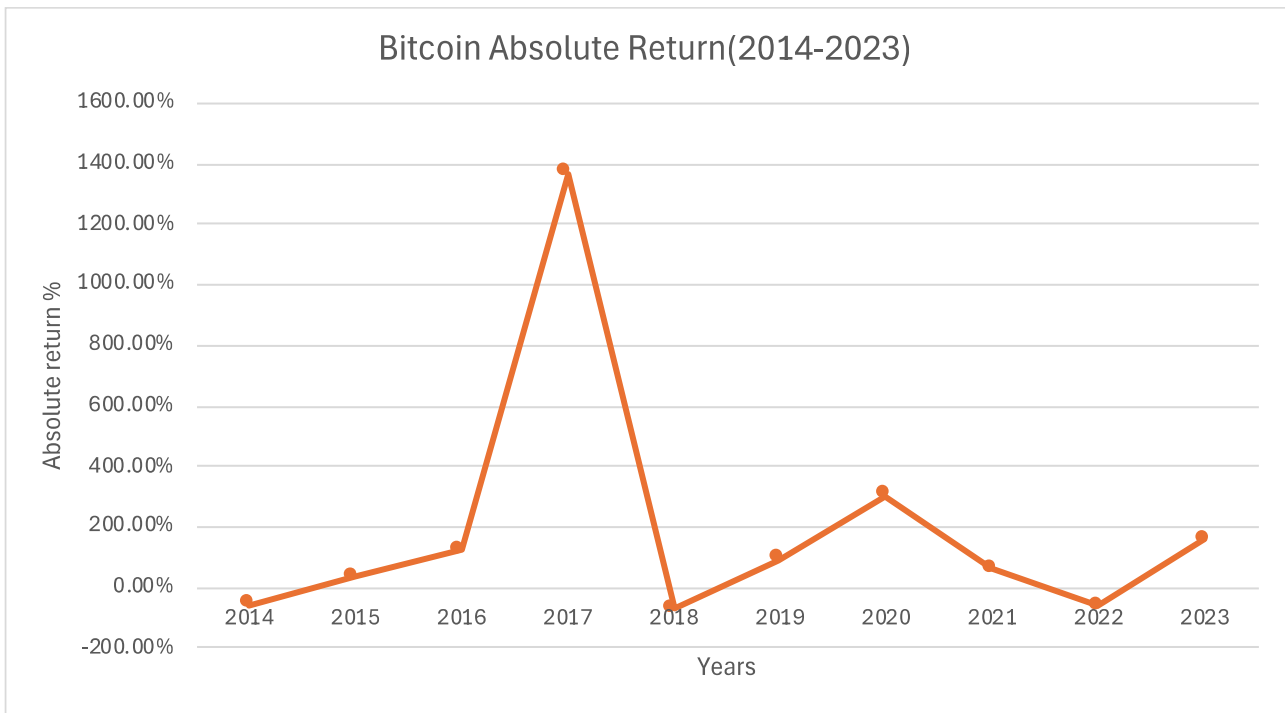


Figure 3. Bitcoin absolute return (CoinMarketCap 2024a)

2.4.1 Volatility of Bitcoin

Bitcoin's remarkable returns have been accompanied by substantial price volatility. A simple method to illustrate the volatility of an asset is to observe the daily fluctuations in its price. Volatility is typically calculated by measuring the standard deviation of daily percentage changes in price. A larger value indicates that investors should anticipate considerable fluctuations in the price of the asset they possess, making it a riskier investment. Early in Bitcoin history, there were frequent fluctuations, with the price moving more than 50% in a day. As the Bitcoin market became more liquid, the fluctuations decreased dramatically, and market moves became smoother. (Burniske & Tatar 2018, 94.)

Bitcoin's price volatility has been notably higher than that of traditional assets since it began trading actively in 2011. In fact, from 2020 to 2024, bitcoin has been three to nearly four times as volatile

as various equity indices. According to Fidelity Digital Assets (2023), Bitcoin has an annual volatility of 72% while gold has 15%, S&P 500 has 19.6%. While bitcoin as an asset class is certainly more volatile than other major asset classes, it is interesting to note that bitcoin is now less volatile than some prominent individual securities - many of which are widely held among traditional investors.

For example, over the last two years, bitcoin has been less volatile than Netflix (NFLX) stock. The realized volatility of NFLX on a 90-day timeframe averaged 53%, while Bitcoin's realized volatility over the same timeframe averaged 46%. (Fidelity Digital Asset 2024.) What is more, the market's reaction to macroeconomic events also significantly influences Bitcoin's volatility. For example, the crash from \$65,000 to under \$54,000 in August 2023 was primarily influenced by fears of a global recession, a macroeconomic event unrelated to Bitcoin itself (Fidelity Digital Assets 2024). Such insights allow a better theoretical understanding of Bitcoin's behavior in different economic environments, contributing to the empirical aspects of this thesis by providing context for observed price trends.

Several factors contribute to Bitcoin's high volatility:

Market Maturity and Liquidity

Bitcoin is a young asset, and early in its history, the market had lower liquidity, making prices more susceptible to fluctuations caused by larger trades or events. As more institutional investors participate and the market develops, Bitcoin's liquidity has improved, which should theoretically contribute to reducing its volatility in the long term. (Fidelity Digital Assets 2024.) However, despite improvements, Bitcoin remains more volatile than traditional assets like stocks or bonds due to its smaller market size and nascent status as an asset class. This nature of Bitcoin means that Bitcoin is still in the price discovery phase, where the market is continuously assessing its true value (The Block 2024).

Speculative Investment and Market Sentiment

Bitcoin attracts speculative investors aiming for high returns, resulting in rapid price increases and subsequent corrections. Market sentiment, influenced by news events, regulatory changes, and market rumors, plays a critical role in shaping investor behavior, often leading to sharp price fluctuations. For instance, market reactions to major announcements, such as decisions on Bitcoin exchange-traded funds (ETFs) or central bank statements, can drive significant price changes (Investopedia 2023). Additionally, Bitcoin's price volatility is heightened by large stakeholders or "whales," whose significant trades can impact the overall market (The Block 2024).

Regulatory Environment

Regulatory uncertainty significantly contributes to Bitcoin's volatility. Government actions such as China's 2021 crackdown on cryptocurrency exchanges and mining led to sharp price declines, demonstrating Bitcoin's sensitivity to regulatory environments. Conversely, positive regulatory developments, like the approval of Bitcoin ETFs in regions such as North America, have historically boosted investor confidence and supported price stabilization by encouraging broader institutional participation. The influence of regulation highlights the need for clearer global policies, which could reduce volatility by providing a more predictable environment for investors. (FinTechMagazine 2024.)

Macroeconomic Factors

Global economic events, such as fears of a global recession or changes in monetary policy by central banks, can influence Bitcoin's price. As a decentralized asset, Bitcoin often serves as a hedge against inflation, attracting investors during periods of currency devaluation or economic uncertainty. For instance, when inflation rises, investors often turn to Bitcoin as a hedge against currency devaluation. For example, during the inflation surge in 2022, when the U.S. inflation rate reached 8.5%, Bitcoin saw increased demand as investors sought to preserve value amid declining fiat purchasing power. (Bitcoin Magazine 2022.)

In another example, during the COVID-19 pandemic, economic instability led to increased interest in decentralized assets like Bitcoin as a hedge. Furthermore, geopolitical events and fluctuations in major world currencies can impact investor sentiment toward Bitcoin, as it is perceived as an asset with the potential to preserve value across borders. (The Block 2024.) Thus, Bitcoin's role as a decentralized and borderless currency makes it highly sensitive to changes in macroeconomic conditions, contributing to its notable price volatility.

For student investors, Bitcoin presents both opportunities and challenges. While its potential for high returns makes Bitcoin an appealing asset, its significant price swings call for a cautious approach. Financial experts recommend diversification to manage this volatility, balancing Bitcoin's high return potential with more stable investments (iShares 2024). This is where Modern Portfolio Theory (MPT) becomes especially relevant. Emphasizing diversification to achieve an optimal balance between risk and return, MPT provides a framework for incorporating volatile assets like Bitcoin into a broader, well-managed portfolio. (Burniske & Tatar 2018, 70-76.)

2.4.2 Modern Portfolio Theory

Modern Portfolio Theory (MPT), established by Nobel Prize winner Harry Markowitz in 1952, is a foundational concept for constructing well-balanced investment portfolios. It suggests that an investment strategy should be built around three key factors: financial goals, time horizon, and risk tolerance. This means that before building any portfolio, students should think about their financial objectives (e.g., saving for further education or long-term investments) when they plan to use the funds and how comfortable they are with potential difficulties in their savings (Burniske & Tatar 2018, 70.)

MPT's core idea is to maximize returns while minimizing risk by creating a diversified portfolio. Markowitz introduced the concept of the "efficient frontier," which is a set of optimal portfolios that offer the highest possible return for a given level of risk. This theory advises that the overall risk of a portfolio can be minimized by strategically combining different assets—like stocks, bonds, and, more recently, digital assets such as Bitcoin—whose prices do not move in perfect sync. This strategic combination is what allows a portfolio to reach its maximum potential return without exceeding the investor's risk tolerance. (Burniske & Tatar 2018, 71-78.)

Why Is MPT Important for Students?

Understanding MPT is crucial for students who are building their first investment portfolios because it helps illustrate the balance between risk and reward. Students, young investors, often have a longer investment time horizon, allowing them to potentially take on more risk for higher returns (Malkiel 2019, 368-369). According to Statman (2018), young investors can benefit from the principles of diversification outlined in MPT to optimize their portfolios for better risk-adjusted returns.

A key feature of MPT is how it treats risk, emphasizing that not all risk is the same. It breaks down risk into *systematic* and *unsystematic* categories. Systematic risk affects the entire market and cannot be avoided, such as economic recessions or political events. Unsystematic risk, on the other hand, is specific to individual companies or industries and can be minimized through diversification. (Sharpe 1964, 425-442.) For example, if an investor holds both tech stocks and utility stocks, a downturn in the tech industry may be offset by stable performance in utilities, thus neutralizing some of the losses. (Burniske & Tatar 2018, 74-76.)

Correlation and Diversification: Why Bitcoin Matters

One of the critical insights of MPT is that adding a high-risk asset to a portfolio can reduce overall risk if that asset's returns do not closely correlate with the other assets in the portfolio. Correlation measures how two assets move in relation to one another, ranging from +1 (perfectly coordinated) to -1 (moving in opposite directions). A low or negative correlation means that when one asset performs poorly, the other might perform well, which helps stabilize the portfolio. (Burniske & Tatar 2018, 74-76.)

Traditionally, stocks and bonds have been used to achieve this balance, as they often react differently to market conditions. However, in recent years, Bitcoin and other digital assets have gained attention because they tend to have low correlations with traditional markets. This means they behave differently compared to stocks and bonds, providing a new way to diversify. Including Bitcoin in a student's portfolio may lower overall risk while potentially increasing long-term returns. (Burniske & Tatar 2018, 76-77.)

2.5 Sustainability and Environmental Impact of Bitcoin Mining

Sustainability has emerged as a pivotal consideration in investment strategies, reflecting a shift toward recognizing the connection between financial performance and societal impact. Sustainable investing, which integrates environmental, social, and governance (ESG) factors into investment decisions, has experienced remarkable growth. As of 2020, global sustainable investment assets reached \$35.3 trillion, accounting for 36% of all professionally managed assets. (Global Sustainable Investment Alliance 2020.) This surge is driven by increasing awareness of global challenges such as climate change, resource scarcity, and social inequalities, prompting investors to seek opportunities that not only offer financial returns but also contribute positively to society.

In the context of cryptocurrency, and Bitcoin in particular, sustainability considerations are becoming increasingly relevant. As this thesis explores the potential benefits and risks of Bitcoin as an asset for students, understanding the role of sustainability in investment decisions is essential. The following sections will delve deeper into ESG criteria and examine how environmental factors, especially those related to Bitcoin mining, impact the viability of Bitcoin as a sustainable investment option.

Environmental, Social, and Governance (ESG) criteria

Environmental, Social, and Governance (ESG) criteria are a set of standards for a company's operations that socially conscious investors use to screen potential investments. ESG criteria help to

evaluate how an organization is managing risks and opportunities related to environmental, social, and governance aspects (Deloitte 2022).

- Environmental criteria examine how a company's activities impact the environment and how those impacts are managed. This includes the company's energy use, waste, pollution, natural resource conservation, and treatment of animals.
- Social criteria consider how a company manages relationships with its employees, suppliers, customers, and the communities where it operates. This encompasses labor relations, diversity and inclusion, human rights, and community impact.
- Governance criteria involve the set of rules or principles defining rights, responsibilities, and expectations between different stakeholders in the governance of corporations. It includes practices around executive remuneration, audits, internal controls, and shareholder rights. (Deloitte 2022.)

Incorporating ESG criteria into investment decisions allows investors to identify companies that are better positioned for long-term success due to sustainable and ethical practices (PRI, 2018). This approach acknowledges that ESG factors can have a material impact on a company's financial performance and risk profile.

In order to assess Bitcoin as a viable sustainable investment, it is essential to apply Environmental, Social, and Governance (ESG) criteria. Bitcoin is a unique asset that defies direct comparison with traditional investment vehicles. Some view it as a new store of value akin to a synthetic, counterparty-free commodity; others value its underlying value transfer system that enables both payment and settlement functions in a permissionless and censorship-resistant manner; and still others are drawn to its tamper-resistant public ledger, which provides an incorruptible notary function. Analyzing Bitcoin through the ESG lens offers a structured approach to evaluate its sustainability impacts, benefits, and risks. (CCAF 2024.)

Environmental Considerations

Bitcoin's Proof-of-Work (PoW) consensus mechanism requires substantial computational power, leading to significant energy consumption. According to the Cambridge Bitcoin Electricity Consumption Index (CBECI), the annual electricity usage of the Bitcoin network is estimated to be around 164.7 TWh. To give a better understanding of gold mining consumes 131 TWh per year. (CCAF 2024.)

This high energy demand raises concerns about carbon emissions, especially when mining operations rely on fossil fuels (Stoll, Klaaßen, & Gellersdörfer 2019, 1650). Bitcoin is estimated to emit

83.49 MtCO₂e Greenhouse gas emissions (GHG) per year compared to gold mining, which emits 100.4 MtCO₂e per year (CCAF 2024).

However, recent developments indicate a shift toward more sustainable practices. Reports such as CoinShares Research (2019) suggest that approximately 74% of Bitcoin mining is powered by renewable energy sources, primarily hydroelectric power. According to the Bitcoin Mining Council's 2022 report, 59.5% of the total Bitcoin mining global energy comes from renewable sources, which is a good sign of progress. The council further reported a 46% increase in efficiency on a year-on-year basis due to increased mining efficiency and improved semiconductor technology. This is driven by miners relocating to regions with cleaner energy sources and adopting more energy-efficient mining hardware. (Bitcoin Mining Council 2022a.)

Efforts to reduce the environmental impact include initiatives to utilize excess renewable energy that would otherwise be wasted and to capture flared natural gas for mining operations, thereby reducing greenhouse gas emissions. These practices not only mitigate environmental concerns but also improve the economic efficiency of energy use.

Social Considerations

Bitcoin offers unique opportunities for enhancing financial inclusion. According to the World Bank (2017), over 1.7 billion adults globally remain unbanked. Bitcoin provides an accessible platform for financial transactions without the need for traditional banking infrastructure, enabling individuals in developing countries or regions with unstable financial systems to participate in the global economy. It can serve as a hedge against currency devaluation, facilitate low-cost remittances, and empower individuals by giving them control over their finances.

In countries like Nigeria and Venezuela, where economic instability is prevalent, Bitcoin adoption has surged as citizens seek to preserve their wealth and access financial services (Al-Jazeera 2021). Moreover, El Salvador's adoption of Bitcoin as legal tender in 2021 highlights its potential role in national economies and its impact on financial inclusion. Bitcoin has also been utilized in humanitarian efforts, such as during the 2022 conflict in Ukraine, where nearly \$70 million in cryptocurrency donations were raised, enabling quick and unrestricted access to vital resources when traditional financial channels faced delays. (KPMG 2023.)

Despite these advantages, challenges remain in the broader adoption of Bitcoin. Limited internet access and digital literacy, particularly in rural areas, can impede access to Bitcoin's benefits. Moreover, regulatory uncertainties in various regions pose risks that can discourage potential users, especially those concerned with the legality and safety of cryptocurrency transactions. (KPMG,

2023.) Addressing these barriers is crucial to unlocking Bitcoin's full potential for social impact, ensuring it can serve as a tool for financial empowerment rather than exclusion.

Governance Considerations

Bitcoin's decentralized governance model promotes autonomy and reduces reliance on centralized institutions, enhancing security and resilience. Decisions regarding protocol updates are made through community consensus via Bitcoin Improvement Proposals (BIPs), allowing for democratic participation among stakeholders. (Nabilou 2021.) However, this decentralized approach also brings challenges in terms of accountability and regulatory compliance. The absence of a central authority can delay the implementation of necessary updates, complicating efforts to address systemic issues promptly (KPMG 2023). Additionally, while Bitcoin's pseudonymous nature supports user privacy, it raises concerns about its use in illicit activities like money laundering. Although blockchain transparency aids law enforcement in tracing transactions, these concerns have led to heightened regulatory scrutiny (Financial Action Task Force [FATF] 2019).

Balancing decentralization with effective governance mechanisms remains critical for Bitcoin's evolution. Collaborative efforts between industry stakeholders and regulators are ongoing, aiming to address these challenges while preserving the network's foundational principles of transparency and decentralized control (KPMG 2023).

3 Research Methods

This research methods chapter, as a part of this thesis, provides a detailed view of the approach taken to investigate the research question. In this chapter, the research methodology is explained. The author presents and justifies the research design, sampling, data collection, and data analysis methods used for the thesis. Furthermore, the author established the validity, reliability, and relevance of the research and provided an understanding of the author's approach and reasoning for the author's research.

3.1 Research Design

The research design of this study aims to provide an understanding of the factors influencing students' investment in Bitcoin. The study employs a combination of desktop research (secondary data analysis) and a survey to gather comprehensive insights. The study is primarily descriptive and exploratory in nature. Descriptive studies aim to gain an accurate profile of events, persons, or situations, often addressing questions like "Who," "What," "Where," "When," or "How." An exploratory approach explores or clarifies an understanding of an issue, problem, or phenomenon (Saunders, Lewis, and Thornhill 2023, 179-180).

A mixed-methods research design was chosen, integrating both qualitative and quantitative approaches. The secondary data was collected through desktop research, which involved analyzing existing literature, books, and online articles (qualitative data) and supplemented by a structured survey (quantitative data) consisting of 11 questions plus 1 open-ended additional comment question targeting university students for gathering primary data. This methodological choice aligns with the mixed-methods design described by Saunders et al. (2023, 181), where quantitative and qualitative data collection techniques and analysis procedures are combined to provide a better understanding of the research problem than either method alone.

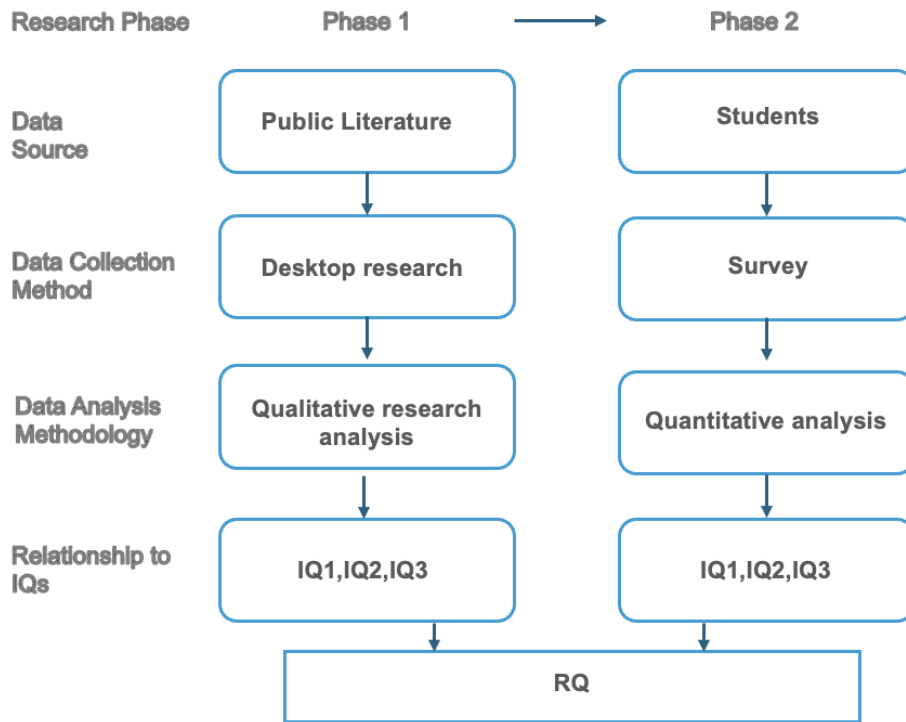


Figure 4. Research phrases and chosen approach

3.2 Sampling

The target population for the survey consisted of university students, specifically those enrolled in undergraduate or postgraduate programs who have the potential to invest or are interested in investment opportunities like Bitcoin. This demographic is relevant due to their proximity to financial independence and openness to new investment vehicles. A total number of 58 students participated in the online survey. This sample size was deemed sufficient to provide meaningful quantitative data for analysis while remaining manageable for the scope of the study.

Efforts were made to reach a diverse group in terms of study disciplines and academic levels to enhance the representativeness of the sample. A non-probability convenience sampling method was employed. Given time and resource constraints, participants were selected based on their accessibility and willingness to participate. (Saunders et al. 2023,313.) Efforts were made to reach a diverse group in terms of study disciplines and academic levels to enhance the representativeness of the sample. Participants were recruited through online university channels, social media platforms, and LinkedIn, aiming to include students from various faculties and academic years.

3.3 Data Collection

Both primary and secondary data were collected to address the research question.

Desktop research (secondary data collection) is conducted to review relevant literature on Bitcoin, focusing on investment metrics such as absolute return, volatility, the Sharpe ratio, and sustainability issues. This method supports the theoretical framework by incorporating insights from key texts like *The Bitcoin Standard* (Ammous 2018) and reports from reputable sources such as CoinMarketCap. The literature review contextualizes the survey findings, helping to explain trends observed in students' attitudes toward Bitcoin investment. It also provides a basis for understanding how Modern Portfolio Theory (MPT) applies to Bitcoin's role in diversified investment portfolios. Findings from desktop research are used to interpret the empirical data collected through the survey, ensuring that the analysis is grounded in both current academic discussions and real-world student perspectives.

The survey collected quantitative data directly from university students using a structured online questionnaire. It consisted of 11 questions, primarily closed-ended, using single-choice and multiple-choice formats to facilitate statistical analysis. For instance, respondents rated the importance of Bitcoin's environmental impact on their investment decisions using a scale ranging from "Not Important" to "Extremely Important." Additionally, one open-ended question was qualitatively analyzed.

The survey was conducted using Webropol, an online survey platform. Participants were recruited through links shared on online channels and social media. Before participating, students were informed about the study's objectives, and assured of anonymity, in alignment with the ethical guidelines of Saunders et al. (2023, 249)

3.4 Data Analysis methods

Qualitative analysis: The desktop research employed thematic analysis to identify key themes related to Bitcoin's role in investment portfolios. Thematic analysis is a widely used approach for analyzing qualitative data, allowing the researcher to identify, analyze, and report patterns within the data. (Saunders et al. 2023, 651). Themes are synthesized with survey data to provide a well-rounded perspective on Bitcoin's potential for student investors.

Quantitative analysis: Survey responses are analyzed using descriptive to identify trends in students' investment motivations and risk perceptions. Cross-tabulation is used to explore relationships between variables, such as the correlation between students' knowledge of Bitcoin and their investment behavior. The author used GPT-4, OpenAI's generative artificial intelligence, to assist

in conducting the statistical analysis, enabling efficient data processing. The combination of findings from desktop research and survey data provided a thorough understanding of the factors influencing students' investment behavior.

3.5 Validity, reliability, and relevance

Content validity was ensured by aligning survey questions closely with the research question and objectives. This alignment guaranteed that each question was directly relevant to understanding Bitcoin's role in student finances. Construct validity was achieved by designing survey items that accurately measure constructs such as investment intention, perceived risk, and sustainability concerns.

External validity was considered by attempting to include a diverse sample of students from different academic disciplines and levels. To ensure reliability, a pilot survey was conducted with a small group of students to refine the survey questions. This process helped in minimizing ambiguities and ensuring consistency in the data collection process.

The research is timely, given the growing interest in cryptocurrencies among young investors and ongoing discussions about Bitcoin's environmental impact. By combining desktop research with primary data, the study provides practical insights that are relevant to academics, students, and financial practitioners alike.

Ethical concerns were addressed by guaranteeing the anonymity of respondents. Data was stored securely, accessible only to the researcher, and participants were informed of their rights, including the voluntary nature of participation and the option to withdraw at any time.

4 Research findings

This chapter presents the findings from the online survey conducted among university students, providing an overview and analysis of their responses. The analysis integrates quantitative data from the survey with insights from desktop research to address the research questions outlined in this study. The results are presented using figures accompanied by descriptive statistics that summarise the key trends and patterns observed.

This chapter begins by outlining the demographic profile of the survey respondents, including their academic background and level of familiarity with Bitcoin and cryptocurrencies. It then explores important factors regarding Bitcoin's acceptance among students, including reasons for investing, perceived obstacles, and considerations related to risk. Additionally, the chapter highlights the impact of Bitcoin's environmental sustainability on investment decisions, reflecting the growing importance of ethical considerations among younger investors.

4.1 Demographics and background

This section covers the demographics of the respondent's gender and field of study.

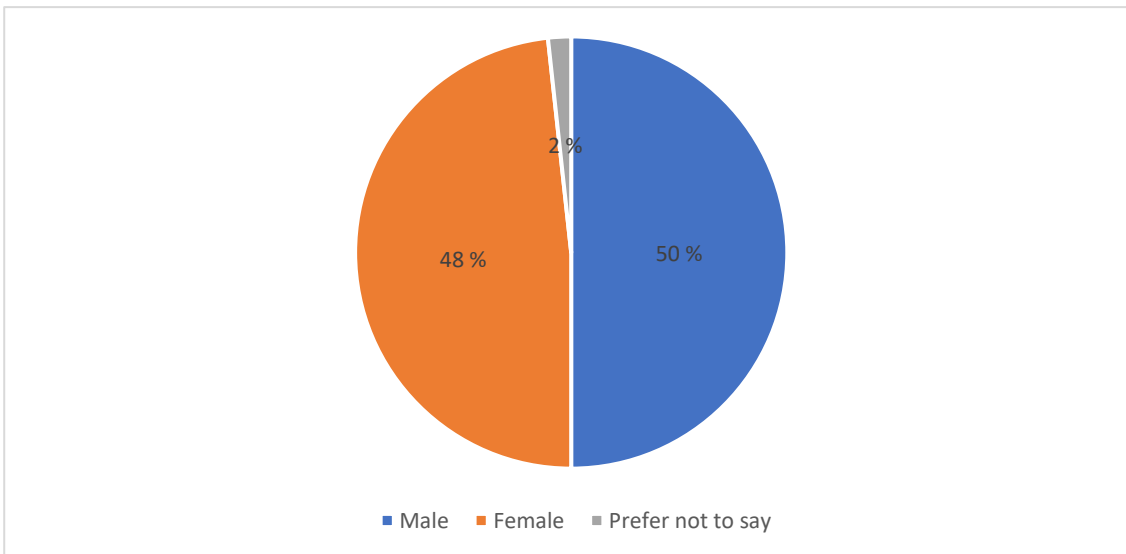


Figure 5. Gender distribution of respondents (n=58)

Based on Figure 5 among the 58 respondents, there was an equal gender distribution, with 50% male and 48% female, and 2% choosing not to specify.

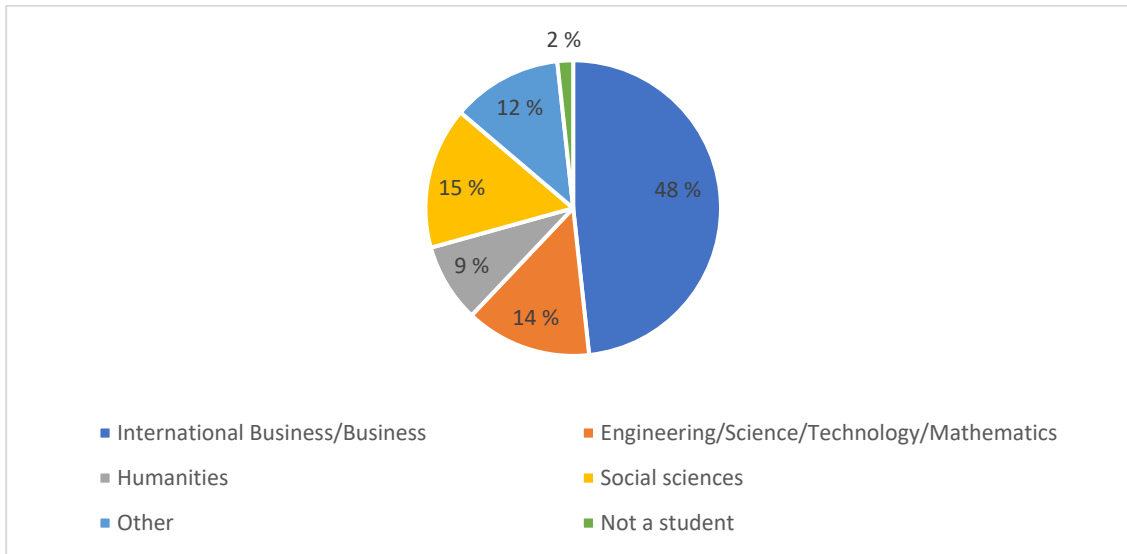


Figure 6. Field of study of respondents (n=58)

Based on Figure 6, the largest group (48%) studied International Business or Business, indicating that many respondents had backgrounds likely to be more exposed to financial concepts. Other fields included Social Sciences (15%), Engineering/Science/Technology/Mathematics (14%), and Humanities (9%); 12% specified 'Other' as their field of study, with detailed responses including Biology, Microbiology, and Communications. Additionally, there are less than 2% none students.

4.2 Knowledge and experience with Bitcoin

The following result presents the responses regarding the questions reflecting knowledge regarding Bitcoin.

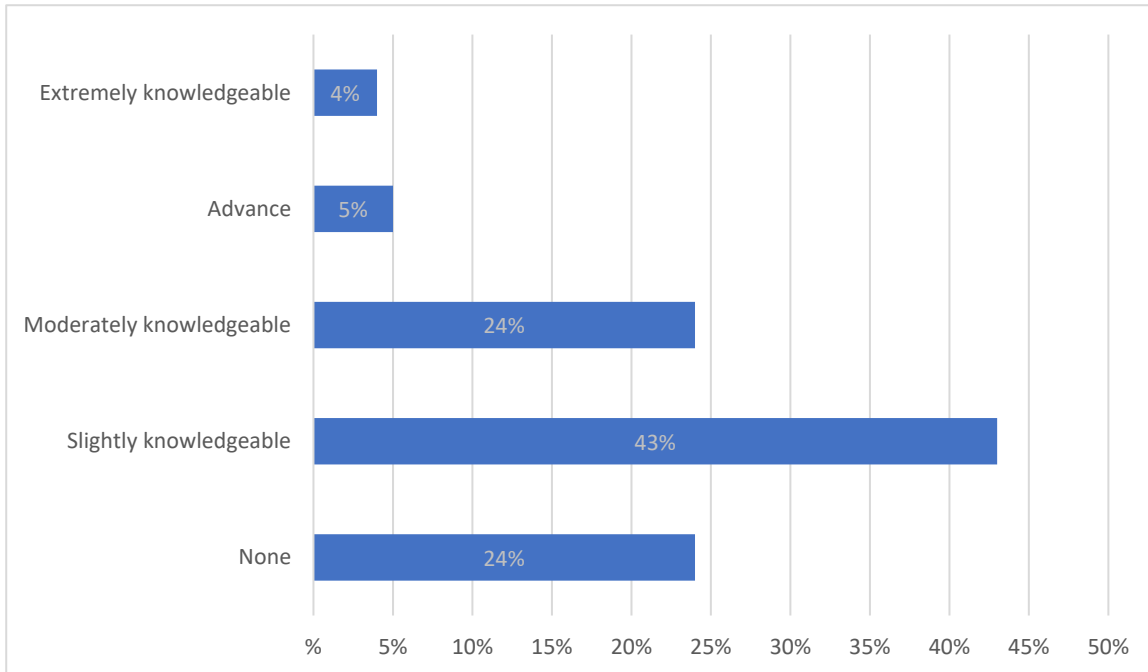


Figure 7. Self-Assessed Knowledge Levels of Respondents Regarding Cryptocurrencies and Bitcoin (n=58)

Figure 7 illustrates that the majority of respondents considered themselves slightly knowledgeable (43%) or moderately knowledgeable (24%) about cryptocurrencies and Bitcoin. Additionally, 24% of respondents indicated they had no knowledge of the subject. A smaller proportion reported advanced knowledge (5%), and only 4% of the respondents considered themselves extremely knowledgeable on the topic.

4.3 Investment status and Motivations

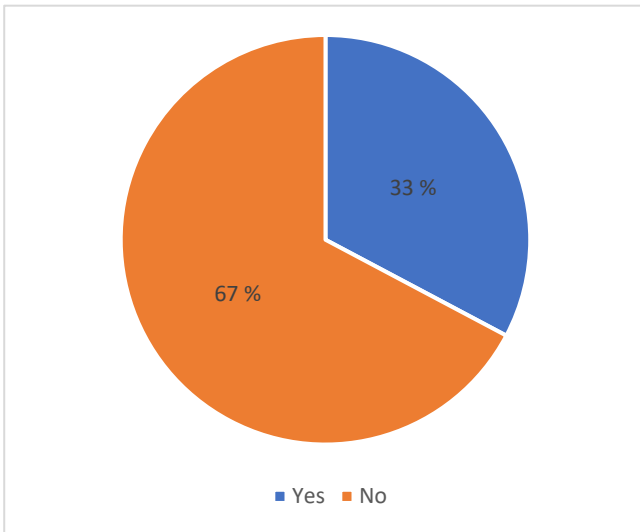


Figure 8. Respondents' Bitcoin Investment Experience (n=58)

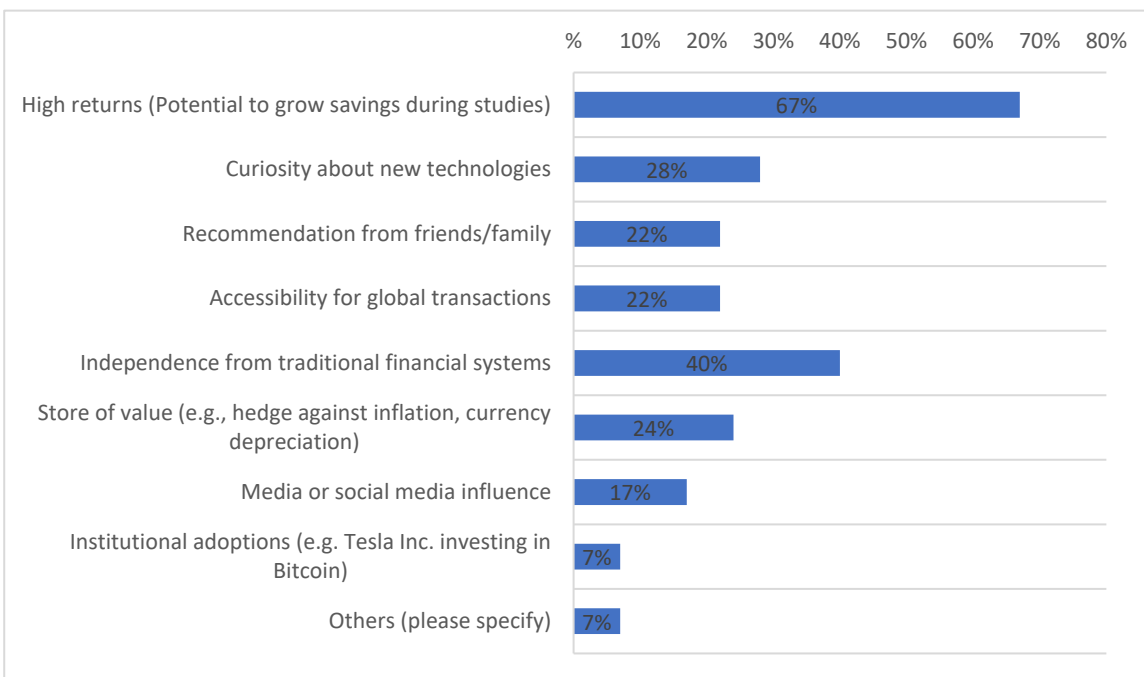


Figure 9. Respondents' Motivations for Investing (n=58)

Figure 8 shows that approximately 33% of respondents had invested in Bitcoin, while 67% had not. This indicates a cautious engagement with cryptocurrency among students. As seen in Figure 9, the primary motivator for investing was "High returns," 67%, indicating a strong desire to grow savings during studies. This was followed by "Independence from traditional financial systems" 40%, reflecting interest in the unique value Bitcoin offers. Further, "Curiosity about new technologies" was the third top motivator, with 28%. In this context, perceived utility and innovation play crucial

roles in the acceptance of these technologies. Students seem receptive to adopting fintech advancements, indicating a possibility for enhanced engagement as they become more familiar with them. "Store of value" 24% reflects an interest in Bitcoin's broader utility but is not the primary driver. This suggests that students may lack awareness of this benefit, "Accessibility for global transactions" and "Recommendation from friends and family" were both 22% of respondents' motives. The limited importance placed on accessibility for global transactions may reflect the students' current financial needs, which might not involve international transactions. Additionally, 17% of respondents were motivated by "Media and social media influence."

"Institutional adoption" and 'Others' responses both represent 7% of respondents. Several respondents mentioned the desire for long-term growth and diversification of their investment portfolios as motivations for investing in Bitcoin, highlighting a strategic approach to spreading investment risk. Conversely, a few respondents indicated no interest in investing in Bitcoin.

4.4 Barriers to investment

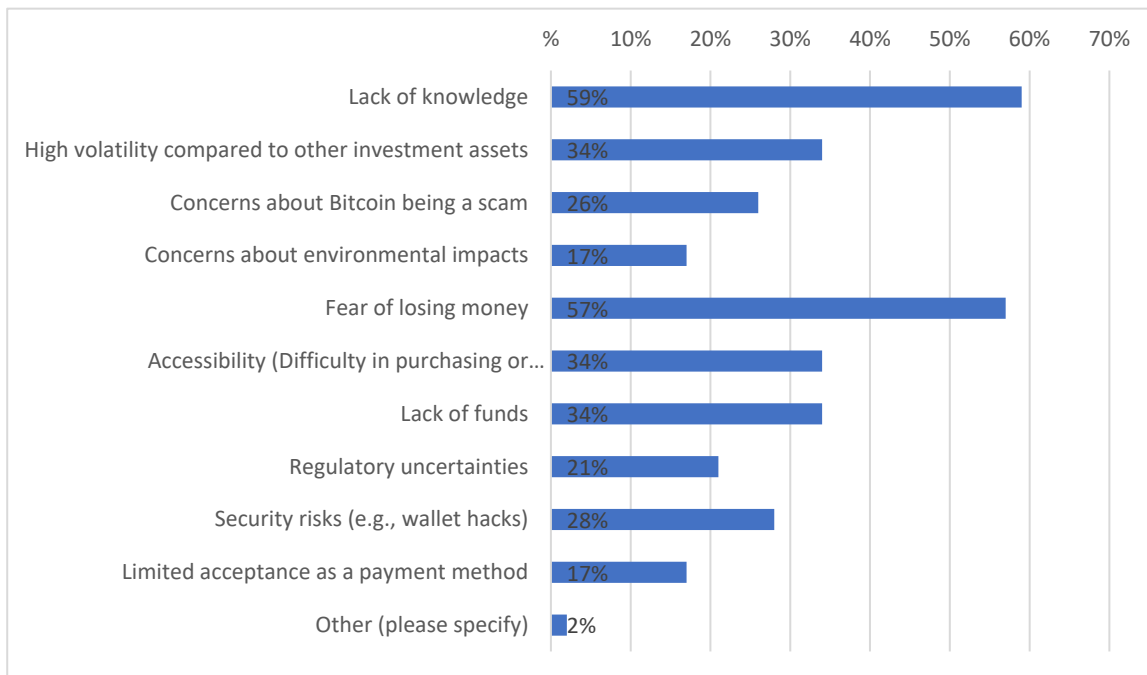


Figure 10. Factors Discouraging Respondents from Investing in Bitcoin (n=58)

Figure 10. indicates that the major barriers to investing in Bitcoin among respondents were a lack of knowledge with 59% and fear of financial loss with 57%. High volatility, accessibility issues, and lack of funds were also significant concerns, with 34%. Security risks (28%), Concerns about Bitcoin being a scam (26%), and regulatory uncertainty (21%) point to a cautious outlook on risks associated with Bitcoin. Environmental concerns and limited acceptance as a payment method

both also have 17%. Only 2% of respondents have answered other discouragement factors for their investment.

4.5 Perceived risk in Bitcoin investment

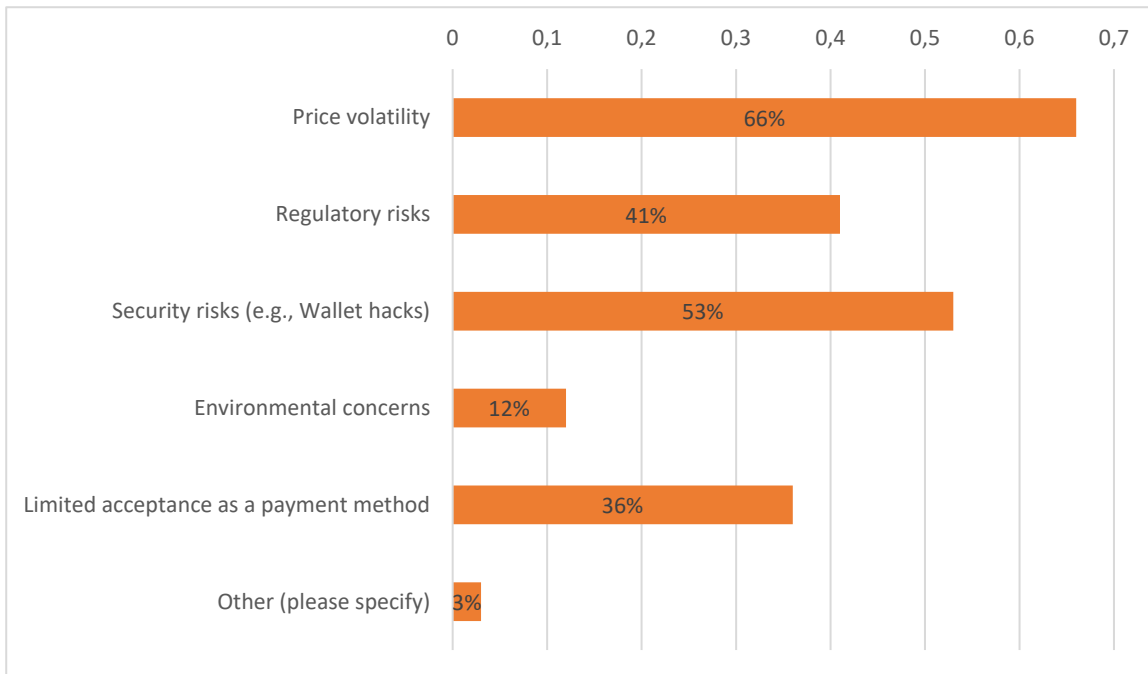


Figure 11. Respondents' Perception of Significant Risks Associated with Investing in Bitcoin (n=55)

In this question, respondents were asked to identify the top three risks associated with investing in Bitcoin. As shown in Figure 10, the top three risk factors were price volatility (66%), security risks such as wallet hacks (53%), and regulatory risks (41%). These findings highlight the primary concerns among respondents when considering Bitcoin as an investment option.

4.6 Future investment potential

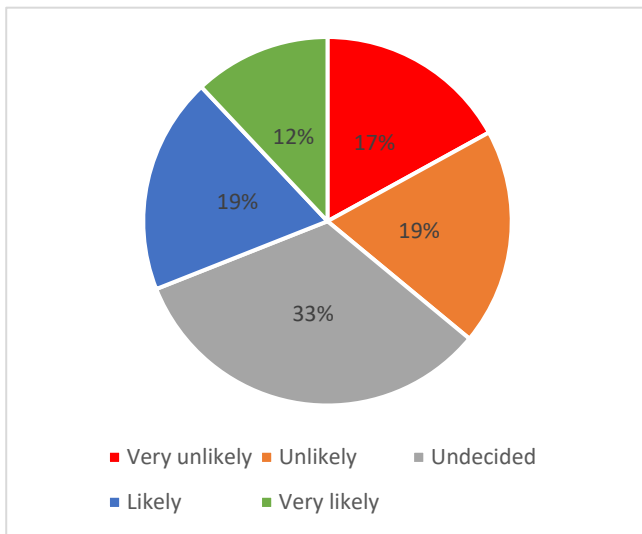


Figure 12. Respondents' future investment likelihood on Bitcoin (n=58)

While 33% were undecided, 12% indicated they were very likely to invest in the future. 19% indicated it's likely to invest. 17% indicated that it is very unlikely to invest, and 19% indicated that they are unlikely to invest in Bitcoin in the future.

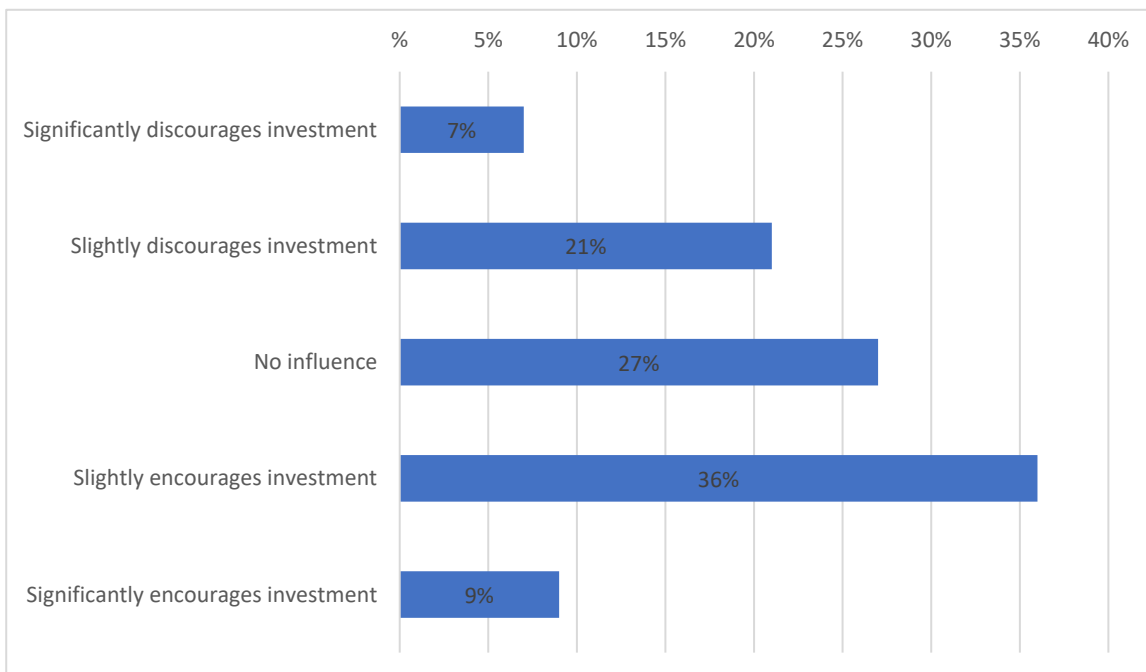


Figure 13. Respondent's decision on past performance influences investment (n=58)

36% felt that past performance slightly encouraged their investment decisions, and 9% stated that they were significantly encouraged. While a nearly equal 27% felt neutral, 21% stated that past performance was slightly discouraging, and 7% were significantly discouraged.

4.7 Environmental and sustainability impact

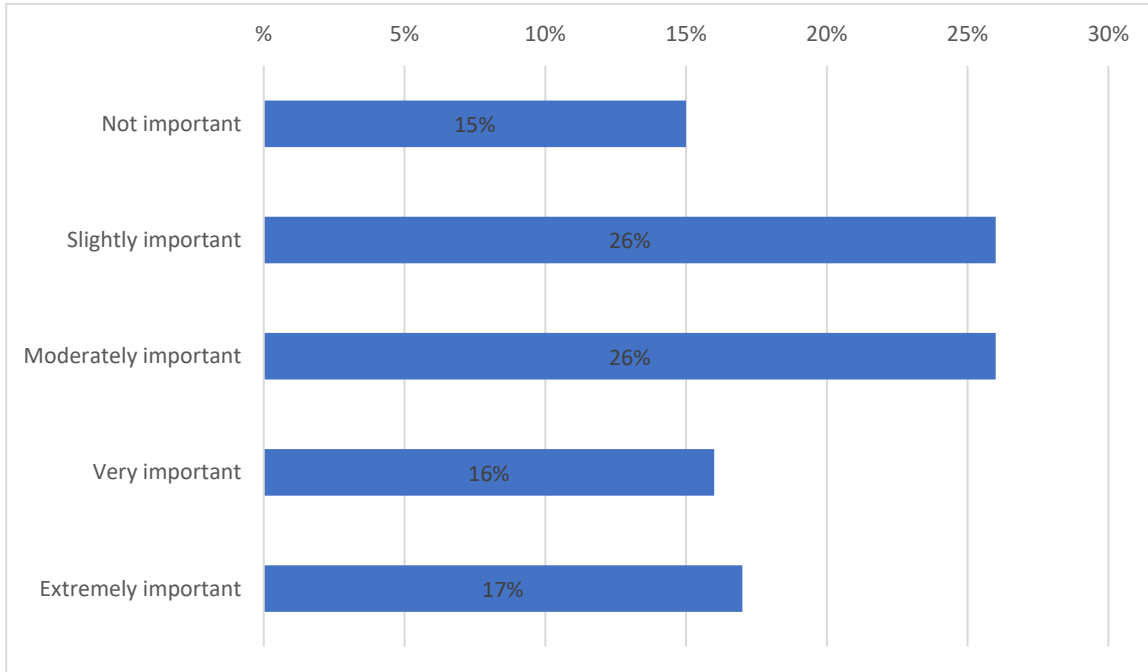


Figure 14. Importance of environmental sustainability in investment decisions (n=58)

Figure 14 shows that respondents were split on how much sustainability influenced their investment choices, with 26% considering it moderately important. However, when asked if sustainable practices (Figure 15) would increase their likelihood of investing, 43% responded "Yes" and another 43% said "Maybe." This indicates an interest in more eco-friendly investment options, particularly among environmentally conscious students.

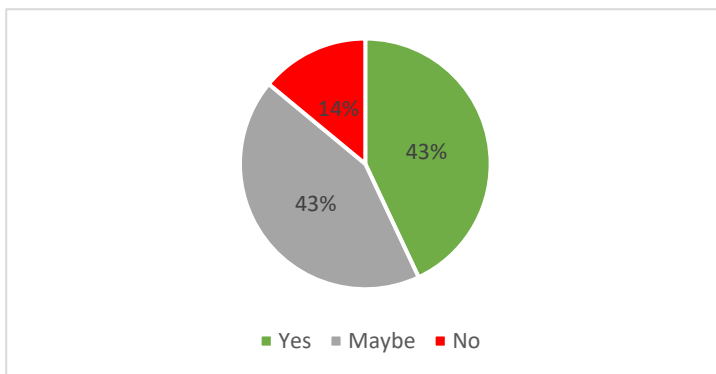


Figure 15. Respondents' likelihood of investing in Bitcoin if it adopted more sustainable practices

4.8 Qualitative Insights from Additional Comments

To supplement the quantitative data, respondents were given the opportunity to provide additional comments on Bitcoin as an investment option for students. The thematic analysis of these open-ended responses revealed several key themes.

Some respondents view Bitcoin as a stable cryptocurrency relative to others and anticipate significant price increases in the future.

Bitcoin is great if you have time and money. I would invest and I do invest in BTC because for me, it looks quite stable in comparison to other coins. Moreover, when all the BTC available on the market will be sold, the price will jump up, and it'll be the moment BTC investors are waiting for.

This optimism aligns with the 45% of respondents who indicated that Bitcoin's past performance slightly or significantly encourages investment.

Other respondents prefer alternative investments, emphasizing sustainability and diversification.

"I think there are more sustainable and time-leveraging ways to invest money such as ETFs and indexes. Bitcoin is fun to speculate on, but people shouldn't take it as a primary investment but only what they can afford to lose."

This reflects the quantitative finding that 59% of respondents are discouraged from investing in Bitcoin due to a lack of knowledge, and 57% fear losing money.

There is skepticism among some respondents regarding the future potential of Bitcoin as an investment.

"For me, investing in Bitcoin was bittersweet. This field would have to make significant improvements to change my mind!"

"I have doubts as I'm not sure if the ship has already sailed."

This skepticism is consistent with the 36% of respondents who are unlikely or very unlikely to invest in Bitcoin in the future.

At least one respondent acknowledged the academic value of studying Bitcoin.

"It is a good topic of investigation."

5 Conclusion and Recommendations

The final chapter of this thesis aims to present a conclusion of the research findings presented in the previous chapter, integrating them with the theoretical framework outlined in Chapter 2. The primary focus is to address the research question: "What are the potential benefits and risks of Bitcoin as a savings asset for students, and what factors motivate new investors to include it in their portfolios?" The objective was to investigate these aspects and evaluate their implications for student investors.

Bitcoin, as a relatively new subject of discussion, remains unfamiliar to many students. The study revealed significant obstacles hindering its broad acceptance among this demographic. The primary barriers identified are a lack of knowledge about cryptocurrencies, concerns over price volatility, lack of funds, and security risks. These factors contribute to a substantial portion of students being undecided or unlikely to invest in Bitcoin. Additionally, the study highlighted that the adoption of sustainable practices within the Bitcoin ecosystem could significantly improve its acceptance among students who are increasingly environmentally conscious.

The motivations for investing in Bitcoin are closely connected to its perceived benefits. High returns serve both as a motivation and a benefit, with the prospect of considerable financial rewards sparking interest among students. This aligns with the discussion in Chapter 2.4, which emphasizes Bitcoin's potential for substantial gains due to its historical performance and inherent volatility.

Addressing the knowledge gap is essential for empowering students to make informed investment decisions. Enhancing financial literacy can reduce perceived risks and increase confidence in managing investments in digital assets.

Risk concerns, particularly regarding price volatility and security, necessitate strategies to mitigate these challenges. Educating students on risk management techniques, such as portfolio diversification and the use of secure platforms, can alleviate fears of financial loss and cyber threats. This approach is consistent with the Modern Portfolio Theory discussed in Chapter 2.4.1, advocating for diversification to balance risk and return.

Furthermore, the study suggests that Bitcoin could become a more sustainable asset with the increased use of renewable energy sources in its mining processes. Environmental sustainability is increasingly important to students, and the integration of sustainable practices could enhance Bitcoin's appeal as an investment option. This finding aligns with the discussions in Chapter 2.5 on the significance of Environmental, Social, and Governance (ESG) considerations in investment decisions.

5.1 Recommendations

Building on research findings, several recommendations are proposed to support students considering Bitcoin as a savings asset.

First, enhancing financial education is crucial. Educational institutions should integrate cryptocurrency and blockchain technology into their curricula to provide students with a comprehensive understanding of digital assets. These technologies have implications across various fields, from finance and economics to computer science and law. By fostering financial literacy in this emerging field, students can make informed decisions and navigate the complexities associated with cryptocurrency investments. This educational initiative not only benefits finance majors but also equips students from diverse disciplines with knowledge relevant to their respective fields.

Second, students can mitigate some of the risks associated with directly holding Bitcoin by considering investment vehicles such as Bitcoin Exchange-Traded Funds (ETFs). Bitcoin ETFs offer exposure to Bitcoin's price movements without the need to directly purchase and store the cryptocurrency, thereby reducing security risks and simplifying the investment process. By investing in ETFs, students can benefit from professional fund management and regulatory oversight, which may provide an added layer of security and confidence.

Third, addressing security concerns is imperative. Students should be encouraged to utilize reputable and well-established cryptocurrency exchanges for trading Bitcoin and to adopt secure wallets for storing their assets. Emphasizing the importance of safeguarding private keys, enabling two-factor authentication, and remaining vigilant against phishing attempts can significantly enhance security awareness. These measures are crucial in reducing the technological risks associated with cryptocurrency investments.

Additionally, promoting environmental sustainability within the Bitcoin network can enhance its attractiveness to environmentally conscious students. Encouraging and supporting initiatives that utilize renewable energy sources for Bitcoin mining can address environmental concerns. Bitcoin miners can leverage surplus energy from overproduction or invest in green energy solutions to reduce the carbon footprint of mining activities. Raising awareness about these sustainable practices can align Bitcoin investment with the ethical values of students concerned about environmental impact, reflecting the importance of ESG consideration.

Finally, staying informed about regulatory developments is essential. Students should keep abreast of updates in cryptocurrency regulations to reduce uncertainty and ensure compliance with legal requirements.

5.2 Personal Reflection

Conducting this research has been an enriching and insightful experience that has significantly enhanced the author's academic knowledge and practical research skills. Engaging with a complex and evolving subject like Bitcoin challenged the author to delve deeply into a vast field of financial knowledge, encompassing areas such as blockchain technology, investment strategies, and sustainability considerations. One of the primary challenges encountered was recruiting an enough number of participants for the survey, as Bitcoin was a niche topic among students.

Working independently on this project allowed the author to enhance project management abilities and self-discipline. Overcoming challenges, such as refining research methods and adapting strategies to engage the target audience effectively, has improved problem-solving skills.

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Appendices

Appendix 1. Survey questions



Role of Bitcoin in Student Finances

 Mandatory questions are marked with a star (*)

This survey is conducted as part of the research-based thesis to investigate the role of Bitcoin in student finances. The survey aims to find the potential benefits and risks of Bitcoin as an asset for students, factors motivating investment decisions, and the impact of sustainability concerns. The survey is anonymous, and your responses will be kept confidential. It will take approximately 5 minutes to complete. Thank you for your time and valuable input!

*The survey is available from the 22nd of October to the 2nd of November.

1. What is your gender? *

- Male
- Female
- Prefer not to say

2. What is your field of study? *

- International Business/Business
- Engineering/Science/Technology/Mathematics
- Humanities
- Social sciences
- Other
- Not a student

3. How would you rate your knowledge of cryptocurrencies and Bitcoin? *

- None
- Slightly knowledgeable
- Moderately knowledgeable
- Advance
- Extremely knowledgeable

4. Have you ever invested in Bitcoin? *

- Yes
- No

5. What motivates or would motivate you as a student to invest in Bitcoin?
(Select all that apply) *

- High returns (Potential to grow savings during studies)
- Curiosity about new technologies
- Recommendation from friends/family
- Accessibility for global transactions
- Independence from traditional financial systems
- Store of value (e.g., hedge against inflation, currency depreciation)
- Media or social media influence
- Institutional adoptions (e.g. Tesla Inc. investing in Bitcoin)
- Others (please specify)

6. What factors have discouraged you from investing in Bitcoin? (Select all that apply) *

- Lack of knowledge
- High volatility compared to other investment assets
- Concerns about Bitcoin being a scam
- Concerns about environmental impacts
- Fear of losing money
- Accessibility (Difficulty in purchasing or understanding how to invest)
- Lack of funds
- Regulatory uncertainties
- Security risks (e.g., wallet hacks)
- Limited acceptance as a payment method
- Other (please specify)

7. Which risks do you consider most significant when it comes to investing in Bitcoin? (Select up to three) *

- Price volatility
- Regulatory risks
- Security risks (e.g., Wallet hacks)
- Environmental concerns
- Limited acceptance as a payment method
- Other (please specify)

You can select from 1 up to 3 options

Selected options: 0

8. Considering the benefits and risks, how likely are you to invest in Bitcoin in the future? *


- Very unlikely
- Unlikely
- Undecided
- Likely
- Very likely

Next





Role of Bitcoin in Student Finances

 Mandatory questions are marked with a star (*)

9. Does Bitcoin's past performance influence your decision to invest in it? *

- Significantly discourages investment
- Slightly discourages investment
- No influence
- Slightly encourages investment
- Significantly encourages investment

10. How important is environmental sustainability to you when considering investment options? *

- Not important
- Slightly important
- Moderately important
- Very important
- Extremely important

11. Would you be more likely to invest in Bitcoin if it adopted more sustainable practices (e.g., green mining)? *

- Yes
- Maybe
- No

12. Do you have any additional comments or thoughts on Bitcoin as an investment option for students?

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