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Title:

Antecedents to Consumer Adoption of Cryptocurrencies and Non-Fungible Tokens in South Africa

By

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A study presented to the Faculty of Commerce, Law, and Management at the University of the Witwatersrand in Johannesburg, South Africa, as part of the requirements for the MM-Strategic Marketing degree.

September 2025

DECLARATION

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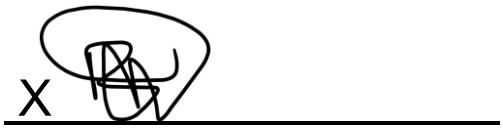
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Bulelani Mabudsha
Student:1355267

22/09/2025

DEDICATION

This dissertation is dedicated to my ever supportive and loving parents who have continued to support me through the highs and lows of this journey. I am honoured and blessed to be a child of yours. I love you dearly. I thank you for instilling withing me the word of God.

ACKNOWLEDGEMENTS

To GOD

"I can do all things through Christ who strengthens me." – Philippians 4:13

First and foremost, I give all glory, honour, and praise to Almighty God, the source of all wisdom, knowledge, and understanding. This dissertation is a testament to His grace, guidance, and unwavering faithfulness. Without His strength, I could not have embarked on this journey, let alone completed it. Thank You, Lord, for being my refuge and my strength, for carrying me through every challenge, and for reminding me that *"with God, all things are possible." – Matthew 19:26*

To My Family

"As for me and my house, we will serve the Lord." – Joshua 24:15

To my beloved family, I owe an immeasurable debt of gratitude. To my Gogo, my prayer warrior, my rock, and my cornerstone, this dissertation is dedicated to you. Your unwavering faith, relentless prayers, and steadfast love have been the foundation upon which I have built this work. You have taught me the power of perseverance and the importance of leaning on God in all things. To my sisters and brothers, your constant inspiration, encouragement, and belief in me have been a source of motivation. You remind me daily of the beauty of family and the strength that comes from unity.

To My Supervisor: Prof. Thomas Anning Dorson

"Iron sharpens iron, and one man sharpens another." – Proverbs 27:17

To my esteemed supervisor, Prof. Thomas Anning Dorson, I extend my deepest gratitude. Your wealth of knowledge, insightful guidance, and unwavering patience have been invaluable throughout this journey. You have not only sharpened my academic skills but also inspired me to

think critically and strive for excellence. Thank you for your mentorship, encouragement, and for believing in my potential.

A Request for Love to Remain and Build in My Family

"Above all, love each other deeply, because love covers over a multitude of sins." – 1 Peter 4:8

As I present this dissertation, I pray that it serves as a reminder of the power of love, unity, and faith. May it be a call for love to remain and grow in my family, binding us together in harmony and purpose. Let us continue to build each other up, to forgive freely, and to walk in love, just as Christ has loved us.

In closing, I am reminded of the words in Ecclesiastes 9:10: "Whatever your hand finds to do, do it with all you might." This dissertation is the fruit of my labour, but it is also a testament to the support, love, and prayers of those who have walked this journey with me. To all who have played a part, big or small, I say thank you. May God bless you abundantly.

ABSTRACT

The growing global fascination with cryptocurrencies and Non-Fungible Tokens (NFTs) offers prospects such as financial inclusion for underserved populations, diversification of investment portfolios, and innovation in digital ownership and monetization, but presents obstacles including socio-economic inequalities, technological complexity, and regulatory ambiguity for consumer uptake. In South Africa, the uptake of these digital assets is still relatively scarce owing to these multifaceted barriers. This investigation explores the components that affect consumer approval of cryptocurrencies and NFTs within South Africa, emphasizing vital aspects such as awareness, comprehension, tech readiness, trust levels, perceived value, and the presence of supportive infrastructure. By synthesizing the Theory of Planned Behaviour (TPB), Technology-Readiness Index (TRI), and the Unified Theory of Acceptance and Use of Technology (UTAUT), this investigation crafts a framework to analyze the impact of these aspects on consumer adoption intentions.

The research employs a quantitative methodology, leveraging survey responses from South African consumers to evaluate their views and readiness to participate in cryptocurrencies and NFTs. The study uses Structural Equation Modelling (SEM) to analyze the relationships among essential factors such as perceived trust, performance expectancy, effort expectancy, and social influence. The results indicate that both awareness and technological readiness play a significant role in influencing adoption intentions, while issues related to security, regulatory ambiguity, and technological complexity present obstacles. Additionally, perceived value for price and hedonic motivation are pivotal in influencing consumer choices concerning cryptocurrencies and NFTs as investment options.

This study contributes to the ongoing academic discussion by addressing gaps in existing research on the adoption of digital assets in emerging markets. From a practical standpoint, it offers actionable insights for policymakers, marketers, and financial institutions to develop targeted strategies that encourage greater adoption. The findings emphasize the role of educational initiatives, transparent regulatory frameworks, and intuitive technological solutions in fostering trust and enhancing accessibility. Further research could explore long-term patterns and the impact of broader economic factors on adoption trends.

Keywords: Cryptocurrencies, NFTs, Consumer Adoption, Blockchain, Technology Acceptance,

South Africa, Digital Assets, Investment Product

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LIST OF ABBREVIATIONS

NFT – Non-Fungible Token

TPB – Theory of Planned Behaviour

TRI – Technology-Readiness Index

UTAUT – Unified Theory of Acceptance and Use of

Technology SEM – Structural Equation Modelling

PCA – Principal Component Analysis

ANOVA – Analysis of Variance

EFA – Exploratory Factor Analysis

SPSS – Statistical Package for the Social Sciences

KMO – Kaiser-Meyer-Olkin (used in factor analysis)

FC – Facilitating Conditions

PT – Perceived Trust

PV – Perceived Value

EE – Effort Expectancy

PE – Performance Expectancy

PVV – Price Value

HM – Hedonic Motivation

SI – Social Influence

IP – Investment

Product AD – Adoption

CHAPTER ONE

INTRODUCTION

1.1. Introduction

1.1.1. Background of the study

In the realm of global interactions, the remarkable escalation in curiosity and conversation surrounding the utilization of cryptocurrency and NFTs stands out. Digital currencies such as Bitcoin and Ethereum have garnered substantial attention and acclaim on a global scale. These cryptocurrencies facilitate decentralized and secure transactions, thus appealing to investors and individuals in pursuit of alternative financial systems (Cambridge Centre for Alternative Finance, 2021). Nevertheless, it is imperative to acknowledge that the Bitcoin marketplace has been plagued by numerous scams and fraudulent undertakings. The absence of regulatory oversight, coupled with the anonymity afforded by cryptocurrencies, has rendered unwary consumers susceptible to exploitation by fraudsters. Documented incidents of Ponzi schemes, fraudulent initial coin offerings (ICOs), and phishing scams have resulted in significant financial detriments for victims (Matta et al., 2020). These occurrences highlight the urgent necessity for enhanced regulatory frameworks and investor education within the cryptocurrency domain, aimed at protecting individuals from deceitful practices. Moreover, the engagement of celebrities and influencers within the cryptocurrency sector has further amplified the enthusiasm and discourse surrounding these digital assets. Various celebrities, including artists, athletes, and actors, have publicly endorsed cryptocurrencies and participated in ICOs or token sales, often utilizing social media platforms for promotion. Their involvement has generated considerable attention and intrigue among their fan bases (Hathaway, 2019). However, it is crucial to approach celebrity endorsements with caution, as these individuals may possess limited knowledge or understanding of the underlying technologies and investment risks associated with cryptocurrencies. The intersection of fraudulent activities and celebrity engagement in the cryptocurrency sector underscores the importance of conducting thorough due diligence and making well-informed investment decisions. Prospective investors are advised to undertake comprehensive research, consult with financial professionals, and exercise discernment when engaging in cryptocurrency- related endeavours (Matta et al., 2020). Additionally, regulatory bodies and authorities are

striving to implement more stringent regulations to protect investors and mitigate the risks associated with cryptocurrency scams and fraudulent behaviours (He et al., 2023).

Despite the fervour and enthusiasm surrounding the integration of cryptocurrencies and non-fungible tokens (NFTs), our comprehension of these digital assets and their ramifications on marketing methodologies remains limited. Such constraints hinder marketers in navigating this dynamic landscape. Initially, there exists a significant gap in the understanding of consumer behaviour and motivations pertaining to the adoption of Bitcoin and NFTs. Empirical investigations have been undertaken to examine the determinants that influence individuals' decisions to invest in cryptocurrencies or acquire NFTs (He et al., 2023). Consequently, marketers are encountering challenges in effectively targeting and engaging with the consumer segments associated with Bitcoin and NFTs due to this lack of clarity (Kara et al., 2021). There is a pressing necessity for marketers to acquire an enhance view to the psychological, social, and economic factors that shape individuals' interests in, and acceptance of, digital assets. Moreover, the intrinsic volatility and speculative nature of cryptocurrencies introduce significant marketing challenges. The valuation of cryptocurrencies can experience substantial fluctuations within a brief time frame, rendering it arduous for marketers to formulate pricing strategies and convey consistent value propositions (Alshenqeeti, 2020).

Furthermore, the revolutionary aspects and detailed architecture of blockchain technology that supports cryptocurrencies and non-fungible tokens (NFTs) introduce major obstacles for marketers in expressing the value and operational features of these digital assets. Blockchain technology is often perceived as esoteric and highly technical, thereby complicating marketers' ability to effectively communicate the advantages and practical uses of cryptocurrencies and NFTs to a broader audience (Hossain & Dwivedi, 2020). Marketers are required to investigate methods to mitigate concerns regarding price volatility and articulate potential risks to consumers while concurrently highlighting the advantages and practical applications of cryptocurrencies and NFTs. Furthermore, marketers must deliver concise and comprehensible messaging that elucidates the technological components while accentuating the prospective benefits for consumers.

Taking into account the consumer's viewpoint, the intricate complexities and technological specifications of cryptocurrencies and NFTs lead to significant user challenges. Individuals may encounter difficulties in comprehending the foundational blockchain technology, cryptographic techniques, and the decentralized nature of these digital assets (Alshenqeeti, 2020). A deficiency in understanding may establish barriers to the adoption of these assets, as consumers might perceive them as intricate and unfamiliar (Wongsunopparat & Nanjun, 2023). Moreover, the absence of established frameworks for evaluating the value and risks associated with cryptocurrencies and NFTs complicates the decision-making processes for consumers (Wongsunopparat & Nanjun, 2023). Given the volatility and speculative attributes of these assets, consumers encounter challenges in estimating their potential returns and long-term sustainability (Liao et al., 2019). The lack of clear regulations and standards exacerbates consumer uncertainty, thereby affecting their intentions to adopt these technologies. Furthermore, consumer adoption may be impeded by insufficient understanding and awareness regarding the potential applications and advantages of cryptocurrencies and NFTs. A significant proportion of individuals may remain oblivious to the various use cases that transcend speculative investment, such as cross-border transactions, financial inclusion, and ownership verification (Mansell et al., 2021). Consumer interest and intentions to adopt these assets may be suppressed by a scarcity of information and educational resources regarding their benefits. Also, consumer intentions towards adopting cryptocurrencies and NFTs are considerably hindered by concerns surrounding security and privacy. Instances of cyber intrusions and security breaches at cryptocurrency exchanges and digital wallets have resulted in the forfeiture of both digital holdings and individual data (Ali et al., 2020). As a result, consumers may exhibit reluctance to engage with these assets due to apprehensions regarding fraud, theft, and breaches of privacy. Additionally, the motivations of consumers to embrace cryptocurrencies and NFTs are significantly influenced by cultural and socioeconomic elements, which encompass differences in attitudes, beliefs, and regulatory environments across various countries and regions. Consumers' perceptions and intentions regarding the acceptance of these digital assets are influenced by cultural norms, trust in financial institutions, and governmental regulations (Tariq et al., 2020).

This study aims to explore the main factors that drive the acceptance of cryptocurrencies and non-fungible tokens (NFTs) among consumers in South Africa, while also evaluating how this acceptance affects views on these digital assets as viable investment options for both individuals and financial institutions. By pinpointing the key motivators and obstacles related to adoption, the research intends to enhance comprehension of the components influencing consumer attitudes and behaviors in this area. The analysis will concentrate on aspects such as consumer knowledge, perceived advantages and drawbacks, trust and security issues, cultural and social influences, regulatory frameworks, and levels of technological familiarity. Through systematic data collection and analysis, the study will assess the significance and effect of these elements on adoption intentions. The results are anticipated to offer valuable insights for marketers, policymakers, and industry leaders, providing a basis for creating targeted marketing strategies, educational programs, regulatory measures, and technological innovations designed to foster the acceptance and integration of cryptocurrencies and NFTs in South Africa.

1.1.2. Context of study

Security concerns around cryptocurrencies include the dangers of hacking, fraud, and phishing. The United States Securities and Exchange Commission (SEC) has begun to regulate cryptocurrencies, with an emphasis on cryptocurrencies being classified as securities, ICOs, and enforcing compliance with securities laws (SEC, 2017; SEC, 2018). The SEC's regulatory initiatives aim to protect investors by ensuring that cryptocurrencies traded through ICOs are registered and provide proper disclosures made by the individuals or companies launching these cryptocurrencies (SEC, 2017). Furthermore, the SEC has launched enforcement actions against fraudulent ICOs and established the Strategic Hub for Innovation and Financial Technology to connect with, and advise, industry stakeholders (SEC, 2018; SEC, 2021). Despite the problems posed by cryptocurrency's decentralised and cross-border character, the SEC's regulatory initiatives indicate a commitment to investor safety and market integrity in the growing cryptocurrency ecosystem. These developments have the potential to influence consumer perception, trust, and confidence in cryptocurrencies, therefore influencing adoption decisions. Regulatory efforts and enforcement against fraudulent acts may assist in boosting consumer trust. When regulatory organisations take steps to protect investors and crack down on fraudulent individuals, it indicates that efforts are being taken to create a more secure and safe environment.

Such measures can comfort consumers and boost their trust in cryptocurrencies, influencing adoption positively. Furthermore, the legislative clarity and compliance requirements brought forth by these developments can contribute to a more transparent and regulated bitcoin economy. Clear rules and compliance requirements can increase customer trust by assuring them that the necessary safeguards are in place to protect their interests. This can boost adoption by addressing legality, accountability, and investment protection concerns.

NFTs are a game-changing approach for validating digital asset ownership and tradable rights (Dowling, 2022). NFTs are associated with assets that are one-of-a-kind in some sense (Bowden & Jones, 2021). Non-fungible tokens, commonly referred to as NFTs, represent an innovative and distinct category within the broader spectrum of cryptocurrency as elucidated by Bao and Roubaud in their 2022 study, and in light of this burgeoning technological advancement, a growing number of consumers are diligently exploring the various advantages and potential benefits associated with utilizing NFTs as their principal medium of exchange for the seamless transfer and ownership of digital assets in an increasingly digital economy. NFTs protect the digital asset by ensuring that only one legal owner is present at any one moment; therefore, tampering, as well as a discussion regarding asset ownership, are avoided. As a consequence, the digital assets market would be able to expand faster. NFTs' distinct qualities have hastened its acceptance in the financial industry. Its advantages include being easy to invest in, readily available, and having a well-established security approach (Kampakis, 2022). To avoid duplication, digital asset ownership should be as simple as possible. This blockchain technology offered robust security that was difficult to break. Furthermore, the crypto method ensures the transparency of digital ownership data. These advantages directly contributed to the NFT payment mechanism's rapid acceptance (Kampakis, 2022).

Non-fungible tokens, commonly referred to as NFTs, have significantly transformed the landscape of brand marketing, as they have been strategically utilized to not only capture the attention of clients but also to influence their purchasing behaviour in profound and unprecedented ways, as discussed by Kaczynski and Kominers in their 2021 study. The Gartner Hype Cycle for Emerging Technologies, published in 2021, provides a comprehensive analysis

of the maturity, acceptance, and potential trajectory of various technologies, and it identifies NFTs as a critical technological development that warrants close monitoring due to their anticipated substantial impact on marketing operations in the foreseeable future. The intrinsic value of an NFT is fundamentally determined by the concept of digital scarcity; as the significance of the NFT as a collectible increase, there is a corresponding surge in interest among individuals who aspire to possess the rights to its associated royalties. Consequently, this heightened demand leads to an escalation in the NFT's market value, paralleling the dynamics observed in traditional collectibles, such as rare sports cards, where the worth of an NFT can appreciate following its initial sale transaction. The phenomenon of supply scarcity is known to enhance the perceived value of a product and can significantly influence consumer purchasing behaviour, as evidenced by research conducted by Inman et al. in 1997 and Lynn in 1991. While marketers may feel an inclination to create a limited-edition NFT to attract and engage their target demographic, it is imperative that the NFT aligns harmoniously with the overarching goals and personality of the brand, as highlighted by Kaczynski and Kominers in their 2021 findings.

The extraordinary rise in sales and market worth has elevated Non-Fungible Tokens (NFTs) to centre stage. The sales volume of NFTs surpassed 2 billion USD during the initial quarter of 2021 alone, highlighting the escalating demand for this emerging class of digital assets (DappRadar, 2021). Prominent transactions include a wide range of items, such as artworks, collectibles, virtual real estate, and tweets, with some NFTs achieving valuations in the millions. The accessibility of NFTs is broadening for both creators and consumers. Artists, content creators, and individuals are empowered to create, trade, and sell NFTs through online platforms and marketplaces such as OpenSea, Rarible, and NBA Top Shot (DappRadar, 2021). These platforms offer user-centric interfaces that facilitate participation and engagement with NFTs.

Despite the proliferation of public awareness regarding NFTs, the understanding of the foundational technology and the implications of NFT ownership may remain superficial. Numerous individuals are familiar with NFTs, yet they may lack a comprehensive grasp of blockchain technology, digital ownership, and potential applications extending beyond art and collectables (Kaczynski & Kominers, 2021). Educational initiatives and resources are pivotal in enhancing comprehension and awareness of NFTs. The application of NFTs has transcended the

realms of art and collectables. Musicians have launched albums and concert tickets as NFTs, providing fans with exclusive content and experiences (DappRadar, 2021). Sports leagues have also ventured into the NFT domain, offering digital memorabilia and opportunities for fan engagement. Furthermore, NFTs have been integrated into gaming, virtual real estate, and even the tokenization of tangible goods (Kaczynski & Kominers, 2021). Information regarding NFTs is readily accessible online from diverse sources, including news outlets and social media. Artists and creators can acquire knowledge about the processes of minting and selling NFTs through guidelines, tutorials, and community forums (DappRadar, 2021). Consumers are equipped to browse and acquire NFTs from diverse platforms and marketplaces. However, given that the NFT ecosystem is susceptible to misinformation and fraudulent activities, it is imperative to exercise caution and validate information from credible sources (Kampakis, 2022). Consumer acceptance of NFTs is shaped by factors such as perceived value, exclusivity, social status, and cultural trends. The allure of possessing a unique and authenticated digital asset attracts collectors, enthusiasts, and individuals in search of innovative forms of digital ownership (Kampakis, 2022). Moreover, the potential for artists and creators to monetize their work directly through NFT sales presents an appealing opportunity, enabling new revenue streams (Kampakis, 2022). As awareness of the potential value and opportunities associated with this burgeoning class of digital assets expands, the accessibility, utility, and understanding of NFTs continue to grow (Kampakis, 2022).

As of 2022, non-fungible tokens (NFTs) had a global market valuation of USD 20.44 billion, with anticipations of a compound annual growth rate (CAGR) of 34.2% extending from 2023 to 2030 (Non-fungible Token Market Size & Share, 2023). The heightened interest in digital art is propelling market growth. Also, the market is moving forward significantly as a worldwide increase in the appetite for NFTs is ignited by their rarity, clarity, and other extraordinary properties. In contrast to conventional assets, NFTs are non-divisible and cannot be segmented among multiple owners, thus ensuring buyer authenticity and security while protecting against counterfeit NFTs (Non-fungible Token Market Size & Share, 2023).

In South Africa, the passion for cryptocurrencies and non-fungible tokens (NFTs) has significantly escalated in recent times. The nation's inclination towards cryptocurrencies, particularly Bitcoin, has surged substantially. A survey executed by Luno, a prominent cryptocurrency exchange based in South Africa, revealed that 13% of participants reported possessing cryptocurrencies (Luno, 2021). This heightened fascination can be ascribed to various elements, such as the allure of significant financial returns, the potential to circumvent conventional banking systems, and the increasing acceptance of digital payment modalities within the country. Moreover, it is approximated that over 5.8 million South Africans, constituting 9.44% of the populace, currently own cryptocurrency (Cryptocurrency Information About South Africa, 2022). Figure 1 illustrates that the majority of cryptocurrency proprietors in South Africa maintain relatively modest quantities of digital assets. In detail, 53.21% of those who own cryptocurrencies possess under ZAR10,000, while 21.13% have between ZAR10,000 and ZAR50,000. Conversely, only 11.89% of respondents report holdings exceeding ZAR100,000. This observation implies that, although cryptocurrency acceptance is expanding in South Africa, it predominantly operates at a retail level, with most participants viewing it as a minor investment rather than a principal repository of value. The comparatively small fraction of high-value asset holders suggests that institutional or affluent individual adoption remains nascent. Factors such as regulatory ambiguity, economic circumstances, and levels of financial acumen may affect these adoption trends. Bitcoin and other cryptocurrencies are progressively recognized as feasible substitutes for national currencies in South Africa. Nevertheless, adoption continues to be disproportionately tilted towards smaller investors, with 53.21% of cryptocurrency proprietors possessing less than ZAR10,000 in digital assets. A minority (11.89%) of cryptocurrency holders have amassed over ZAR100,000, indicating that substantial investment remains constrained. This observation suggests that, while there is a growing interest in cryptocurrencies, the predominant engagement among South Africans is as a secondary investment rather than a primary asset class (Cryptocurrency Information About South Africa, 2022).

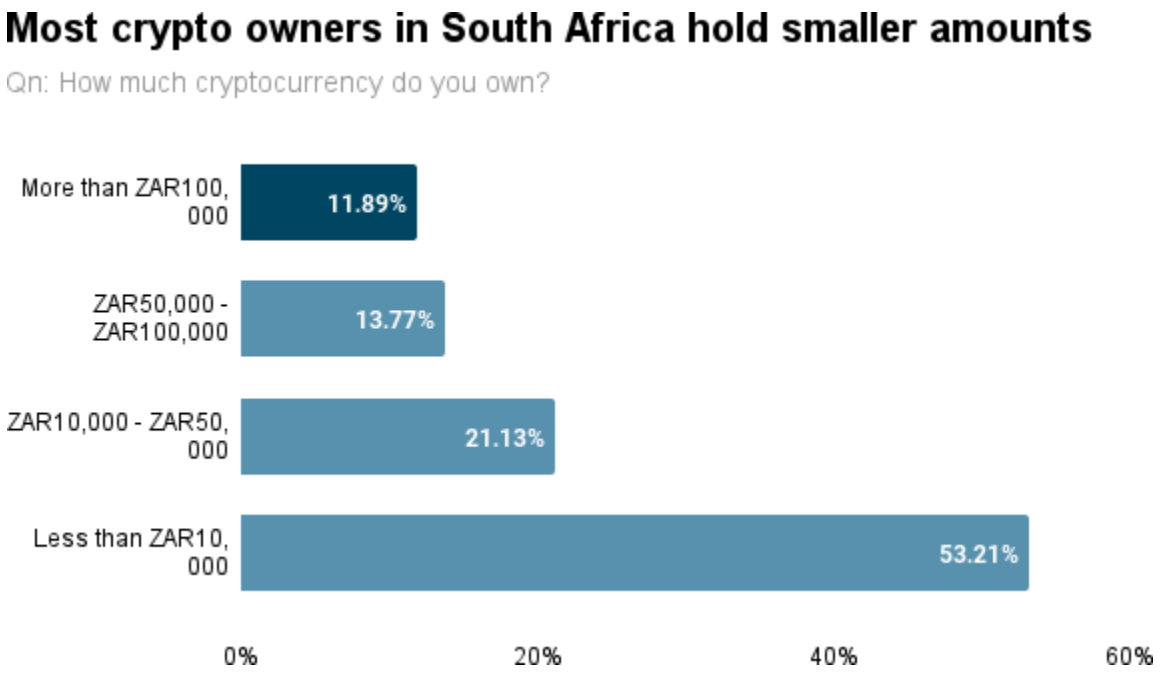


Figure 1: Cryptocurrency Ownership Value of account in South Africa

Sources:(*Cryptocurrency Ownership Data for South Africa 2022 | Triple-A*)

Cryptocurrencies have also been used by a number of South African businesses and organisations. For example, the South African Revenue Service (SARS) has given instructions on how to tax cryptocurrency (SARS, 2020). Furthermore, big stores such as PicknPay and Woolworths have begun accepting Bitcoin as a payment option, assisting in the country's widespread acceptance of cryptocurrencies (Nel, 2021).

1.1.3. Problem Statement

Several essential variables would affect the broad acceptance and use of cryptocurrencies and NFTs in an ideal circumstance and environment in South Africa. A perfect ecosystem would have clear and thorough regulatory frameworks for cryptocurrencies and NFTs in place. This would provide legal certainty, investor protection, and market players with guidelines, boosting trust and confidence in digital assets (Möser *et al*., 2020). Regulators such as the SARB would be crucial in creating a conducive regulatory environment. Educational activities, public campaigns, and targeted programmes would equip people with the knowledge and awareness

they need to make educated decisions about adopting and utilising these digital assets A well-informed and educated population would understand the benefits, hazards, and applications of cryptocurrencies and NFTs (Kara *et al*., 2021). A perfect scenario would encourage financial inclusion by making cryptocurrencies and NFTs available to a wide variety of people. This involves attempts to close the digital gap, such as increasing internet connectivity and expanding access to technology infrastructure, especially in underprivileged areas. The development of accessible platforms, mobile applications, and secure digital wallets has the potential to enable widespread participation in the cryptocurrency and NFT domains (Eichler et al., 2020). The adoption of cryptocurrencies and NFTs would be propelled by pertinent and varied use cases that provide substantial value for individuals and organizations. To give an example, crypto assets might increase the swiftness of sending funds, facilitate worldwide exchanges, and present an alternative route for value retention. NFTs have the capacity to open up new channels and refine efficiency in areas like art, music, gaming, the governance of intellectual property, and supply chain management (Tariq et al., 2020). An optimal environment would prioritize stringent security protocols and trust-enhancing practices to mitigate issues related to hacking, fraud, and privacy. Comprehensive security measures, advanced authentication frameworks, and transparent auditing processes would protect users' digital assets and personal data. Sustained adoption and growth necessitate the cultivation of confidence among users, investors, and stakeholders (Ali et al., 2020).

The current landscape of cryptocurrency and NFT utilization in South Africa is marked by a combination of enthusiasm and obstacles. Although there exists significant enthusiasm for these digital assets, several factors hinder their extensive acceptance. The framework for embracing cryptocurrencies and NFTs in South Africa is diverse. Individuals aiming to engage with these digital assets typically need to establish accounts on cryptocurrency exchanges or NFT platforms. Subsequently, they must undergo a verification procedure, deposit funds, and familiarize themselves with the functionalities of the platform. Establishing secure digital wallets for asset storage and management may also constitute part of the adoption framework (Muvengwi et al., 2020). A major hindrance to adoption in South Africa is the general populace's insufficient knowledge and comprehension of cryptocurrencies and NFTs. Existing literature

indicates that many individuals lack awareness of blockchain technology or the potential benefits and drawbacks of these assets. This lack of understanding may lead to reluctance to engage with this relatively novel and complex domain (Kara et al., 2021). Several obstacles hinder the widespread acceptance of cryptocurrencies and NFTs in South Africa. Both consumers and service providers encounter difficulties stemming from regulatory ambiguity and the absence of established guidelines. The lack of regulatory clarity may induce concerns regarding legality, investor protection, and compliance, thereby fostering hesitation in adoption (Möser et al., 2020). Additionally, certain regions within the country experience limited access to technological infrastructure and dependable internet connectivity. Disparities in technological access can obstruct the adoption of cryptocurrencies and NFTs, particularly among disadvantaged or rural communities. If infrastructure is inadequate, individuals could face obstacles in engaging with the digital asset domain (Eichler et al., 2020). Moreover, apprehensions concerning security and privacy are inhibiting adoption. The potential risks of hacking, fraud, and data breaches may deter individuals from using cryptocurrencies and NFTs. If these assets are perceived as being linked to illicit activities or fraud, adoption may face significant challenges (Ali et al., 2020). An article addressing the evidentiary gap was authored by Karg, Metzger, and Gimpel (2019). They underscored the vital necessity for advanced empirical exploration to achieve a more profound comprehension of the influences on bitcoin adoption and application, together with the hurdles to its integration.

The existing literature is deficient in articulating the specific needs and preferences of South African consumers regarding the adoption of cryptocurrencies and NFTs. It is imperative to ascertain the extent of consumer comprehension of this emerging technology to facilitate the formulation of strategies that could promote the integration of cryptocurrencies and NFTs. Empirical research is essential to identify consumer challenges and inclinations, which will inform the creation of strategic marketing initiatives aimed at encouraging adoption. Approaches to enhance favourable outcomes in this context must be determined through additional research. Moreover, given the extensive economic and social ramifications of cryptocurrency and NFT adoption in South Africa, it is vital to conduct studies that elucidate its long-term impacts on economic development, wealth distribution, and societal welfare. This understanding will inform the development of policies and measures aimed at fostering sustainable adoption and maximizing benefits for all stakeholders involved.

1.2. Research Objectives

1.2.1. Evaluate the awareness and knowledge to which South Africans understand cryptocurrencies and NFT's that will lead to a greater propensity to adopt them.

1.2.2. Evaluate the level of innovativeness among South African consumers towards cryptocurrency and NFTs by assessing their willingness to explore and adopt these technologies.

1.2.3. Investigate the degree of optimism among South African consumers regarding the potential benefits and future prospects of cryptocurrencies and NFTs, influencing their adoption intentions.

1.2.4. Evaluate the performance expectations of South African consumers regarding the advantages and value derived from adopting cryptocurrencies and NFTs, including aspects such as personalization, ease of use, and transaction efficiency.

1.2.5. Identify the availability of necessary resources, infrastructure, and support systems required for the successful adoption and integration of cryptocurrency and NFT technologies within the South African context.

1.2.6. Assess the perceived price value of cryptocurrencies and NFTs among South African consumers, considering the cognitive equilibrium between the benefits derived and the financial costs associated with their adoption.

1.2.7. Determine the intention of South African consumers to actively engage with cryptocurrency and NFTs, including their likelihood of investing, trading, or utilizing these technologies in various domains such as finance, gaming, and art.

1.3. Significance of Study

1.3.1. Academia

The investigation can significantly advance the academic field by addressing existing research deficiencies and enhancing comprehension in various manners. For example, the meticulous analysis undertaken in this research endeavour can significantly contribute to the formulation and establishment of a comprehensive and robust theoretical framework by rigorously examining the unique and distinctive factors that influence consumer acceptance and adoption of cryptocurrencies and non-fungible tokens (NFTs) specifically within the intricate socio- economic and cultural context of South Africa. This meticulously developed model may serve to

facilitate a much deeper and nuanced understanding of consumer behaviour, preferences, and aspirations that are intrinsically related to the progressive adoption and integration of various digital assets into the financial practices and investment portfolios of individuals. Furthermore, the outcomes of this research could uncover critical insights into the singular socio-cultural, economic, and regulatory dynamics of South Africa, thus enhancing the existing but limited literature on adoption behaviour in this country. By addressing these deficiencies, the study may establish a foundation for subsequent investigations and theoretical advancements within the sphere of cryptocurrency and NFT acceptance.

1.3.2. Practically

The study's conclusions may have practical implications for many players in the bitcoin and NFT ecosystems. The study's results may contribute to the research pool used by policymakers to establish successful regulatory frameworks that balance investor protection and innovation while also providing clarity and direction to market players. The comprehensive findings derived from this study possess the potential to be utilized effectively by various entities such as cryptocurrency exchanges, platforms dedicated to non-fungible tokens (NFTs), and providers of digital wallet services, all of which can leverage this information to design and implement user- centric platforms, products, and services that specifically address the distinctive needs, preferences, and behavioral tendencies of consumers in the South African market. Moreover, the insights garnered from this research can serve to significantly influence marketing strategies aimed at bolstering consumer awareness, enhancing comprehension, and encouraging responsible participation within the burgeoning fields of cryptocurrency and NFTs, thereby fostering a more informed user base. In addition to these applications, educators, along with industry-specific training programs, can harness the outcomes of this study to develop comprehensive instructional materials and engaging activities that effectively promote consumer awareness, elevate financial literacy, and facilitate informed decision-making among potential investors and users. Furthermore, the contributions made by this research extend to a diverse array of stakeholders, including developers of NFT applications and websites, creators and entrepreneurs operating within this digital landscape, as well as regulators, lawmakers, scholars, and academic researchers, all of whom can benefit from the insights provided in order to better comprehend the various factors perceived as obstacles or deterrents by those user groups that

remain sceptical about embracing NFTs as viable investment or trading instruments. Thus, the implications of this study are far-reaching, offering valuable guidance that can assist in navigating the complexities of this evolving digital economy and fostering a more inclusive and informed engagement with emerging financial technologies. In conclusion, the outcomes of this research hold significant promise for driving positive change and enhancing understanding within the rapidly evolving realms of cryptocurrency and NFT markets, ultimately contributing to a more robust and responsible digital financial ecosystem. This research will benefit them since it will provide a greater knowledge of NFTs, particularly the impact of their use in financial transactions (Loza-Vega, 2022)

1.4. Delimitations

The study on the precursors to consumer adoption of cryptocurrencies and NFTs in South Africa may have limitations that should be recognised. The study focuses on cryptocurrency and NFT consumer adoption in South Africa; therefore, the findings and conclusions may not be relevant to other nations or locations with different social, economic, and regulatory conditions. As a result, when projecting the study's findings beyond the South African setting, caution should be applied. Furthermore, if the participants who are volunteers choose to engage in the research, the study may suffer from self-selection bias. Individuals with specific features or views related to cryptocurrencies and NFTs may be more likely to participate, resulting in a non-representative sample. It is critical to be aware of any potential biases in the study's conclusions (Alzahrani & Daim, 2021). Additionally, the study may not account for all of the contextual elements influencing consumer adoption of cryptocurrencies and NFTs in South Africa. Factors such as macroeconomic conditions, political stability, cultural norms, and technological infrastructure may influence adoption behaviours but are not fully addressed in the scope of the study (Alzahrani & Daim, 2021). Recognising and taking these contextual aspects into account might assist in creating a more sophisticated picture of adoption dynamics.

1.5. Definition of key terms

1.3.1. Blockchain

This is a shared ledger that is certified by the users and is termed blockchain (Hacker *et al*.,2019) Blockchain functions as an immutable database that allows for decentralised

transactions, and blockchain-based applications are already appearing in a variety of industries.

1.3.2. Investment Product

An investment product in NFTs and cryptocurrencies refers to a financial instrument or asset that individuals can invest in for the purpose of generating potential returns or profits. This can include NFTs and various cryptocurrencies like Bitcoin and Ethereum (SEC, 2020).

1.3.3. Cryptocurrency

A virtual currency that is intended to be used as an alternative to traditional fiat money, allowing users to make digital payments for products and services without the need of middlemen (Murphy, Murphy, & Seitzinger, 2015).

1.3.4. Non-Fungible Token

A "non-fungible" relates to a unique digital object known as an NFT. This means that it cannot be replaced or substituted by another similar digital object. NFTs are created to protect digital data and establish ownership and scarcity (Dean, 2022). NFTs can be traded, much like physical art. When an artist or creator sells an NFT, they can choose to retain the copyright, transfer it to the buyer, or set restrictions on the number of subsequent sales and ownership transfers (Houser & Holden, 2022).

1.3.5. Technology

The application of scientific knowledge to practical purposes of human existence or used to change and govern the environment in which humans live (Encyclopaedia Britannica Editors, 2022). It is seen as a necessary tool that we cannot do without since it serves an important purpose and has a significant influence on almost every aspect of our lives today.

1.3.6. Perceived Usefulness

Davis (1989) defines perceived usefulness or utility as an individual's subjective estimate of the amount to which a specific technology, product, or service is expected to improve their performance or make activities simpler to complete. The usefulness of an information system or online transaction, such as NFTs, is determined by the user's belief that it will improve his or her performance. It is recognised as one of the factors that influence user behaviour.

1.3.7. Perceived Trust

Perceived trust relates to individuals' willingness and confidence that certain expectations would be met during online transactions without posing any dangers or hazards (Ryu & Ko, 2020; Odusanya *et al*., 2020). Users' confidence levels and intentions to continue using technology might be influenced by perceived trust (McKnight, Choudhury, & Kacmar, 2002).

1.3.8. Perceived Privacy and Security

Perceived privacy and security in NFTs refer to an individual's subjective view or belief regarding the amount of privacy and security given by NFTs (Joshi & Parhi, 2021).

1.3.9. Perceived Ease of Use

Perceived ease of use in NFTs refers to an individual's subjective judgement of how simple and user-friendly the process of engaging with NFTs is (Davis, 1989).

1.6. Assumptions

When it comes to cryptocurrency and NFT adoption, this study will assume that consumers make logical decisions based on available information and the perceived advantages and risks (Kamalul Ariffin et al., 2018). This assumption indicates that before making adoption decisions, customers thoroughly weigh the prospective benefits and drawbacks. Furthermore, the study will presume that the information provided by participants about their knowledge, attitudes, and behaviours concerning cryptocurrencies and NFTs is valid and credible. This assumption presupposes that individuals respond truthfully and recall their experiences and perceptions accurately. Furthermore, the selected sample will be assumed to be representative of the larger community of cryptocurrency and NFT users in South Africa. This assumption assumes that the sample sufficiently represents the diversity of features, attitudes, and behaviours within the target audience, and that market circumstances for cryptocurrencies and NFTs remain reasonably stable during the research period. This assumption implies that no major disruptions, regulatory changes, or substantial market fluctuations would occur over the study's duration, which might have a considerable influence on consumer adoption intentions and behaviour.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This review seeks to analyse the theoretical and empirical roots of the elements that determine how consumers in South Africa accept cryptocurrencies and NFTs. This inquiry aims to provide a thorough understanding of the elements that affect consumer adoption of these digital assets in South Africa. By analysing existing research and theoretical perspectives, we will establish a theoretical and conceptual framework that will inform the development of hypotheses for this investigation. The outcomes of this literature review will enhance the comprehension of consumer behaviour regarding cryptocurrencies and NFTs, particularly considering South Africa's distinctive socioeconomic landscape.

2.2 Theoretical Review

To ascertain the determinants that affect adoption, the researchers undertaking this investigation employed the methodology of mapping analysis (Patil et al., 2020). The exogenous constructs of the present study are intricately linked to various models and theories pertaining to adoption, acceptance, and diffusion, which encompass the Theory of Planned Behaviour, the Technology Readiness Index theory, the unified theory of acceptance and use of technology (UTAUT), as well as the extended UTAUT (UTAUT2).

2.2.1 Theory of Planned Behaviour (TPB)

TPB is a social psychological theory that helps predict and analyse human behavioural intentions (Jaiswal et al., 2021). The Theory of Planned Behaviour (TPB) has been used in several research on bitcoin and NFT adoption. Researchers have investigated the psychological factors that influence consumers' decisions to adopt cryptocurrencies, with a focus on cognitive and affective decision-making, as well as external factors like blockchain technology, system design, and social influences (Choi & Shin, 2023).When it comes to the intention to use cryptocurrency and Non-Fungible Tokens (NFTs), the Theory of Planned Behaviour (TPB) emphasises awareness and understanding. In the context of cryptocurrency adoption, awareness refers to an individual's grasp of the existence and characteristics of cryptocurrencies, whereas knowledge refers to the depth of information and comprehension about how cryptocurrencies and NFTs work (Behl et

al., 2023; Kumari et al., 2023). In a study evaluating the impact of individual traits on cryptocurrency adoption, researchers discovered that technology awareness, subjective financial literacy, and personal innovativeness strongly influenced an individual's propensity to embrace cryptocurrencies (Kumari et al., 2023).

To begin, awareness is critical in moulding attitudes and intentions to adopt new technology (Choi & Shin, 2023). Ajzen (1991) defines awareness as an individual's understanding of the presence and possible advantages of a specific behaviour. In the context of cryptocurrencies and NFTs, awareness refers to comprehending the core principles, functionality, and prospective uses of these digital assets. Individuals who understand the decentralised character of cryptocurrencies and the unique ownership rights provided by NFTs, for example, are more inclined to adopt them (Choi & Shin, 2023). Furthermore, awareness of bitcoin and NFTs alters subjective norms, which represent perceived societal pressures to engage or refrain from a particular behaviour. According to Ajzen (1991), subjective norms are affected by views about whether key referents approve or disapprove of a behaviour, as well as incentive to comply with these referents. Individuals with more understanding of cryptocurrencies and NFT adoption may perceive a social norm favouring their adoption, particularly if they belong to social organisations or communities that accept these digital assets (Behl et al., 2023). Individuals with less understanding, on the other hand, may experience social pressure against adoption as a result of scepticism or disinformation spread by their social groups (Behl et al., 2023). Furthermore, knowledge improves perceived behavioural control, which reflects people's judgements of the ease or difficulty of carrying out the behaviour. Consistent with Ajzen's (1991) argument, knowledge enables people to assess their ability to confidently interact with bitcoin and NFT. Individuals who have a better understanding of blockchain technology, digital wallet security measures, and the mechanics of NFT marketplaces, for example, are more likely to believe they can navigate and use these technologies effectively (Choi & Shin, 2023). Individuals with less expertise, on the other hand, may see adoption as more difficult, resulting in decreased intentions to engage with bitcoin and NFTs (Behl et al., 2023; Choi & Shin, 2023). Integrating the constructs of awareness and knowledge in this particular study enhances the explanatory power of TPB when applied to the intent to adopt cryptocurrency and NFTs.

2.2.2 Technology-Readiness Index Theory (TRI)

The TRI hypothesis is a framework for assessing people's preparedness to embrace and use new technologies. Parasuraman's (2000) TRI hypothesis assumes that people's propensity to accept technology is impacted by their perceived technology-related beliefs and attitudes (Parasuraman,2000). The notion of the TRI consists of 16 characteristics characterised as drivers and inhibitors across four dimensions ('optimism,' 'innovativeness,' 'discomfort,' and 'insecurity'). Drivers, which include optimism and innovativeness, are the driving factors for technological readiness. Innovativeness measures a person's willingness to experiment with new technologies and their adaptability to change (Bonnet & Teuteberg, 2023). Discomfort is defined as the dread and anxiety that people may feel when using or interacting with technology (Bonnet & Teuteberg, 2023). Concerns about complexity, compatibility, and potential negative consequences are addressed. Individuals' optimism reflects their positive beliefs and expectations about technology, particularly their belief in their capacity to use and profit from it. Individuals' sentiments of vulnerability or dread of undesirable outcomes related with utilising technology, such as privacy and security issues, are represented by insecurity (Zarifis & Cheng, 2022). These four aspects, according to the TRI hypothesis, shape individuals' technical readiness, which determines their adoption and usage of new technology.

Technological readiness refers to the primary motives for understanding the consumer's mental enablers and inhibitors in cryptocurrencies and NFTs. We connect these components, namely optimism, innovativeness, insecurity, and discomfort, with the characteristics of cryptocurrencies and NFTs in this study. Individuals that have a favourable attitude towards cryptocurrencies and NFTs may view these digital assets as creative and possibly profitable (Bonnet & Teuteberg, 2023). They may believe in blockchain technology's transformational power and the possibility for financial rewards or unique ownership experiences linked with cryptocurrencies and NFTs (Bonnet & Teuteberg, 2023). Due to the perceived investment value, optimism is a driver of technology readiness (Bonnet & Teuteberg, 2023). Another aspect of the TRI theory that influences cryptocurrency and NFT acceptance is innovativeness. Individuals' innovativeness is measured by their readiness to test new technologies and their openness to change (Parasuraman, 2000). Those who are more forward-thinking may be early adopters of cryptocurrencies and NFTs, actively seeking new financial opportunities or investigating the possibilities afforded by

digital collectibles. Investors identify authenticity, verifiability, digital asset management, and disintermediation with NFTs' distinctive qualities (Bonnet & Teuteberg, 2023). Social standing, community building, and physical (physical-digital blend) traits all contribute to investment optimism and optimistic belief. For a variety of reasons, insecurity is a substantial obstacle to the adoption of cryptocurrencies and NFTs (Zarifis & Cheng, 2022). For starters, the business model of cryptocurrencies and NFTs is still in its infancy and changing at a rapid pace (Zainab et al., 2022). Finally, blockchain technology is still subject to cyberattacks such as hacking, doxing, and scamming from persons and impersonators. The lack of provenance, regulation, and governance contributes to consumer scepticism regarding cryptocurrencies and NFTs (Omar & Basir, 2020). Consumers' beliefs on trust and risk will predicate the intention to adopt technological innovations as investment products (Zarifis & Cheng, 2022).

Cryptocurrencies and NFTs have the potential to help new types of value generation, but this is eclipsed by market fraud, speculation, and regulation. Information on these digital assets is not always clear on the ultimate shape they will take, and present and ever-changing rules appear to be inadequate in keeping up with this ever-changing environment (Zarifis & Cheng, 2022). As a result, customers voice their unease and uncertainty since they are afraid of being duped. The kinds of scams that have taken place, include overt fraud such as artists overpaying to buy their own NFTs and the owners' rights (Gunay & Kaskaloglu, 2022). Given that this industry is in its infancy, many consumers are most vulnerable to these kinds of attacks.

The fundamental motives for a consumer to adopt then invest in cryptocurrencies and NFT’s is based on perceived trust. Investors' trust in these digital assets will influence their investing selections. A positive relationship will lessen the complexity of their decisions (Qian et al., 2022). Consumers will have to choose between the enabling and hindering characteristics of these digital assets, which created the precedent to adoption of cryptocurrencies and NFTs in this study. When considering the benefits and drawbacks of adoption, the consumer's willingness to accept trade-offs influences their decision. (Wang et al., 2019). Due to the ever-changing nature of cryptocurrencies and NFTs, understanding of their worth as an investment product is limited; this will serve as a caution to investors as they research their value. There is a large amount of

discourse around producing value through NFT investments because of its advantages over other traditional paths (Mackenzie & Brzia, 2022). Consumers' investment decisions will be influenced by their perceptions of specific cryptocurrency and NFT value elements such as scarcity (not replicated), liquidity (easily and quickly transferred), intrinsic worth (network effect due to increased usage), utility, and hype (Mackenzie & Brzia, 2022).

2.2.3 Unified Theory of Acceptance and Use of Technology (UTAUT)

The body of academic literature pertaining to the field of consumer behaviour has experienced a remarkably pronounced and noteworthy escalation in the development and proliferation of theoretical frameworks that meticulously investigate the intentions of consumers regarding the adoption of various technological innovations. The Technology Acceptance Model (TAM), which was originally conceptualized and eloquently articulated by Davis in the year 1989, fundamentally posits that individuals are more likely to embrace a particular technology if they perceive it to be both user-friendly and advantageous in terms of its benefits. This theoretical approach is predicated on two essential components: the perceived advantage that a technology offers to the user and the perceived accessibility or ease of use associated with its implementation, both of which have been rigorously validated and repeatedly substantiated by numerous experts and scholars who specialize in the domain of information technology.

Nevertheless, despite its contributions, the Technology Acceptance Model has been criticized and subsequently deemed inadequate for comprehensively determining the factors that influence the adoption of emerging and novel technologies, primarily because it fails to account for the significant impact that social interactions and contextual influences may exert on consumer behaviour (Beh et al., 2019). In response to this limitation and as a proactive measure to address the dynamic and progressive characteristics inherent in contemporary technology, the Combined Theory of Technology Acceptance and Usage (CTTAU) was meticulously formulated and developed (Venkatesh et al., 2003). The Unified Theory of Acceptance and Use of Technology (UTAUT) serves as an integrative framework that represents a convergence of multiple theoretical perspectives, which collectively encompass the Theory of Reasoned Action, the Technology Acceptance Model (TAM), the Theory of Planned Behaviour, the Motivational Model, the Model of PC Utilization (MPCU), as well as the integrated framework of TAM and

the Theory of Planned Behaviour, the Social Cognitive Theory, and finally, the Innovation and Diffusion Theory (IDT) (Venkatesh et al., 2003).

According to the UTAUT model, four key factors influence technology adoption: performance expectation, effort expectation, social influence, and facilitating conditions (Abbasi et al., 2021). Performance expectation refers to individuals' beliefs regarding the enhancement of their productivity through technology, while effort expectation emphasizes the perceived ease of use and accessibility of the technology. Social influence encompasses the perceptions of relevant individuals regarding technology use, and facilitating conditions address the perceived availability of necessary resources and support, all of which ultimately shape behavioral intentions toward technology utilization (Abbasi et al., 2021).The UTAUT theory has been widely used in the analysis of technology acceptance and usage in a broad range of fields, including e-commerce, e-learning, mobile apps, and healthcare systems (Abbasi et al., 2021). It has provided academics and practitioners with valuable insights into individuals' motivations and barriers to adopting and utilising technology, guiding them in developing treatments and strategies to improve technology adoption and effective implementation.

As the UTAUT model has been able to garner great explanatory prowess, many critics have proposed that the UTUAT misses specific factors, which has resulted in its inability to fully represent a consumer's intention to adopt technology (Shaw & Sergueeva, 2019). Other studies have critiqued UTUAT since it was proposed from an organisational standpoint, with elements more connected to defining employees' behavioural intentions. As a result, it is unable to assess consumer-graded technologies such as cryptocurrencies and NFTs. Ventkatesh et al (2012) provided a consumer facing model that extended the original model constructs to incorporate habit, hedonic motivation, and price value in response to this critique (Venkatesh, Thong, & Xu, 2012). As a result, there are a total of seven constructions that reflect the financial, intrinsic, and functional rewards.

To explain why people, accept and utilise cryptocurrencies and NFTs, the UTAUT hypothesis may be applied. Although the UTAUT theory was not specifically created to investigate these digital assets, its structures can nonetheless give insights into the difficulties impacting people's

decisions to accept and utilise cryptocurrencies and NFTs (Shaw & Sergueeva, 2019). One of the important variables in the UTAUT theory is performance expectation, which is crucial to cryptocurrency and NFT adoption. Individuals' opinions about the benefits and advantages provided by the technology are captured by performance expectancy. Individuals may see possible benefits such as investment opportunities, financial gains, enhanced transparency, or ownership of unique digital assets in the context of cryptocurrencies and NFTs. Their conviction in these technologies' performance benefits can impact their acceptability and adoption (Shaw & Sergueeva, 2019). An additional aspect in the UTAUT theory is effort expectancy, which takes into account people's judgements of the ease of use and simplicity of technology. Individuals may be concerned about the complexity of managing digital wallets, understanding blockchain technology, or navigating the decentralised nature of cryptocurrencies and NFTs (Shaw & Sergueeva, 2019). Effort expectancy influences whether people view these devices to be user-friendly and simple to use. Social influence, a key component of the UTAUT theory, can influence bitcoin and NFT adoption. Subjective norms, which represent individuals' impressions of the expectations and opinions of significant others, are included in social influence (Shaw & Sergueeva, 2019). Social influence, in the context of cryptocurrencies and NFTs, might come from recommendations and experiences given by friends, relatives, or significant persons in the crypto community. Positive subjective norms can help these technologies gain acceptance and adoption (Shaw & Sergueeva, 2019). The third aspect in the UTAUT theory is facilitating conditions, which addresses the resources and assistance accessible to users to facilitate technology use. Access to secure and user-friendly digital wallets, instructional materials for understanding blockchain technology, and regulatory frameworks that ensure consumer protection are all examples of facilitating factors in the case of cryptocurrencies and NFTs.

Individuals' propensity to embrace and use cryptocurrencies and NFTs can be influenced by the presence or absence of certain favourable conditions. By applying the UTAUT theory to bitcoin and NFT adoption, researchers and practitioners can gain insights into the factors driving user acceptability and usage. This understanding may be applied to the development of ways for overcoming hurdles, enhancing perceived advantages, and promoting the widespread usage of cryptocurrencies and NFTs.

In the context of this study, the TRI and the UTAUT offer valuable lenses through which to examine the intricate landscape of cryptocurrency and NFT adoption. TRI's dimensions of optimism, innovativeness, discomfort, and insecurity provide a framework for assessing individuals' readiness to embrace new technologies, making it pertinent to understanding the factors shaping cryptocurrency and NFT adoption. Specifically, optimism fuels the belief in the transformative power and investment potential of these digital assets, while innovativeness sheds light on the early adopters actively exploring their financial opportunities. Discomfort and insecurity mirror the hesitations and uncertainties stemming from the evolving nature of blockchain technology and security concerns. On the other hand, UTAUT's constructs of performance expectation, effort expectancy, social influence, and facilitating conditions delve into the behavioural intentions of technology users. Performance expectation helps us comprehend how individuals perceive the benefits and advantages of cryptocurrencies and NFTs, while effort expectancy reveals the ease of use and user-friendliness of these digital assets.

Social influence considers the role of recommendations from significant others, and facilitating conditions scrutinises the presence of resources and support for cryptocurrency and NFT adoption. Through these theoretical perspectives, we can better grasp the intricacies of user acceptability and usage, with the potential to identify and address obstacles and promote the widespread use of cryptocurrencies and NFTs in South Africa.

2.3 Empirical Review

2.3.1 Cryptocurrency Adoption

This empirical review aims to clarify the fundamental factors that drive bitcoin adoption by synthesising evidence from major academic publications. This study seeks to give comprehensive knowledge of the variables influencing people's decisions to use cryptocurrencies by analysing and synthesising empirical studies, theoretical frameworks, and methodological techniques used in prior research.

Qualitative research on cryptocurrency adoption has offered useful insights into consumers' opinions, motives, and obstacles in using this novel financial technology. Researchers used approaches such as interviews and theme analysis to highlight many major results on cryptocurrency adoption and its implications for technology adoption in general. Firstly,

qualitative research has given insight on consumers' perspectives of bitcoin use and utility. Alqaryouti et al. (2020) and Sas & Khairuddin (2017) found that perceived ease of use and perceived utility were important in determining consumers' intentions to embrace cryptocurrency. This research has found that, although some consumers see cryptocurrencies as a viable payment mechanism with room for future expansion, others voice misgivings or scepticism owing to usability problems or a lack of perceived benefit in their individual circumstances. For example, Alqaryouti, et al. (2020) discovered that stakeholders frequently regard cryptocurrency usability to be low, citing complexity in blockchain technology and issues with wallet administration as major hurdles. Similarly, Sas & Khairuddin (2017) found that beginners or infrequent consumers of cryptocurrency may struggle with usability issues, impacting their overall experience and adoption. Furthermore, qualitative research has demonstrated the importance of consumer motives in promoting cryptocurrency acceptance. Arli et al. (2020) found that people acquire cryptocurrency for a variety of reasons, including anticipation of a monetary revolution, empowerment through decentralised currency systems, and perceptions of cryptocurrencies as a store of actual wealth. These findings highlight the importance of understanding customers' fundamental motivations and goals while investigating technological adoption processes.

Qualitative research has also looked at the obstacles and constraints that consumers and businesses encounter while embracing cryptocurrency. For example, Sas & Khairuddin, (2017) investigated trust issues among bitcoin users in Malaysia, emphasising the need for decentralisation, regulation, and transaction transparency in fostering consumer trust. Similarly, Abou Ali (2024) conducted a study on organisational cryptocurrency adoption, emphasising the role of IT preparedness, innovativeness, and social media activity in separating adopters from non-adopters. These studies assist in better understanding the dynamics affecting the acceptance and dissemination of novel technologies like cryptocurrencies by investigating aspects such as perceived performance expectancy, consumer incentives, trust difficulties, and organisational and personal preparedness.

Quantitative studies have demonstrated the importance of consumer motives in encouraging bitcoin adoption. Research has revealed a variety of reasons for people investing in and having cryptocurrency, including anticipation of a monetary revolution, empowerment through decentralised currency systems, and perceptions of Bitcoin as a reliable store of wealth (Jegerson, Khan, & Mertzanis, 2023). These findings highlight the importance of understanding customers' fundamental motivations and goals while investigating technological adoption processes. Researchers investigated parameters linked with bitcoin adoption as a money exchange mechanism by integrating the (TAM), Innovation Diffusion Theory (IDT), and TRI, as seen in Jankeeparsad and Datt Tewari (2022). Structural equation modelling and worldwide surveys were used to evaluate the study model, revealing important factors such as simplicity of use, visibility, and compatibility. However, constraints such as sample size and regional bias were identified, highlighting the need for larger studies in varied contexts to improve the generalizability of findings. Several studies have examined demographic and economic factors of cryptocurrency adoption, such as social impact (Schuh & Shy, 2015; Glaser et al., 2014; Hur & Yoo, 2015). These studies identified links between customer attributes, adoption behaviours, and payment preferences, providing complex insights into bitcoin usage trends. Furthermore, Glaser et al. (2014) investigated consumers' aspirations to replace fiat currency with cryptocurrency, revealing motives for adoption and investing behaviours. Understanding these correlations is critical for developing marketing tactics, regulatory frameworks, and educational campaigns to encourage bitcoin acceptance and incorporation into traditional financial institutions.

2.3.2 NFT Adoption

Non-Fungible Tokens have received a lot of interest in recent years because they have the potential to revolutionise ownership, provenance, and monetization in a variety of sectors (Doherty, 2021). These digital assets, which use blockchain technology, represent unique items or assets that cannot be reproduced or divided, assuring their scarcity and validity (Doherty, 2021). The adoption of NFTs has piqued the interest of both academics and industry practitioners, with studies aimed at understanding the reasons driving acceptance, investigating use cases across many industries, and addressing barriers to widespread use. NFTs have found use in a variety of businesses, allowing for the representation, ownership, and trading of one-of- a-kind digital assets.

Research on NFT adoption has revealed many significant elements that influence individuals' and organisations' readiness to adopt this developing technology. The report focuses on the legal and regulatory obstacles associated with NFT adoption, emphasising the necessity for clear and rigorous regulatory frameworks to build trust and confidence in potential users. Kılıçaslan and Ekizler's (2022) study on customer perceptions of NFTs found that perceived value, usability, and security impact consumers' propensity to embrace NFTs. Furthermore, Taherdoost (2022) provided a complete theoretical model that incorporates technological, organisational, and environmental aspects to explain business adoption of NFTs, emphasising the significance of perceived compatibility and competitive pressure in determining adoption decisions.

Figure 2 Statistics show that the gaming business dominates the NFT market, accounting for 37%. However, this is a minor reduction from the previous quarter's dominance of 45%. Notably, the DeFi sector has had a rebound, boosting its dominance from 23% to 32%. The Social category is also growing, accounting for 13% of the entire market, up 1% from the previous quarter (Gherghelas, 2023). NFTs have helped to digitise classic collections like virtual trading cards, pets, and actual commodities representations. Platforms such as NBA Top Shot and CryptoKitties provide NFT-based basketball mementos and virtual cat breeding experiences, respectively (Di Meglio, 2021). Furthermore, musicians and artists may tokenize songs and sell NFTs representing limited editions, unique material, or event tickets, generating new revenue streams and increasing fan engagement (Evans, 2021). Platforms such as Audius and Rarible allow musicians to distribute and sell their music as NFTs (Paget, 2021).

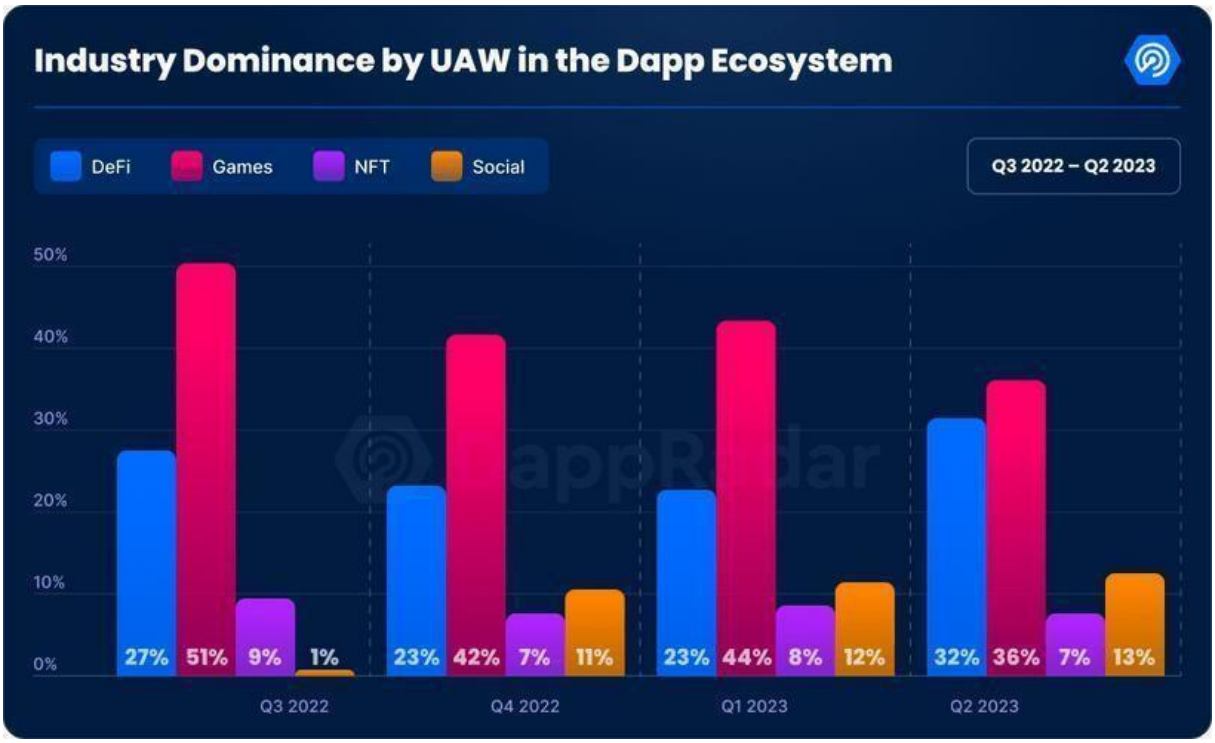


Figure 2: Industry Dominance by Category of NFTs

Sources:(Gherghelas, 2023)

Users in virtual worlds may own and sell virtual real estate using NFTs, which promotes innovation, social interaction, and virtual economic activity. The vast range of NFTs throughout many industries, as shown in Figure 2, provides strong empirical evidence of increased NFT adoption. The versatility of NFTs, as demonstrated by their use in art, games, collectibles, music, virtual real estate, and domain names, provides several options for both people and organisations to participate in the developing digital economy (Evans, 2021).

2.4 Conceptual Framework

2.4.1 Awareness and Knowledge of Cryptocurrencies

To understand the factors that contribute to consumer acceptance of cryptocurrencies and Non-Fungible Tokens (NFTs) in South Africa, the constructs of awareness and knowledge must be integrated into the framework. Individuals' understanding and experience with digital assets influences cryptocurrency and NFT acceptance in South Africa, as it does in many other nations. Thus, hypothesising awareness and knowledge as essential components within the framework

enables researchers to investigate the fundamental determinants affecting adoption intentions among South African consumers. Awareness refers to people's identification of the existence and potential benefits of cryptocurrencies and NFTs, whereas knowledge digs further into their comprehension of the underlying technology, market dynamics, and legal considerations surrounding these assets (Budree & Nyathi, 2023; Silenzi & Cabuk, 2023; Shahzad et al., 2024). By incorporating awareness and knowledge into the framework, researchers can better understand how these factors interact with attitudes, subjective norms, and perceived behavioural control to shape adoption intentions among South African consumers, providing valuable insights for policymakers and market stakeholders seeking to promote widespread adoption of cryptocurrencies and NFTs in the region. Consequently, the following hypothesis are proposed:

H1a: There is a positive relationship between awareness of cryptocurrencies and NFTs and the intention to adopt these digital assets among South African consumers.

H1b: Knowledge about cryptocurrencies and NFTs positively influences the adoption intentions among South African consumers.

2.4.2 Technological readiness of consumers to adopt Cryptocurrency and NFT’s

In the context of the TRI, consumers' innovativeness, optimism, and perceived trust are pivotal determinants influencing the adoption of emerging technologies like cryptocurrencies and NFTs. Innovativeness, reflecting individuals' openness to novel technologies, drives consumers to explore and adopt cryptocurrencies and NFTs as they exhibit a propensity for experimenting with innovative solutions. Similarly, optimism, representing positive expectations towards technology, encourages consumers to embrace cryptocurrencies and NFTs due to their optimistic outlook on the potential benefits and prospects of these digital assets. Additionally, perceived trust in the reliability, security, and transparency of blockchain technology influences consumers' adoption decisions, as they perceive cryptocurrencies and NFTs as secure and trustworthy investment options. Thus, by considering consumers' levels of innovativeness, optimism, and perceived trust, the TRI framework provides valuable insights into the factors shaping the adoption of cryptocurrencies and NFTs (Shuhaiber et al., 2023; Bland et al., 2024; Ismail et al., 2024) Consequently, the following possibilities are proposed:

H2a: The innovativeness of consumers positively influences the adoption of cryptocurrencies and NFTs, reflecting their propensity to embrace novel technologies.
H2b: Consumer optimism towards technology favourably impacts the adoption of cryptocurrencies and NFTs, indicating the significance of trust in shaping adoption intentions.
H2c: A consumer's perceived trust in technology positively influences their intention to adopt cryptocurrencies and NFTs, underscoring the role of trust perceptions in shaping adoption behaviours.

Technological insecurity and discomfort can be significant barriers to a consumer's technological preparedness. The evolving nature of information privacy and security in the cryptocurrency and NFTs ecosystems is mostly to blame (Zarifis & Cheng, 2022). There are currently no fool proof regulatory and compliance measures in place. Anxiety about using technology stems from a sense of being overwhelmed by it. The greater the users' discomfort, the longer it takes to achieve technological readiness (Gunay & Kaskaloglu, 2022). When the physical and digital worlds converge, there is a greater discomfort in understanding the truth, which affects investors' trust perception in cryptocurrency and NFT investing.

H3a: A consumer’s insecurity about technology will negatively impact their adoption of cryptocurrencies and NFTs.
H3b: A consumer’s discomfort with technology will negatively impact their adoption of cryptocurrencies and NFTs.
H3c: The perceived positive value a consumer anticipates from cryptocurrencies and NFTs will positively impact their adoption of the technology.

2.4.3 Consumer technology acceptance and use of Cryptocurrency and NFTs

Performance expectation relates to the degree to which a consumer recognizes advantages and value resulting from the integration of technology, including elements such as customization, ease of use, and reduced effort. It serves as a critical metric in fostering consumer acceptance and the embracement of digital behaviours. Venkatesh and others (2012) pointed out that consumers weigh costs against benefits when trying out new technology. Consequently, within the framework of the current investigation, performance expectation not only amplifies the user's inclination to embrace cryptocurrencies and NFTs

but also enhances the perceived value associated with their adoption. In accordance with the UTUAT theory, effort expectancy denotes the level of ease experienced by a consumer when interacting with new technology (Venkatesh et al., 2012). This perception fosters a positive attitude and openness towards innovation (Merhi et al., 2019; Ali & El Kaakour, 2024). As per Davis' (1989) findings, users navigate a cognitive trade-off between the exertion required for effective technology utilization and the rewards and benefits derived from its application. Furthermore, user performance expectation is positively and significantly influenced by effort expectancy. Thus, if the execution of transactions involving cryptocurrencies and NFTs proves advantageous and requires minimal effort, South African consumers are predisposed to embrace them in the context of this study (Sangsawang, 2024).

Social influence denotes the degree of impact an individual receives from their social circle regarding the adoption of technology (Sangsawang, 2024). Given that the use of Bitcoin is often perceived as a solitary endeavour, positive experiences with cryptocurrency from friends or family may serve as a catalyst for an individual's adoption of such technology (Venkatesh et al., 2012; Sham et al., 2023). Research by Nseke (2018) examined the role of Bitcoin among African populations and empirically substantiated the significance of social influence in enhancing their propensity to utilize Bitcoin, thereby corroborating this perspective. The hypothesis emerges as a consequence of these arguments:
H4a: The adoption of cryptocurrencies and NFTs is influenced positively by performance expectations.
H4b: Consumer adoption of cryptocurrencies and NFTs will benefit positively from effort expectation.
H4c: Social impact positively influences consumer uptake of cryptocurrencies and NFTs.

2.4.4 Facilitating Conditions

The concept of an individual having the necessary technological infrastructure to implement a new technology is termed a facilitating condition (Lady et al., 2024). Consequently, in this research, facilitating conditions for adoption pertains to the availability of essential resources for consumers. This includes aspects such as the interconnectivity and versatility of using devices like smartphones and tablets, access to technology and the requisite components for internet connectivity, or the knowledge needed to conduct a transaction. As noted by Venkatesh and others (2012), hedonic motivation is characterized by feelings of enjoyment, pleasure, or fun associated with the use of specific technological tools. These emotions, which reflect consumers 'hedonic impulses, serve as a significant driving force behind technology adoption. Moreover, the utilization of cryptocurrency and NFTs can be perceived as a facet of contemporary life,

adding value for those consumers who actively pursue innovation and novelty (Riffai et al., 2012; Karpurapu et al., 2024). Alalwan et al. (2017) provided empirical evidence indicating that when users have high hedonic motivation for Internet banking, they perceive greater benefits, which affects their performance expectancy and consequently enhances the price value of Internet banking. Price value is understood as the cognitive balance between the monetary cost and the advantages derived from using a technology (Venkatesh et al., 2012). Unlike in an organizational context, the responsibility for adopting new technology lies with the individual user. Therefore, prior to embracing new technology, the user conducts a cost-benefit analysis (Alalwan et al., 2017). Adoption of technology is more probable when the perceived advantages surpass the monetary outlay. In the current marketing literature, the assessment of cost/price is usually based on the quality of the product or service acquired, or the perceived benefits by the user (Alalwan et al., 2017; Mulyono et al., 2024). Consequently, this study asserts that:

H5a: Creating favourable conditions will have a positive influence on the South African consumer's adoption of cryptocurrencies and NFTs.

H5b: Hedonic motivations positively influence the adoption of cryptocurrencies and NFTs.

H5c: A positive Price value will have a positive impact on the adoption of cryptocurrency and NFTs.

2.4.5 Investment product

The underlying dynamics that drive bitcoin and NFT adoption are the basis for the concept of cryptocurrencies and NFTs as investment products (Venkatesh *et al*., 2012). The combination of these variables, most notably trust, will influence a consumer's choice to shift from accepting cryptocurrencies and NFTs as a technology to viewing them as potential investment items (Hamid et al., 2024). These underlying dynamics coupled with significantly impactful cycles that are influenced by a series of speculative bubbles, which serve as innovation accelerators. These bubbles create hype cycles that attract new users and investors, thereby enhancing network effects and driving technological adoption (Huber & Sornette, 2020). Additionally, the interplay between Bitcoin's price and user adoption generates feedback loops that further stimulate interest and investment in the cryptocurrency, leading to explosive growth in user bases after initial dormant periods (Cong et al., 2018). A favourable link in this regard will lead to less decision complexity (Qian *et al*., 2022). As a result, the research offers in the context of this study:

H6: Consumers' adoption of cryptocurrencies and NFTs will have a positive impact on the view of these digital assets as an investment product by financial institutions.

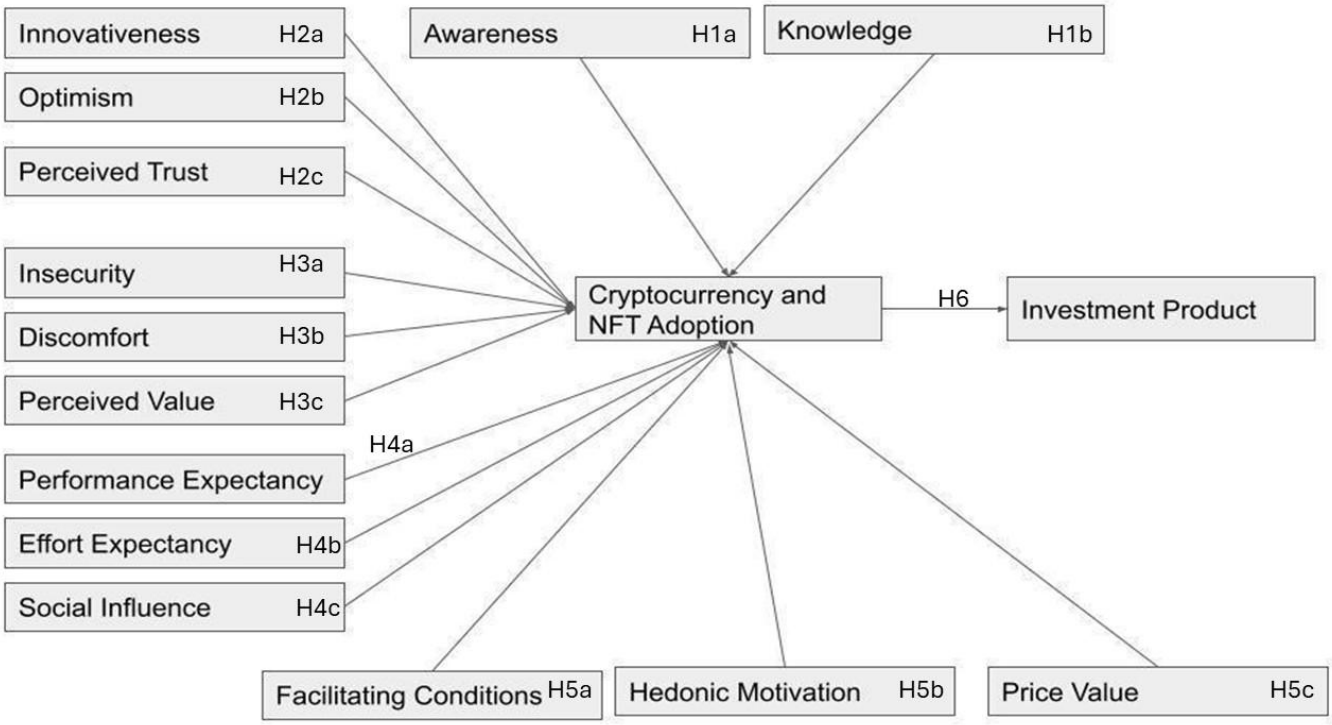


Figure 3: Conceptual Framework

2.5 Research Hypothesis Development

This section develops the research hypothesises by integrating insights from the theoretical and empirical reviews. Each hypothesis is reviewed is revied in the context of existing literature, highlighting gapes more specifically in emerging marketing such as South Africa where socio-economic, regulatory and infrastructural factors uniquely influence adoptions. The null (H0) and alternative (HA) hypotheses are stated for empirical testing. These hypotheses address antecedents to consumer adoptions of cryptocurrencies and NFTs, extending models like TPB, TRI and UTAUT to fill contextual voids.

Hypothesis 1: Awareness and Knowledge

The connection between awareness and the intention to adopt is substantiated by the Theory of Planned Behavior (TPB), which underscores the significance of knowledge in influencing behavioural intentions (Ajzen, 1991). In a similar vein, knowledge plays a crucial role in the adoption process by mitigating perceived risks (Venkatesh et al., 2003). Nevertheless, within the South African context, there exists a paucity of research that investigates how cultural misconceptions and inadequate financial literacy distinctly impact awareness and comprehension of cryptocurrencies and NFTs, thereby creating a notable void in the understanding of localized impediments (Mudzongo & Chibaya, 2022).

H0a: There is no positive relationship between awareness of cryptocurrencies and NFTs and the intention to adopt these digital assets among South African consumers.
Ha (H1a): There is a positive relationship between awareness of cryptocurrencies and NFTs and the intention to adopt these digital assets among South African consumers.
H0b: Knowledge about cryptocurrencies and NFTs has no positive influence on adoption intentions among South African consumers.
Ha (H1b): Knowledge about cryptocurrencies and NFTs positively influences adoption intentions among South African consumers.

Hypothesis 2: Consumer Innovativeness and Optimism

Innovativeness and optimism, which are fundamental constructs of the Technology Readiness Index (TRI),

facilitate the adoption of technology by promoting an openness to novel experiences and fostering positive anticipations (Parasuraman & Colby, 2015). Trust, which aligns with the Unified Theory of Acceptance and Use of Technology (UTAUT), augment intentions through perceived dependability (Venkatesh et al., 2012). Nevertheless, empirical investigations conducted within the South African context exhibit a deficiency in exploring how economic volatility influences innovativeness and optimism, as well as how perceptions of trust differ across the domains of cryptocurrency and non-fungible tokens (NFTs), thereby indicating a notable gap in comprehensive analytical frameworks (Kumalo & Ndlovu, 2023).
H0a: The innovativeness of consumers has no positive influence on the adoption of cryptocurrencies and NFTs, reflecting their propensity to embrace novel technologies.
Ha (H2a): The innovativeness of consumers positively influences the adoption of cryptocurrencies and NFTs, reflecting their propensity to embrace novel technologies.
H0b: Consumer optimism towards technology has no favorable impact on the adoption of cryptocurrencies and NFTs, indicating the significance of trust in shaping adoption intentions.
Ha (H2b): Consumer optimism towards technology favorably impacts the adoption of cryptocurrencies and NFTs, indicating the significance of trust in shaping adoption intentions.
H0c: A consumer's perceived trust in technology has no positive influence on their intention to adopt cryptocurrencies and NFTs, underscoring the role of trust perceptions in shaping adoption behaviors.
Ha (H2c): A consumer's perceived trust in technology positively influences their intention to adopt cryptocurrencies and NFTs, underscoring the role of trust perceptions in shaping adoption behaviors.

Hypothesis 3: Technological Insecurity and Discomfort

As TRI inhibitors, technological discomfort and insecurity have a detrimental effect on adoption by raising perceived risks (Parasuraman, 2000). On the other hand, by emphasising advantages, perceived value from UTAUT2 can counteract these effects (Venkatesh et al., 2012). Due to legislative ambiguity, there is a study vacuum in South Africa on insecurity and discomfort with blockchain technology, specifically with regard to Cryptocurrencies and NFTs.
H0a: A consumer’s insecurity about technology will not negatively impact their adoption of cryptocurrencies and NFTs.
Ha (H3a): A consumer’s insecurity about technology will negatively impact their adoption of cryptocurrencies and NFTs.

H0b: A consumer's discomfort with technology will not negatively impact their adoption of cryptocurrencies and NFTs.
Ha (H3b): A consumer's discomfort with technology will negatively impact their adoption of cryptocurrencies and NFTs.
H0c: The perceived positive value a consumer anticipates from cryptocurrencies and NFTs will not positively impact their adoption of the technology.
Ha (H3c): The perceived positive value a consumer anticipates from cryptocurrencies and NFTs will positively impact their adoption of the technology.

Hypothesis 4: Performance Expectations

By increasing perceived utility and usability, performance and effort expectations from UTAUT boost adoption (Venkatesh et al., 2003). Through normative pressure, social impact also propels uptake (Venkatesh et al., 2012). There is a knowledge vacuum regarding the combined impact of these aspects, though, as research in South Africa seldom ever look at how they interact with Cryptocurrency and NFT-specific use cases (such digital art) (Ngwenya, 2022).
H0a: The adoption of cryptocurrencies and NFTs is not influenced positively by performance expectations.
Ha (H4a): The adoption of cryptocurrencies and NFTs is influenced positively by performance expectations.
H0b: Consumer adoption of cryptocurrencies and NFTs will not benefit positively from effort expectation.
Ha (H4b): Consumer adoption of cryptocurrencies and NFTs will benefit positively from effort expectation.
H0c: Social impact does not positively influence consumer uptake of cryptocurrencies and NFTs.
Ha (H4c): Social impact positively influences consumer uptake of cryptocurrencies and NFTs.

Hypothesis 5: Facilitating Conditions
According to Venkatesh et al. (2012), UTAUT2's hedonic incentive and facilitating conditions encourage adoption through enjoyment and infrastructure. By weighing the advantages and disadvantages, price value also affects choices. However, there is a contextual vacuum in South African research that does not address how high transaction costs and insufficient digital infrastructure directly impede Cryptocurrency and NFT adoption (Chikwira & Mangudya, 2023).
H0a: Creating favourable conditions will have no positive influence on the South African consumer's

adoption of cryptocurrencies and NFTs.
Ha (H5a): Creating favourable conditions will have a positive influence on the South African consumer's adoption of cryptocurrencies and NFTs.
H0b: Hedonic motivations do not positively influence the adoption of cryptocurrencies and NFTs.
Ha (H5b): Hedonic motivations positively influence the adoption of cryptocurrencies and NFTs.
H0c: A positive price value will have no positive impact on the adoption of cryptocurrency and NFTs.
Ha (H5c): A positive price value will have a positive impact on the adoption of cryptocurrency and NFTs.

Hypothesis 6: Adoption as Investment Products

Adoption intentions, rooted in TPB, shape perceptions of cryptocurrencies and NFTs as investment products, aligning with financial inclusion goals (Ajzen, 1991). However, limited South African studies explore how institutional perceptions evolve with consumer adoption, particularly for Cryptocurrencies in the financial sector and NFTs in creative sectors, indicating a research gap (Mabasa, 2022).
H0: Consumers' adoption of cryptocurrencies and NFTs will have no positive impact on the view of these digital assets as an investment product by financial institutions.
Ha (H6): Consumers' adoption of cryptocurrencies and NFTs will have a positive impact on the view of these digital assets as an investment product by financial institutions.

2.6 Chapter Summary

Finally, the literature analysis sheds light on the acceptance of cryptocurrencies and NFTs in South Africa. It emphasises the importance of understanding the elements that influence consumer adoption, as well as the need for complete theoretical frameworks and empirical study in the South African context. The review emphasises the importance of trust, perceived value, optimism, innovativeness, insecurity, discomfort, performance expectancy, effort expectancy, social influence, conducive conditions, hedonic motives, and pricing value in determining consumer adoption intentions. These components represent psychological, technical, and socio- cultural influences on decision-making. Both the TRI theory and the UTAUT theory are excellent frameworks for examining the elements that drive adoption. These ideas lay the groundwork for comprehending consumers' preparedness, perspectives, and motives, as well as the impact of external forces in determining their adoption behaviours. The survey of literature also highlights

current knowledge gaps, such as the lack of a thorough theoretical framework tailored to the South African setting and insufficient empirical research on consumer uptake in the area. It emphasises the need for additional research into the characteristics and dynamics impacting adoption intentions and behaviours in South Africa.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The methods used to investigate the factors influencing consumer adoption of cryptocurrencies and NFTs in South Africa are described in this chapter. A well-designed procedure is required to get reliable and valid research findings that answer the study objectives and hypotheses. This chapter discusses the philosophy, approach, strategy, method selection, time horizon, and procedures, as well as data gathering methods.

3.2 Research Philosophy

Epistemology, as a philosophical framework for research, pertains to the researcher's understanding of knowledge and the methodologies they utilized to generate knowledge (Bryman & Bell, 2019). This framework formed the bedrock for study design, data gathering, and analytical techniques. Various epistemological viewpoints shaped the researcher's perceptions regarding reality and the dynamics between researcher and subject. Positivism constituted a prominent epistemological paradigm that underscored the objective and scientific essence of knowledge (Bryman & Bell, 2019). The Researcher adhering to positivist principles employed quantitative methodologies to investigate phenomena in an objective and quantifiable way, aspiring for unbiased objectivity. They posited the existence of an objective reality that could be observed, quantified, and understood through empirical evidence (Goldman, 2019). The chosen epistemological stance in a study dictated the research design, data collection strategies, and analytical methodologies implemented (Guba & Lincoln, 1994). It was imperative for the researcher to be transparent about their epistemological stance, as it influenced their approach to knowledge construction and the interpretation and credibility of research outcomes.

In this investigation concerning the precursors to consumer acceptance of cryptocurrencies and NFTs within the South African milieu, the selection of an appropriate research philosophy, particularly epistemology, was pivotal in shaping the research framework and yielding significant outcomes. Although positivism was predominantly linked to quantitative research methodologies, emphasizing objectivity and generalizability, it remained aligned with an epistemological stance that prioritized comprehending the determinants influencing adoption intentions and behaviours within the South African context (Kara, Spohrer, Doherty, & Mazzarol,

2021). Epistemology constitutes the foundation of knowledge creation, guiding the researcher's perceptions regarding the essence of reality and the dynamics of the researcher-participant relationship (Ragab & Arisha, 2017). In this research endeavour, a positivist approach was employed to investigate quantitative associations among variables, test hypotheses, and gather empirical evidence concerning the factors that impact consumer acceptance of cryptocurrencies and NFTs in South Africa. Embracing a positivist epistemological perspective facilitated the acquisition of data relating to adoption intentions, attitudes, and behaviours through stringent quantitative research techniques such as surveys or experimental designs (Ragab & Arisha, 2017). The focus was placed on the collection of objective data that could undergo statistical analysis to uncover patterns, relationships, and correlations among variables. This methodological approach allowed for the extrapolation of findings to a broader population and facilitated comparisons with prior research conducted in international or Western contexts (Ragab & Arisha, 2017). Nevertheless, it was essential to acknowledge that the positivist approach bore limitations in encapsulating the subjective meanings and interpretations associated with the adoption of cryptocurrencies and NFTs. It may not have adequately reflected the unique cultural, social, and historical dimensions that influenced consumer behaviour in South Africa (Muvengwi, Kahonde, & Muvengwi, 2020). Nonetheless, the research provided valuable contributions to both academic discourse and practical applications by delivering evidence-based insights that could guide strategies aimed at promoting responsible and informed adoption of cryptocurrencies and NFTs within the South African market.

3.3 Research Approach

The deductive methodology, commonly referred to as deductive reasoning, was deemed the most appropriate research strategy for investigating the determinants that impacted consumer acceptance of cryptocurrencies and NFTs within the South African context. This methodology was validated in light of the research aims and the intrinsic characteristics of the inquiry. The deductive approach commenced with a foundational assumption or theoretical framework and subsequently employed empirical observations or data to evaluate, validate, or challenge it. The study sought to examine the factors that influenced adoption intentions and behaviours while concurrently analysing the utilization of cryptocurrencies and NFTs as investment vehicles (Bryman & Bell, 2019). This approach proved advantageous as it facilitated the development of

specific hypotheses that could be scrutinized through quantitative data, thereby aligning well with the research objectives.

On top of that, the inquiry was founded on recognized theories that illuminate the elements of technology adoption, incorporating the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT). As a result, this methodology permitted the acquisition of empirical evidence through surveys, experimental designs, and various quantitative techniques to scrutinize the interrelations among the variables specified in the hypotheses (Bryman & Bell, 2019). Through the collection of objective data regarding adoption intentions, perceptions, and behaviours, the research was positioned to test the formulated hypotheses and ascertain the degree to which the factors delineated in the theoretical frameworks influenced consumer acceptance of cryptocurrencies and NFTs within South Africa.

The logical framework utilized in this investigation enhanced its rigour and validity. The systematic transition from theoretical constructs to hypothesis formulation and subsequently to data analysis assured coherence and uniformity throughout the research endeavour. This methodical evaluation and validation or dismissal of hypotheses established a robust and credible foundation for formulating conclusions and deriving informed recommendations based on the empirical findings.

3.4 Research Design

As posited by Bryman and Bell (2019), quantitative research design constitutes a methodical approach to the acquisition and examination of numerical data aimed at addressing research inquiries and validating hypotheses. This approach includes the methodical and standardized gathering of data through surveys, experiments, or pre-existing datasets, succeeded by the application of statistical methodologies to derive conclusions from the data. The quantitative research design presents a multitude of advantages and disadvantages. A prominent characteristic of this design is its capacity to furnish objective and precise measurements (Bryman & Bell, 2019). The employment of numerical data allows for quantification and statistical scrutiny, which empowers researchers to obtain accurate and reliable results. The standardized

methodologies and systematic data collection procedures mitigate biases and bolster the replicability of the study. Hence, the quantitative research design is uniquely suited for studying causal dynamics between variables and broadening the implications of results to encompass wider demographic segments. Another merit of quantitative research design is its facilitation of data analysis. Tools for statistics helped in the examination of data patterns, trends, and interrelationships. This simplifies the process of identifying associations between variables, assessing statistical significance, and producing quantitative summaries (Bryman & Bell, 2019). Given its capability to analyze extensive datasets rapidly and effectively, quantitative research design is exceptionally appropriate for studies involving large sample sizes or when multiple variables are to be examined simultaneously.

The primary focus of this inquiry was to investigate South Africa's preparedness for the merging of cryptocurrencies and NFTs by analyzing the factors that influenced adoption goals and actions, along with evaluating the practicality of cryptocurrencies and NFTs as varied investment possibilities. A mono-method quantitative approach was deemed the most suitable research methodology for accomplishing these aims. The quantitative paradigm was particularly effective in addressing these objectives due to its provision of numerical data amenable to statistical scrutiny. This methodology facilitated the gathering of data through structured and standardized processes, including surveys and experiments. Surveys were employed to gather insights regarding adoption intentions, attitudes, perceptions, and behaviours pertaining to cryptocurrencies and NFTs. This enabled the quantification of responses and the exploration of statistical relationships among variables. Moreover, the quantitative framework supported hypothesis testing, which was congruent with the study’s aims. This investigation involved the integration of recognized theories and models that clarify the process of technology adoption, including the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT), to devise hypotheses. The quantitative data amassed was subsequently subjected to statistical analysis to assess the interrelations among variables and validate the proposed hypotheses. Such statistical analysis allowed researchers to identify patterns, trends, and correlations within the data, yielding insights into the factors driving consumer adoption of cryptocurrencies and NFTs. In addition, the statistical assessment

amplified the relevance of the conclusions to more extensive populations and helped ascertain the study's soundness and reliability (Bryman & Bell, 2019). The quantitative approach also proved advantageous for investigating extensive sample sizes, which was crucial for comprehending consumer adoption behaviour on a larger scale. Given South Africa's heterogeneous population, which encompasses a diverse array of demographic and socioeconomic attributes, the adoption of a quantitative approach was imperative for collecting data from a representative sample, thus enabling more robust and generalizable conclusions.

Based on several considerations, the study justified the use of a cross-sectional approach to investigate the antecedents of consumer adoption of cryptocurrencies and NFTs in South Africa. The study aimed to assess South Africa's readiness to adopt cryptocurrencies and NFTs and to examine the factors that influenced adoption intentions and behaviours. A cross-sectional design was employed to collect data at a specific point in time, providing a snapshot of the prevailing adoption trends and the factors that influenced them. This approach enabled the researcher to assess the prevalence of adoption, identify the factors that encouraged or discouraged adoption, and examine the relationships between these factors. Cross-sectional designs were frequently used in studies that sought to investigate adoption behaviours and the factors influencing adoption intentions (Rogers, 2003; Venkatesh et al., 2003). By employing a cross-sectional technique, the study was able to collect data on adoption intentions, attitudes, and perceptions from a diverse sample of individuals representing different demographic and socioeconomic groups within South Africa. This allowed for an examination of potential differences in adoption intentions and behaviours across various population segments, providing insights into the specific factors that influenced adoption within this context (Babbie, 2016).

Additionally, when compared to longitudinal designs, the cross-sectional approach was more practical in terms of time, resources, and participant recruitment. Longitudinal studies required the collection of follow-up data over an extended period, which could be challenging and time-consuming. The cross-sectional approach enabled a more efficient data collection process, allowing for the acquisition of a larger sample size within a shorter timeframe (Bryman & Bell, 2019). Furthermore, the cross-sectional design provided useful baseline data that could serve as a

foundation for future research and comparisons. It identified the current adoption prevalence, the key factors influencing adoption intentions, and potential barriers or gaps in the adoption process. This information could be leveraged to develop initiatives, policies, and strategies to facilitate the broader adoption of cryptocurrencies and NFTs in South Africa (Bryman & Bell, 2019).

3.5 Population and Sample

3.5.1 Population

The chosen population constituted a pivotal element of the investigation, as it affected the extent to which the findings could be generalized to the intended demographic (Stephanie, 2019). The demographic of interest for this examination concerning the precursors to consumer acceptance of cryptocurrencies and non-fungible tokens (NFTs) in South Africa was the South African consumer populace. Individuals within this classification exhibited the potential to embrace or were already actively participating in the adoption of cryptocurrencies and NFTs. The distinctive emphasis of the study warranted the selection of the South African consumer demographic as the focal group. The research sought to furnish insights and recommendations that were directly relevant to the local market by exploring the determinants that shaped consumer acceptance of cryptocurrencies and NFTs in the South African milieu. South Africa presented a unique socioeconomic, cultural, and legal framework that considerably influenced adoption intentions and behaviours (McLeod, 2019).

According to Statistics South Africa (2022), South Africa's population in 2022 exceeded 60 million people. The consumer sector was a significant component within this populated landscape, displaying a broad mix of demographics and socioeconomic stratifications. The working-age cohort, which constituted approximately 65% of the total population (Statistics South Africa, 2022), played a considerable role in the consumer sector, exhibiting diverse purchasing behaviours and specific demands. With around 64% of South Africans residing in urban areas (Statistics South Africa, 2022), urbanisation significantly influenced consumer access to a wide range of goods and services, thereby distinguishing consumption patterns between urban and rural settings. Concurrently, South Africa's economic environment

encompassed distinct segments, notably the middle-income group, which was pivotal in driving considerable consumer expenditure, while different economic classes displayed contrasting consumption tendencies (Statistics South Africa, 2022). Additionally, the demographic comprising approximately 20% of individuals below 15 years of age (Statistics South Africa, 2022) exerted a substantial influence on familial spending habits and foreshadowed future consumer behaviours. The effort to accurately quantify the consumer population necessitated a comprehensive application of statistical methodologies, integrating considerations such as income distribution, consumption trends, and regional preferences (Statistics South Africa, 2022). For in-depth and up-to-date insights, continuous data collection and analysis by authoritative bodies such as Statistics South Africa provided holistic demographic and consumer- related statistics, offering valuable academic references. Moreover, aligning the research objectives with an exploration of the South African consumer population enabled a thorough examination of the unique characteristics within this community, encompassing cultural dimensions, levels of financial literacy, regulatory frameworks, and the accessibility of technological infrastructure, thereby facilitating a nuanced investigation into the intricacies and complexities of adoption within the South African context.

Finally, the selection of the South African consumer population, with a focus on various demographics and socioeconomic groups, was a strategic and relevant choice for examining the factors that influenced the adoption of cryptocurrencies and non-fungible tokens (NFTs). South Africa's diverse population, characterised by distinct socioeconomic, cultural, and demographic traits, underscored the importance of understanding local factors that shaped adoption intentions and behaviours across different segments of society. This study explored how various groups within the South African consumer base, including different age cohorts, income levels, educational backgrounds, and cultural communities, interacted with and perceived cryptocurrencies and NFTs. By analysing these diverse perspectives, the research sought to uncover insights that were not only academically rigorous but also directly applicable to the local market. This approach contributed to a nuanced understanding of consumer behaviour towards these digital assets in South Africa, ultimately offering valuable recommendations for stakeholders seeking to engage with this emerging market.

3.5.2 Sample and Sampling Method

The extensive community of Gauteng served as the population sample for this investigation into the determinants influencing consumer acceptance of cryptocurrencies and NFTs. The research sought to examine the elements impacting consumer adoption of cryptocurrencies and NFTs within Gauteng, which serves as a microcosm of the larger South African populace, employing a non-probability convenience sampling methodology. The researcher initially aimed for a minimum sample size ranging from 300 to 400 participants, a standard practice in social science research to ensure adequate statistical power and reliability of results (Bryman & Bell, 2019). Nevertheless, the ultimate sample comprised 613 respondents.

The use of convenience sampling was justified in this scenario due to the practical limitations involved in accessing the entire target population. Non-probability convenience sampling allowed the researcher to handpick participants based on their presence and how easily they could be reached within the research scenario (Babbie, 2016). Considering the logistical hurdles and resource limitations inherent in conducting research across a vast province like Gauteng, convenience sampling offered a pragmatic solution for data collection. By enlisting participants who were easily accessible—such as everyday individuals encountered through personal interactions, students from various educational institutions, faculty members, and staff associated with these institutions—the study enhanced efficiency in participant recruitment and data gathering.

In order to undertake a thorough investigation into the determinants affecting consumer acceptance of cryptocurrencies and non-fungible tokens (NFTs) among various demographic and socioeconomic categories within South Africa, the researcher solicited consent from all universities located in Gauteng. This encompassed the University of Pretoria, University of Johannesburg, University of the Witwatersrand, Tshwane University of Technology, Vaal University of Technology, University of South Africa (UNISA), and Sefako Makgatho Health Sciences University. By acquiring authorization to research the populations affiliated with these

institutions, the study aimed to assemble a varied and representative sample that mirrors the broader South African consumer demographic.

This methodology facilitated a more profound comprehension of the adoption behaviours and intentions pertaining to cryptocurrencies and NFTs across different educational contexts and socioeconomic strata. The initially proposed sample size of 300 to 400 participants was substantiated by pragmatic considerations and established research benchmarks (Bryman & Bell, 2019). Nevertheless, the eventual sample size of 613 respondents considerably enhanced the dependability of the study's outcomes. Although convenience sampling did not ensure complete sample representativeness or generalizability to the overall population, it enabled the examination of a range of perspectives and experiences within Gauteng. Consequently, the research yielded significant insights into the elements propelling consumer adoption of cryptocurrencies and NFTs within a practical framework.

3.6 Research Instrument

Given its capacity to facilitate efficient data gathering from a substantial sample size, the questionnaire was identified as the most suitable method for data collection in this investigation concerning the determinants influencing consumer acceptance of cryptocurrencies and NFTs within the South African context. Employing a structured questionnaire featuring validated scales and items, the research evaluated dimensions such as trust, perceived risk, perceived value, innovativeness, optimism, insecurity, discomfort, and social influence. The standardized format of the questionnaire ensured uniformity and comparability among respondents, while the integration of demographic and socioeconomic inquiries enabled an examination of potential disparities in adoption trends across various groups within the South African populace.

The analysis of the quantitative findings from the questionnaire involved detailed statistical methods, which enabled the study of connections among various factors, testing of theoretical propositions, and the application of results to a more extensive audience. This methodological approach facilitated a systematic evaluation of consumer perceptions and behaviours regarding cryptocurrencies and NFTs. At the conclusion of the study, the questionnaire validated its role as

a research mechanism, as it allowed for the fast retrieval of considerable data and uncovered significant understandings regarding the influences on consumer engagement with cryptocurrencies and NFTs in South Africa.

3.7 Procedure for Data Collection

The empirical evidence for this investigation concerning the determinants that facilitated consumer acceptance of cryptocurrencies and NFTs in South Africa was obtained through a survey questionnaire disseminated via Qualtrics, an online survey instrument. Within the survey, a 5-point Likert scale was utilized as a metric to assess respondents' attitudes and perceptions (Likert, 1932). To commence the data gathering process, the researcher formulated a survey questionnaire that encompassed the primary constructs of interest, such as technological readiness, trust, perceived value, perceived risk, and intentions for adoption.

The questionnaire comprised assertions or themes that respondents evaluated on a 5-point scale ranging from "strongly disagree" to "strongly agree," facilitating a spectrum of responses and thorough analysis. The questionnaire was distributed through various channels, including email invitations, social media networks, and online discussion forums, with a targeted sample size of 400 respondents. Upon concluding the data collection phase, the researcher acquired and downloaded the survey results from the Qualtrics platform. The amassed data, which included Likert scale evaluations from participants, was subsequently processed and subjected to statistical analysis to discern patterns, correlations, and trends.

3.8 Data Analysis and Interpretation

To attain a comprehensive comprehension of the research phenomenon, a variety of data analytical methodologies were implemented in this investigation concerning the determinants of consumer acceptance of cryptocurrencies and NFTs within the South African context. To summarize the characteristics of the participants, descriptive statistics were used to provide insights into their views, convictions, and plans regarding the embrace of cryptocurrencies and NFTs. These statistical measures aided in discerning patterns, trends, and distribution of responses within the dataset. Different inferential statistical techniques, including correlation analysis, regression analysis, t-tests, ANOVA, and chi-square tests, were employed to analyze the

relationships, associations, and differences identified among the variables discussed (Bryman & Bell, 2019). Such statistical instruments facilitated the evaluation of the strength and direction of relationships, hypothesis validation, and the determination of the statistical significance of the findings. They yielded insights into variable interconnections, pinpointed critical predictors of adoption intentions, and enabled comparisons across different groups or subgroups within the sample.

The impact of variables such as trust, perceived risk, and perceived value on the intentions to adopt cryptocurrencies and NFTs was evaluated through regression analysis (Hair et al., 2019). This strategy was implemented to gauge the force and pathway of relationships among independent and dependent elements. It contributed to the identification of principal predictors and ascertained which factors exerted the most substantial influence on consumer adoption behaviour.

To uncover hidden structures in the data, Hair et al. (2019) implemented factor analysis; consequently, this research adopted a similar approach to factor analysis. By elucidating the intricacies of the data, factor analysis was instrumental in revealing the underlying patterns or frameworks that elucidate the correlations among variables. It enabled the identification of similarities and classifications among the variables, thus providing a more profound understanding of the elements that affect adoption.

In conclusion, structural equation modelling (SEM) was applied to assess both the measurement and structural components (Hair et al., 2019). SEM synthesized factor analysis and regression analysis to offer a holistic understanding of variable interrelationships. This methodology was pivotal in assessing the goodness-of-fit of the theoretical model, scrutinizing proposed relationships, and delivering insights into the direct and indirect influences of various factors on adoption intentions. SEM permitted a more integrated analysis of the data and a deeper insight into the interconnections among variables (DeVault, 2018).

The investigation entailed a meticulous and exhaustive analysis of the quantitative data gathered utilizing these analytical frameworks. Additionally, we employed Cronbach's alpha coefficient to check the trustworthiness of the questionnaire, thereby confirming the coherence of the responses. The Statistical Package for the Social Sciences (SPSS) served as a tool for data analysis, fostering accurate and effective processing of the dataset.

3.9 Validity and Reliability

3.9.1 External Validity

In the framework of this investigation concerning the precursors to consumer acceptance of cryptocurrencies and NFTs in South Africa, the concept of external validity was paramount in ascertaining the generalizability of the research outcomes. Several elements bolstered the external validity of this inquiry. Firstly, the final cohort comprising 613 participants offered a substantial representation of the population, thereby enhancing the precision of the results and augmenting their relevance to the larger South African consumer demographic. An increased sample size mitigated potential biases and fortified the statistical power of the study (Krejcie & Morgan, 1970).

Moreover, the study's external validity was fortified by the participation of individuals from a variety of demographic backgrounds, encompassing various age categories, income brackets, and geographic regions within South Africa. By embracing a heterogeneous sample, the research was able to capture variations in opinions and adoption behaviours across diverse population segments, facilitating more rigorous generalizations (Krejcie & Morgan, 1970). Additionally, by incorporating a spectrum of antecedents and adoption behaviours into the analytical framework, Structural Equation Modelling (SEM) provided a thorough assessment of the determinants that influenced adoption intentions across different demographic categories and contextual environments.

Furthermore, SEM allowed for the derivation of model fit indices, which evaluated the degree to which the proposed model corresponded with the empirical data. A well-fitting model suggested that the relationships posited in the theoretical construct remained valid not only within the research sample but also across broader populations or contexts, thereby enhancing external validity (Hair et al., 2019).

3.9.2 Internal Validity

Several factors were instrumental in enhancing the internal validity of this study. Primarily, the implementation of a standardized survey instrument ensured consistency in the data collection process. The survey was meticulously developed and validated to effectively measure critical dimensions of interest, including trust, perceived risk, perceived value, adoption intentions, and other pertinent attributes. By employing validated measurement scales and adhering to rigorously established methodological guidelines, the study aimed to reduce measurement errors and bolster internal validity.

The research methodology deemed most suitable for this inquiry was cross-sectional analysis, which was utilized to elucidate the causal relationships between the antecedents and the consumer adoption of cryptocurrencies and NFTs. This methodological approach facilitated the evaluation of variable interrelations at a singular temporal instance, thereby mitigating potential confounding influences attributable to temporal variations (Bryman & Bell, 2019).

A further aspect that augmented the internal validity of the study was the systematic control of potential confounding variables. The research employed statistical methodologies such as regression analysis to account for and scrutinize the impact of confounding factors on the relationship between antecedents and adoption intentions (Hair et al., 2019). The integration of pertinent control variables sought to isolate the effects of the antecedents on adoption intentions while minimizing alternative interpretations (Wongsunopparat & Nanjun, 2023).

Structural equation modelling (SEM) facilitated the integration of latent variables, which represent constructs that cannot be directly observed but are inferred from observable indicators. By incorporating latent variables such as trust in technology or the perceived value of cryptocurrencies and NFTs, SEM permitted a more sophisticated analysis congruent with theoretical frameworks, thereby enhancing internal validity (Wongsunopparat & Nanjun, 2023). This stringent evaluation of measurement validity contributed to internal validity by diminishing measurement errors and ensuring the robustness of the findings (Byrne, 2016).

Moreover, through meticulous questionnaire design and data collection methodologies, the study addressed potential common method biases, including social desirability bias and response biases. To alleviate these biases, measures of anonymity and confidentiality were upheld, thereby ensuring that participants could provide candid and unbiased responses, thus further reinforcing internal validity (Podsakoff et al., 2012).

3.9.3 Reliability

Several steps will be taken to improve the study's reliability. To begin, the data collection survey/questionnaire will use recognised and tested measurement scales. These scales have been thoroughly evaluated and show good internal consistency, indicating that the items within each scale accurately assess the same underlying construct (Hair et al., 2019). The study aims to decrease measurement errors and improve data dependability by employing tried-and-true measuring devices, using appropriate sampling procedures to boost dependability even more.
Simple random sampling will be used to choose participants from the target demographic. This technique ensures that each member of the population has an equal chance of being included in the sample, reducing sampling biases and increasing sample representativeness (Trochim and Donnelly, 2008). A bigger sample size, in this case 300-400 respondents, adds to the study's reliability by increasing the stability and consistency of the results (Krejcie & Morgan, 1970). Appropriate statistical approaches will be used to examine the dependability of the data acquired. Internal consistency reliability metrics, such as Cronbach's alpha, will be calculated for each construct to evaluate the consistency of responses inside each scale (Bryman & Bell, 2019).
Cronbach's alpha values near one indicate that the measurement scales have a high level of internal consistency and reliability.

3.10 Ethical Considerations

A key ethical issue in this research involved maintaining confidentiality and the security of participant data, especially in compliance with South Africa's Protection of Personal Information Act (POPI Act). The study conformed to the stipulations of the POPI Act by ensuring that participant information was securely stored and shielded from unauthorized access. The personal data of participants were anonymized and handled with the utmost confidentiality, and all data were presented in aggregate form to avert the identification of individual participants.

Another essential ethical dimension was the concept of informed consent. Participants obtained extensive details about the study's goals, the techniques utilized, potential hazards and benefits, in addition to their rights as study subjects. They were granted the opportunity to pose inquiries prior to granting their voluntary informed consent to participate in the study. The consent procedure ensured that participants comprehensively understood their involvement and were capable of making an informed decision regarding their participation.

To safeguard participants' well-being, the study took measures to mitigate any potential harm or discomfort. The individuals involved faced no physical or psychological disadvantages stemming from their participation. The questionnaire was meticulously designed to be clear, respectful, and non-intrusive, and participants retained the right to omit questions or withdraw from the study at any moment without incurring any penalties.

As well, the research affirmed that the data secured was solely intended for scientific exploration and was conveyed in a manner that ensured the participants' identities and confidentiality were preserved. All data were securely stored, with access restricted solely to the researcher on a private, password-protected computer. The names or identifying particulars of individual participants were not revealed in any dissemination or publication of the study's findings.

The respective research ethics committee at the University of the Witwatersrand (Wits) was engaged to ascertain that the study conformed to the institution's ethical norms. In order to preserve ethical integrity across the research journey, the researcher followed the ethical principles and directives laid out by recognized organizations, including the American Psychological Association (APA) and the Economic and Management Sciences Research Ethics Committee (EMSREC) at Wits.

By upholding these ethical standards, the study ensured participant autonomy, privacy, and protection, thereby reinforcing research integrity and academic responsibility in the exploration of consumer adoption of cryptocurrencies and NFTs in South Africa.

3.11 Chapter Summary

This chapter delineated the research methodology utilized to explore the determinants that affect consumer adoption of cryptocurrencies and NFTs within the South African context. It elaborated on the research philosophy, which adhered to a positivist epistemological perspective, underscoring the importance of objectivity and empirical scrutiny. A deductive methodology for research was embarked upon, shaped by influential theories surrounding technology adoption like the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT). An empirical research framework was implemented, incorporating a cross-sectional survey shared via Qualtrics, leading to a final participant count of 613 from the Gauteng area. Incorporating statistical strategies, the data assessment featured regression analysis and structural equation modelling (SEM) to explore how variables relate to one another. To substantiate the findings, we employed several measures of reliability and validity, incorporating Cronbach’s alpha alongside standardized measurement tools. Ethical considerations were given precedence, in compliance with the Protection of Personal Information Act (POPIA), ensuring that informed consent, confidentiality, and adherence to institutional research ethics were maintained. This rigorous methodological approach guaranteed the credibility and relevance of the research findings to the broader South African context.

CHAPTER FOUR

DATA ANALYSES

4.1 Introduction

This chapter gives an empirical study of the data collected to explore the factors influencing consumer adoption of cryptocurrencies and non-fungible tokens (NFTs in South Africa). The study model presented in Chapter 3 proposes that perceived utility, perceived ease of use, perceived risk, trust, and social influence are important predictors of consumer adoption intentions. To investigate these assumptions, a quantitative research strategy was used, which included the collecting of primary data using structured questionnaires.

4.2 Descriptive Statistics

In this section, tables are used to present the demographic profile of respondents.

Demographic variables include gender, age group, the highest level of education, racial group, and household's total income per annum.

Table 1: Descriptive Statistics of Sample

Variable	Sub-variable	Frequency
Gender	Male	249
	Female	248
	Prefer not to say	116
	Total	613
Age group	18 – 25	141
	25 – 32	158
	33 – 59	212
	60 and above	102

	Total	613
Education level	High School or Below	83
	Student (bachelor)	104
	Graduate(bachelor)	155
	Graduate(masters)	149
	Student(masters)	53
	Doctorate Degree	69
	Total	613
Race	African	229
	White	123
	Coloured	127
	Indian	134
	Total	613
Income per annum	R0 – R54 344	139
	R54 345 – R151 727	90
	R151 728 – R363 930	130
	R363 931 – R631 120	79
	R631 121 – R863 906	69
	R863 907 – R1 329 844	46
	R1329 845+	59

	Total	613

Table 1 shows a thorough demographic breakdown of respondents, including factors such as gender, age group, education level, racial group, and yearly family income. The gender distribution among the 613 respondents revealed that men represented 40.6% (n=249), followed by females at 40.5% (n=248), while 18.9% (n=116) decided not to reveal their gender. In terms of race, African respondents made up the plurality (37.4%, n=229), followed by Indian (21.9%, n=134), Coloured (20.7%, n=127), and White participants (20.1%, n=123).

In terms of age, the majority of respondents (34.6%, n=212) were between the ages of 33 and 59, while the minority (16.6%, n=102) were above the age of 60. The most frequent educational qualification was a bachelor's degree (24.3%, n=155), with students seeking master's degrees being the least represented (8.6%, n=53).In terms of yearly income, the majority of respondents (22.7%, n=139) reported earning between R0-R54,344, while the smallest group (7.5%, n=46) earned between R863,907 and R1,329,844. These findings give a thorough overview of the demographic makeup of the study's participants.

4.3 Central Measures of Tendency

The study's concept distribution was assessed using a central tendency metric. Most variables were assessed using a five-point Likert scale, with 1 indicating "Totally disagree" and 5 indicating "Totally agree" (refer to the questionnaire). A score of less than 2.5 on a 5-point Likert scale indicates that the concept's statements are not supported by the majority of responders. A score between 2.5 and 3.5 indicates that respondents neither agree nor disagree with claims regarding the topic. A score greater than 3.5 suggests a predisposition to agree with claims in the constructions.

Awareness of Cryptocurrencies and NFTs (Mean = 3.30; Std. Dev. = 0.97)

The mean for Awareness implies that respondents are knowledgeable of cryptocurrencies and NFTs, indicating a reasonable degree of awareness. This is similar with previous studies that found an improving but still moderate level of knowledge in developing countries (Chaarani et al., 2023). Awareness has a large standard deviation, showing that respondents' experiences with cryptocurrencies and NFTs are diverse. This dispersion may imply varying levels of exposure to

various technologies, as is usual in emerging economies where knowledge and availability vary by demographic group (Chaarani et al., 2023).

Understanding of Cryptocurrencies and NFTs (Mean = 3.23; Std. Dev. = 0.95)

Understanding has a moderate mean, implying that respondents grasp bitcoin and NFT concepts to an average degree. Given the complexity of these technologies, intermediate knowledge is common in emerging markets (Venkatesh et al. 2003). Understanding has a comparable degree of variance, indicating that, while the mean shows a decent level of knowledge, responses differ substantially. This diversity may highlight disparities in the availability of information regarding these devices (Nambisan et al., 2017).

Consumer Innovativeness (Mean = 3.44; Std. Dev. = 1.02)

Innovativeness, with a mean score of 3.4 or above, indicates that respondents are more open to new technologies, which may influence the adoption of cryptocurrencies and NFTs.While standard deviation for Innovativeness is rather big, showing that respondents are open to adopting new technology. The broad range of innovativeness is congruent with findings from technology adoption studies, which show that some users are early adopters while others are more conservative (Turner, 2007).

Consumer Optimism (Mean = 3.34; Std. Dev. = 0.98)

The mean for Optimism indicates a moderately good outlook for cryptocurrencies and NFTs. Optimism regarding technology has been linked to better adoption rates, since optimistic customers are more likely to identify potential benefits (Parasuraman 2000).The standard deviation for Optimism is moderate, indicating that while the majority of respondents are optimistic, some are more dubious of bitcoin and NFT adoption. Optimism variability typically reflects people's different levels of risk tolerance.

Consumer Insecurity (Mean = 3.37; Std. Dev. = 0.95)

Insecurity is modest, with some worries about bitcoin reliability and security. Higher degrees of vulnerability can be a barrier to adoption, since security-conscious customers may be unwilling to use financial technology. The moderate standard deviation for Insecurity reflects a wide range of security worries, with some respondents being more anxious than others. Perceptions of

danger in security-sensitive technologies such as cryptocurrencies may differ substantially based on prior experiences and knowledge (Shin, 2009).

Consumer Discomfort (Mean = 3.40; Std. Dev. = 0.85)

The mean degree of discomfort is 3.40, indicating that respondents may be concerned about using cryptocurrencies. Discomfort with new technology is typically associated with perceived complexity or a lack of usability, which can inhibit adoption. The reduced standard deviation for Discomfort implies that respondents' concerns about cryptocurrencies are more consistent. This consistency may indicate a widespread mistrust or concern of the complexity or risks associated with these technologies.

Consumer Perceived Trust (Mean = 3.29; Std. Dev. = 0.87)

The mean Perceived Trust is somewhat less than 3.3, indicating a low level of trust. Trust is essential for technology adoption, particularly in financial settings where customers are concerned about security. The standard deviation for Perceived Trust is generally low, indicating that respondents' feelings of trust were reasonably equal, albeit with significant variation.
Because of its decentralised nature and lack of regulation, respondents commonly report comparable trust issues.

Consumer Perceived Value (Mean = 3.35; Std. Dev. = 0.99)

The average Perceived Value is greater than normal, showing that respondents see potential advantages in using cryptocurrencies and NFTs. Higher perceived value is typically associated with increased adoption intentions. The substantial standard deviation for Perceived Value indicates that respondents' assessments of the benefits of cryptocurrencies varies, showing that there are various viewpoints on its utility or value proposition. Individuals' financial goals and expertise with digital assets may affect their sense of value.

Effort Expectancy (Mean = 3.37; Std. Dev. = 0.90)

Effort Expectancy denotes a minimal ease of use, which may encourage respondents to adopt. According to the UTAUT paradigm (Venkatesh & Davis, 2000), ease of use has a positive influence on user acceptance. The moderate standard deviation in Effort Expectancy suggests that ratings of ease of use are rather consistent, while there is some variation. This variation may

be due to respondents' varying levels of technical expertise, which influences their comfort with bitcoin use.

Performance Expectancy (Mean = 3.41; Std. Dev. = 0.97)

The mean for Performance Expectancy indicates that respondents expect cryptocurrencies to deliver valuable features, which is consistent with research demonstrating that perceived performance benefits are critical for technology adoption (Venkatesh & Davis, 2000).

A higher standard deviation for Performance Expectancy suggests that respondents' expectations of how cryptocurrencies and NFTs would benefit them differ, showing varying levels of perceived usefulness. Such fluctuation is common with new technologies, particularly when the benefits are not completely realised.

Price Value (Mean = 3.30; Std. Dev. = 0.87)

The Price Value mean shows a moderate conviction that the financial costs or value for money associated with cryptocurrencies and NFTs are acceptable, which is typically linked to adoption. The relatively low standard deviation in Price Value suggests that respondents had similar perceptions of the value for money in bitcoin investments, suggesting shared viewpoints on the financial problems associated with adoption.

Hedonic Motivation (Mean = 3.34; Std. Dev. = 1.05)

The mean for Hedonic Motivation indicates that respondents find happiness or satisfaction in interacting with these technologies. Hedonic incentive has been shown to have a substantial impact on adoption, particularly for non-essential technology. The large standard deviation for Hedonic Motivation demonstrates significant variability, demonstrating that although some respondents love utilising these technologies, others do not. This variety in hedonic drive is characteristic of optional, non-essential technology.

Social Influence (Mean = 3.41; Std. Dev. = 0.86)

With a mean score of 3.4 or higher, Social Influence suggests that respondents may be forced or urged by others to embrace cryptocurrencies. Social effect is a well-known component of technical adoption, particularly for noticeable and innovative products. sociocultural Influence has a low standard deviation, indicating that people feel similar social pressures or support for

bitcoin adoption. This homogeneity might reflect a widely shared social milieu towards these devices in the respondents' communities.

Facilitating Conditions (Mean = 3.33; Std. Dev. = 1.05)

The mean number indicates that respondents believe they have moderate access to the resources needed to use cryptocurrencies. Facilitating conditions, such as infrastructure and help, are essential for technology adoption models. The significant standard deviation for Facilitating Conditions indicates variance in respondents' access to resources required for bitcoin use. This disparity may indicate varying amounts of technical infrastructure and assistance accessible to responders.

Adoption (Mean = 3.36; Std. Dev. = 0.97)

The average for Adoption is moderate, reflecting a reluctant desire in implementing these technologies. According to technology acceptance research, moderate adoption rates are normal in emerging economies with growing infrastructure and regulatory frameworks. The standard deviation for adoption reveals variation in respondents' intentions to accept cryptocurrency, most likely reflecting competing views and perceived hurdles to adoption.

Investment Product (Mean = 3.41; Std. Dev. = 1.02)

The mean for Investment Product indicates that respondents feel cryptocurrencies and NFTs are suitable investment options. Previous study has focused on the perception of cryptocurrencies as speculative assets, which effects adoption incentives (Baur et al., 2018). The substantial standard deviation for Investment Product indicates that, while the majority of respondents regard cryptocurrencies as an investment option, their views range significantly. This variance may reflect respondents' varying risk tolerances and financial goals.

4.4 Inferential Statistical Analysis: Chi-Square Tests, ANOVA, and t-Tests Chi-square test of analysis – Association between Gender and Age group.

The purpose of the Chi-square test of independence is to assess the association between gender and age group, which are two categorical variables. Based on the Chi-square Test summarized in

Table 2, there is no statistically significant association between age and gender (Phi= 0.003 P-value= 0.932 > 0.05). The Chi-square test of independence was conducted to assess whether there is a statistically significant association between gender and age group. The Pearson Chi-Square test produced a value of χ^2 (6) = 92.047 with a p-value of 0.000, indicating a highly significant relationship between the two variables at the 1% level of significance. This means that gender and age group are not independent of each other; rather, there is a meaningful association between them in the context of cryptocurrency adoption. In practical terms, this finding suggests that the distribution of age categories differs significantly across gender groups (see Appendix, Table 2).

The Chi-Square test of independence was conducted to assess whether there is a statistically significant association between gender and age group in relation to cryptocurrency. The Pearson Chi-Square value (χ^2 (1) = 92.04, p = 0.000) indicates a significant correlation, meaning that gender and age group are not independent of each other. This suggests that age distribution varies significantly across gender categories. The results from the cross-tabulation (see Appendix, Table 3) show that females are more prevalent in younger age groups (18-32 years), while males dominate in older age groups (33+ years). Interestingly, a substantial number of respondents (116 individuals, 18.9%) preferred not to disclose their gender, which could indicate privacy concerns or gender diversity. Overall, the findings suggest that both males and females engage with cryptocurrency equally across different age groups. These findings reinforce the statistical significance reported in the Chi-square test, highlighting that age distribution differs by gender and that engagement with cryptocurrency is shaped by demographic dynamics (see Appendix, Table 3).

Analysis of variance (ANOVA)

A one-way ANOVA was conducted to evaluate the Age group on the income level of respondents. The first table of interest is Table 4 which summarizes the mean and standard deviation of the dependent variable (monthly expenditure) across the groups in the independent variable (age group). Descriptive statistics analysing the link between income levels and age categories revealed diversity in mean income scores among respondents. Individuals earning between R151,728 and R363,930 had the greatest mean (M = 2.84, SD = 0.645), followed closely by those earning more than R1,329,845 (M = 2.81, SD = 1.121). In contrast, respondents in the R0-R54,344 income

category had the lowest mean income score (M = 2.06, SD = 1.306). These disparities indicate that income distribution is not uniform across the sample, and that specific age groups have greater or lower income levels. The overall descriptive data therefore gave preliminary indications of possible variance, necessitating inferential statistical testing (see Appendix, Table 4).

Further analyses are therefore needed to (1) test whether this observed variation in the mean score is statistically significant and (2) where the difference lies. The Analysis of Variance

(ANOVA) presented in Table 5 shows that these variations of the mean across groups are statistically significant (p-value=0.000 <0.01, F=8.848). The one-way ANOVA revealed significant variations in mean income between age groups, $F(6, 605) = 8.848$, $p < 0.001$. This finding suggests that income levels fluctuate substantially according to age group, rather than just by coincidence. The between-group variance (SS = 51.268, MS = 8.545) was significantly larger than the within-group variation (SS = 584.261, MS = 0.966), supporting the conclusion that age-related disparities in income distribution exist. To investigate this further, post-hoc Tukey testing indicated that persons in the lowest income band (R0-R54,344) reported considerably lower expenditure levels than respondents earning between R363,931 and R631,120, as well as those making more than R1,329,845. These findings reveal age-related inequalities in financial ability across the sample group (Appendix, Table 5). Having established the statistically significant difference in age group across income levels, it is important to determine where this difference is evident within the groups. A post-hoc analysis using a Tukey method was conducted in SPSS and presented in Table 6. The results reveal that respondents earning less than R0 – R54 344 significantly spend less than those earning between R363 931 – R631 120 and above R1329 845+.

Table 6: Multiple Comparison

	(I) INCOME PER ANNUM (RANDS)	(J) INCOME PER ANNUM (RANDS)	Mean Difference (I-J)	Std. E1T or	Sig.
LSD	R0-R54 344	R54 345 - R151 727	-.420*	.133	.002
		R151 728 -R363 930	-.781*	.120	.000
		R363 931-R631 120	-.310*	.138	.026
		R631 121 - R863 906	-.232	.145	.109
		R863 907 -Rl 329 844	-.355*	.167	.034
		R1329 845+	-.756*	.153	.000
	R54345-R151727	RO -R54 344	.420*	.133	.002
		R151 728 -R363 930	-.361*	.135	.008
		R363 931-R631 120	.111	.152	.465
		R631 121 - R863 906	.188	.157	.233
		R863 907 -Rl 329 844	.065	.178	.716
		R1329 845+	-.336*	.165	.042
	R151 728-R363 930	RO -R54 344	.781*	.120	.000
		R54 345 - R151 727	.361*	.135	.008
		R363 931-R631 120	.471*	.140	.001
		R631 121 - R863 906	_549*	.146	.000

The post-hoc analysis using the Tukey method, as shown in Table 6, reveals statistically significant differences in spending behaviour across income levels. Specifically, respondents earning less than R54,344 per annum tend to spend significantly less than those in higher income brackets, particularly those earning R363,931 – R631,120 and above R1,329,845 ($p < 0.05$). The mean differences confirm that lower-income groups have significantly lower spending levels compared to higher-income categories. Additionally, individuals earning R151,728 – R363,930 spend significantly more than those in lower-income brackets, reinforcing the trend that spending increases with income. However, the differences between mid-range income groups (e.g., R363,931 – R631,120 and R631,121 – R863,906) are not always statistically significant, suggesting a plateau effect in spending behaviour. Overall, these results indicate that income is a key determinant of spending habits, with low-income earners spending significantly less than high-income groups. This has important implications for consumer behaviour, marketing strategies, and economic policy, particularly in understanding the purchasing power of different income segments.

Independent sample t-test

An independent sample t-test was used to compare the income per annum earned by respondents in the study. The first table of interest is Table 7 that encapsulates the mean and standard deviation of income across that respondents use. The mean shows that those who use standard meters (M=2.64). A deeper analysis is therefore needed to determine whether this difference in mean score is Statistically significant. An independent sample t-test is therefore needed to decipher this important question.

Table 7: Group Statistics

Group Statistics

	In which age category will you fall by the end of 2025?	N	Mean	Std. Deviation	Std. Error Mean
	18-25	140	2.64	2.153	.182

INCOME PER ANNUM (RANDS)	25-32	158	3.78	1.634	.130

Before testing the mean difference, a Levene's test for equality of variance was conducted to ascertain whether the variance of scores for the two groups is the same. Levene's test in Table 9 indicates that the equal variance is not assumed because the p-value is below 0.05. Therefore, the information on the second row (Equal variances not assumed) will be considered.

The second portion of Table 7(t-test for equality of means) provides details on the t-test itself. The table reveals that there is a statistically significant difference in the expenditure of income and those using standard gender ($p<0.00$, $t=--5.194$, Mean= $|1.143|$). These findings provide valuable insights into income distribution across age groups and may have implications for economic policy and financial planning, particularly regarding disposable income and investment capabilities among younger South Africans.

4.5 Reliability Analysis

In the current analysis regarding the foundations of consumer acceptance of cryptocurrencies and NFTs in South Africa, Cronbach's Alpha serves as a popular statistical metric for determining the internal consistency of the various elements (Taber, 2018). A Cronbach's Alpha value exceeding 0.7 is conventionally regarded as satisfactory (Hair et al., 2014); however, a score of 0.6 is considered permissible (Malhotra et al., 2017), indicating that the items within the construct consistently measure the same fundamental concept (George and Mallery, 2003). The reliability check was executed to measure the internal coherence of the constructs: Awareness of Cryptocurrencies and NFTs (A), Understanding of Cryptocurrencies and NFTs (U), Consumer Innovativeness (I), Consumer Optimism (O), Consumer Insecurity (In), Consumer Discomfort (D), Perceived Trust (PT), Perceived Value (PV), Effort Expectancy (EE), Performance Expectancy (PE), Price Value (PVV), Hedonic Motivation (HM), Social Influence (SI), Facilitating Conditions (FC), Adoption (AD), and Investment Product (IP).

The results in Table 8 show that not all constructs are internally consistent in their assessment due to the variability in Cronbach's Alpha values. The reliability analysis reveals that, while most constructs are generally trustworthy, those with lower reliability may require additional

modifications to effectively capture the complexities of bitcoin and NFT adoption in South Africa. These findings should aid future research in improving measurement validity, particularly for variables with low Cronbach's Alpha values, resulting in a more comprehensive understanding of the factors influencing adoption.

Table 8: Assessment of Reliability

Construct	**Cronbach's Alpha**	**Conclusion**
Awareness	0.677	Moderate
Understanding	0.627	Moderate
Innovativeness	0.676	Moderate
Optimism	0.655	Moderate
Insecurity	0.595	Moderate
Discomfort	0.375	Low
Perceived Trust	0.447	Low
Perceived Value	0.624	Moderate
Effort Expectancy	0.865	High
Performance Expectancy	0.625	Moderate
Price Value	0.721	High
Hedonic Motivation	0.768	High
Social Influence	0.316	Low
Facilitating Conditions	0.366	Low
Cryptocurrency and NFT Adoption	0.542	Moderate
Investment Product	0.662	Moderate

Awareness (0.677), comprehension (0.627), innovativeness (0.676), optimism (0.655), perceived value (0.624), performance expectation (0.625), bitcoin and NFT acceptance (0.542), and investment product (0.662) are examples of moderately reliable constructs. These statistics imply that these concepts have acceptable internal consistency, although they may need to be refined in future research. In the context of consumer adoption of cryptocurrencies and NFTs, modest

dependability may represent users' evolving awareness and different interpretations of these constructs, particularly given South Africa's early stage of cryptocurrency use.

Cronbach's Alpha values of more than 0.7 indicate high reliability, as do constructs such as Effort Expectancy (0.865), Price Value (0.721), and Hedonic Motivation (0.768). High reliability shows that these characteristics are well-defined and consistently recognised by participants, highlighting their importance in assessing consumer adoption. The high reliability of Effort Expectancy is consistent with previous studies demonstrating that ease of use is an important factor in technology adoption (Venkatesh et al., 2003). Similarly, Price Value and Hedonic Motivation align with consumer behaviour research, which usually highlights the importance of cost-benefit analysis and intrinsic joy in adoption decisions (Kim et al., 2009).

Constructs with low dependability include Discomfort (0.375), Perceived Trust (0.447), Social Influence (0.316), and Facilitating Conditions (0.366), suggesting that there may have been issues with how these constructs were defined or measured during the study. For example, the low dependability of social affect may indicate a cultural or contextual variation in how social factors impact adoption decisions in South Africa, since prior study has identified varying amounts of social influence among demographic groups. Low dependability in Facilitating Conditions may suggest a lack of stable infrastructure for cryptocurrency adoption in South Africa, as seen in other developing countries (Hai et al., 2023).

4.6 Exploratory Factor Analysis (EFA)

The goal of an EFA is to explain a multidimensional dataset with fewer variables. Once a questionnaire has been verified, another method known as Confirmatory Factor Analysis can be performed. This is supported by AMOS, SPSS 27 software.

A principal component analysis was performed on all 44 items describing the six components in the model. An orthogonal rotation utilising the VARIMAX approach was performed. As seen in the data, nine components have Eigenvalues greater than the Kaiser's threshold of one. Surprisingly, these components collectively explained 72.1% of the variation across all items.

The scree plot, which displays an inflexion point, supported the retention of the nine-factor solution.

Table 9: Total Variance Explained

Total Variance Explained									
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% Of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	13.955	29.074	29.047	13.955	29.074	29.047	6.033	12.569	12.569
2	3.250	6.772	35.846	3.250	6.772	35.846	4.698	9.787	22.356
3	2.068	4.308	40.135	2.068	4.308	40.135	4.113	8.569	30.926
4	1.729	3.602	43.756	1.729	3.602	43.756	3.987	8.288	39.213
5	1.530	3.187	46.942	1.530	3.187	46.942	2.459	5.123	44.336
6	1.258	2.620	49.563	1.258	2.620	49.563	1.606	3.345	47.681
7	1.188	2.475	52.038	1.188	2.475	52.038	1.458	3.037	50.718
8	1.104	2.300	54.338	1.104	2.300	54.338	1.439	2.998	53.716
9	1.003	2.089	56.427	1.003	2.089	56.427	1.301	2.711	56.427
Extraction Method: Principal Component Analysis.									

Initial Eigenvalues

Represents the overall variation explained by each component prior to extraction. Components having eigenvalues greater than one are often regarded significant. The first component explains

29.07% of the variance, the second explains 6.77%, and so forth. The cumulative percentage in this section shows the total variance explained when successive components are added.

Extraction Sums of Squared Loadings

Represents the variance accounted for by the extracted components (same as the initial values in PCA). For instance, the first component accounts for 29.07%, and the cumulative variance explained by the first nine components is 56.43%.

Rotation Sums of Squared Loadings

Reflects the variance explained following rotation, which is intended to increase interpretability by dispersing volatility more evenly among components. Following rotation, the first component accounts for 12.57%, the second for 9.79%, and so on, with the cumulative variance being redistributed. The first nine components collectively explain 56.43% of the total variance, as shown in the cumulative column under all sections.

Rotated Components

After rotation, the loadings on components typically align more clearly with distinct sets of variables, making it easier to assign meaning to each component. Review the rotated factor matrix (if available) to see which variables load strongly (e.g., >0.5 or <-0.5) onto each component.

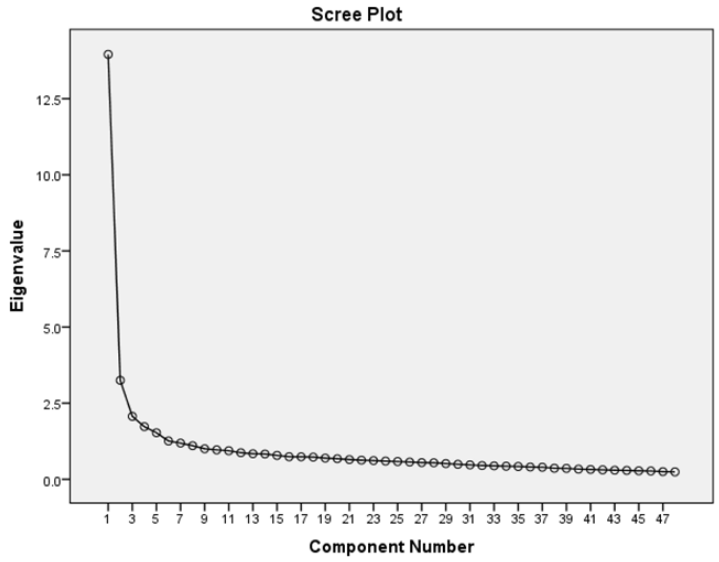


Figure 4: Scree Plot- Factor Analysis

Elbow Criterion

The scree plot in Figure 4 illustrates the eigenvalues of each component, providing insight into the number of meaningful components. The steep decline from Component 1 to approximately Component 3 or 4 indicates that these components explain most of the variance. Beyond this point, the slope flattens, signifying that the remaining components contribute minimal explanatory power. According to the Elbow Criterion, components appearing after the “elbow” are often discarded as they add little value to the overall analysis.

Retained Components:

Based on the eigenvalues > 1 rule, you would retain the first 9 components, as indicated in the "Total Variance Explained" table. However, if you focus on the elbow point, retaining 3–4 components might suffice for a more parsimonious model.

Interpretation of Retained Components:

Examine the rotated factor loadings for the retained components to identify meaningful patterns and align them with your constructs (e.g., awareness, trust, adoption).

Table 10: Total Variance Explained

	Initial	Extraction		Initial	Extraction
A1	1.000	0.554	**PV1**	1.000	0.582
A2	1.000	0.470	**PV2**	1.000	0.567
A3	1.000	0.569	**PV3**	1.000	0.564
K1	1.000	0.481	**EE1**	1.000	0.519
K2	1.000	0.499	**EE2**	1.000	0.665
K3	1.000	0.523	**EE3**	1.000	0.594
I1	1.000	0.514	**PV1**	1.000	0.513
I2	1.000	0.532	**PV2**	1.000	0.552
I3	1.000	0.569	**PV3**	1.000	0.553
O1	1.000	0.572	**P1**	1.000	0.586
O2	1.000	0.512	**P2**	1.000	0.560
O3	1.000	0.546	**P3**	1.000	0.572
IS1	1.000	0.615	**HM1**	1.000	0.562
IS2	1.000	0.625	**HM2**	1.000	0.553
IS3	1.000	0.585	**HM3**	1.000	0.508
DC1	1.000	0.660	**FC1**	1.000	0.650
DC2	1.000	0.597	**FC2**	1.000	0.640
DC3	1.000	0.559	**FC3**	1.000	0.575
PT1	1.000	0.554	**AD1**	1.000	0.594
PT2	1.000	0.586	**AD2**	1.000	0.601
PT3	1.000	0.630	**AD3**	1.000	0.549
SI1	1.000	0.555			
SI2	1.000	0.519			

Initial Communality: This is always set to 1.000 because all the variance in each variable is initially assumed to be explainable by the components. **Extraction Communality**: Indicates the proportion of variance for each variable that is explained by the retained components.

Communalities Analysis

In Principal Component Analysis (PCA), commonalities denote the fraction of variance for each variable that is elucidated by the extracted components. Table 10 showcases both the initial and extracted communalities for every variable involved in the analysis. The initial communality values are consistently assigned a value of 1.000, reflecting the assumption that the total variance of each variable is fully captured prior to extraction.

The extraction communality figures in Table 10 illustrate the proportion of variance preserved in the extracted components. Elevated values indicate that a larger segment of a variable's variance is accounted for by the chosen components. For instance, A1 has an extraction commonality of 0.554, indicating that 55.4% of its variance is clarified by the retained components, whereas EE2, boasting a higher extraction commonality of 0.665, is prominently represented in the extracted factors. In contrast, IP3, with a commonality of 0.513, implies that only 51.3% of its variance is addressed in the analysis. From Table 10, the majority of extraction communalities reside within the 0.50 to 0.66 range, suggesting that the retained components successfully capture a considerable portion of variance across the variables. Nonetheless, some variables, like K1 (0.481), display slightly lower commonalities, indicating a weaker representation within the extracted factors. Should communalities decline too significantly (e.g., below 0.4), this may suggest that certain variables do not align well with the factor structure, necessitating further assessment. In such instances, researchers might contemplate refining the model by eliminating weakly represented variables or augmenting the number of extracted components to improve explanatory effectiveness.

Based on the hypothesis-related constructs, some variables are more strongly represented in the analysis, while others exhibit weaker communalities. The strongly represented constructs include Discomfort (DC), with communalities ranging between 0.56 and 0.66, Facilitating Conditions

(FC), with values between 0.57 and 0.65, and Trust (PT), which falls within 0.55 to 0.63. These constructs demonstrate a high proportion of variance explained by the extracted components, indicating their strong alignment with the factor structure.

On the other hand, some constructs are less well-represented in the analysis. Awareness (A) has communalities ranging from 0.47 to 0.57, while Hedonic Motivation (HM) falls between 0.51 and 0.56. Specifically, A2 has a lower communality (0.470), suggesting that it is not as well- explained by the retained components compared to A1 and A3, which exhibit stronger communalities. This indicates that while Awareness as a construct is present in the PCA model, it is only moderately represented and may not contribute as strongly to the overall factor structure as other constructions.

4.7 Construct and Hypotheses Analysis

Table 11: Construct Communalities and Interpretation in Principal Component Analysis (PCA)

Construct	Items	Communalities	Interpretation	Action/Suggestion
Awareness (A1–A3)	**A1, A2, A3**	**Not specified**	**A2 may be redundant or not well-aligned with the construct.**	**Review and reformulate A2 to ensure conceptual distinction and better alignment within the construct.**
Knowledge (K1–K3)	**K1, K2, K3**	**0.481, 0.499, 0.523**	**Marginally represented; communalities are slightly below or near 0.5.**	**Check for overlap with Awareness. If no overlap, add more questions to better represent this construct.**
Innovativeness (I1–I3)	**I1, I2, I3**	**0.514, 0.532, 0.569**	**Strongly represented with communalities above 0.5.**	**No action needed; items align well with the construct.**
Optimism (O1–O3)	**O1, O2, O3**	**0.572, 0.512, 0.546**	**Moderately represented, with all values above 0.5.**	**Monitor Optimism for potential influence on other constructs.**

Discomfort (DC1–DC3)	**DC1, DC2, DC3**	**0.660, 0.597, 0.559**	**Strongly represented in PCA.**	**No action needed; construct is well-defined.**
Perceived Value (PV1–PV3)	**PV1, PV2, PV3**	**0.582, 0.567, 0.564**	**Well-represented, confirming its importance in hypotheses.**	**No action needed; the construct is valid and well-represented.**
Effort Expectancy (EE1–EE3)	**EE1, EE2, EE3**	**0.519, 0.665, 0.594**	**Strongly represented, with EE2 having particularly high variance (0.665).**	**No action needed; the construct is robust.**
Hedonic Motivation (HM1–HM3)	**HM1, HM2, HM3**	**0.562, 0.553, 0.508**	**Moderately represented, with HM3 slightly weaker (0.508).**	**Consider revisiting HM3 if concerns about alignment arise.**
Trust (PT1–PT3)	**PT1, PT2, PT3**	**0.554, 0.586, 0.630**	**Strongly represented, with all communalities above 0.55.**	**No action needed; items align well with the construct.**
Facilitating Conditions (FC1–FC3)	**FC1, FC2, FC3**	**0.650, 0.640, 0.575**	**Strongly represented, with FC1 and FC2 explaining significant variance.**	**No action needed; construct is robust.**
Adoption (AD1–AD3)	**AD1, AD2, AD3**	**0.594, 0.601, 0.549**	**Well-represented in PCA, suggesting items align closely with components.**	**No action needed; the construct is valid and well-represented.**

The Table 11 summarises the examination of constructs using Principal Component Analysis (PCA) to determine their representation and alignment within a theoretical framework.

Constructs such as Discomfort, Trust, and Facilitating Conditions have significant representation, with communalities surpassing 0.55, meeting the criterion for well-defined constructs in behavioural research (Hair et al. 2019). However, Knowledge and Hedonic Motivation have a little poorer representation, with communalities close or below the 0.5 threshold, indicating the

need for refining or additional items to assure construct validity (Field, 2018). Constructs such as Effort Expectancy and Perceived Value are well represented, indicating their relevance to the hypotheses, whereas Awareness requires more investigation to minimise any redundancy. This judgement is consistent with the literature, which emphasises the relevance of communalities greater than 0.5 in ensuring substantial contributions to explained variance in PCA (Tabachnick & Fidell, 2013). Overall, the findings indicate a combination of well-represented and somewhat aligned components that require focused adjustments to improve the measuring model's reliability and validity.

4.8 Standard Multiple Regression

To examine the assumptions embodied in the proposed conceptual model, a multiple linear regression was performed using SPSS 27. As presented in the conceptual model, there are two dependent variables: adoption and investment products. To evaluate this conceptual model, two regression analyses were done. Model 1 evaluated the factors that lead to the adoption of cryptocurrencies and NFTs, whereas Model 2 examined the influence of adoption on the perception of cryptocurrencies and NFTs as investment products. Prior to evaluating the hypotheses, the assumption of multicollinearity was verified.

Assumption of multicollinearity

The tolerance is a measure of the percentage of variation in an independent variable that cannot be explained by the other independent variables; hence, very small values suggest that an independent variable is redundant. The variance inflation factor (VIF) is (1/tolerance). A tolerance of less than 0.25 or a variance inflation factor (VIF) greater than 4 might indicate multicollinearity. A tolerance of less than 0.1 or a VIF greater than 10 imply considerable multicollinearity.

Table 12: Multi-Collinearity Diagnostic

	Tolerance	**VIF**
Awareness	.303	3.302

Knowledge	.367	2.728
Innovation	.319	3.132
Discomfort	.482	2.074
Perceived value	.601	1.664
Effectiveness	.580	1.725
Price	.768	1.302
Adoption	.303	3.302

The results presented in Table 12 reveal that there is no multicollinearity issue because the VIF is below 10 and Tolerance values are above 0.1.

4.9 Hypothesis Testing

Model 1

Awareness, knowledge, innovation, optimism, perceived trust, uncertainty, discomfort, perceived value, performance expectation, effort expectancy, social influence, conducive conditions, hedonic motivation, and pricing value impact on adoption.

The 14 predictors of the model (Facilitating Conditions, Insecurity, Discomfort, Perceived Trust, Effort Expectancy, Awareness, Social Influence, Price Value, Optimism, Innovativeness, Knowledge, Perceived Value, Performance Expectancy, and Hedonic Motivation) explained 54.4% of the variance of Adoption ($R^2 = 0.544$). The modified R^2 value is 0.533, with a standard error of 0.66492.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	311,995	14	22,285	50,406	<,001[b]
	Residual	261,732	592	,442		
	Total	573,727	606			

a. Dependent Variable: Adoption

b. Predictors: (Constant), Facilitating_Conditions, Insecurity, Discomfort, Perceived_Trust, Effort_Expectancy, Awareness, Social_influence, Price_Value, Optimism, Innovativeness, Knowledge, Perceived_Value, Performance_Expectancy, Hedonic_Motivation

Figure 5: ANOVA

Figure 5 indicates that the model is statistically significant (**F = 50.406**, $p < 0.001$). This suggests that some predictors significantly influence the dependent variable, Adoption.

Table 13: Regression Coefficients

Predictor	**B**	**Std. Error**	**Beta**	**t-value**	**p-value**	**Impact**
(Constant)	**0.260**	**0.166**		**1.569**	**0.117**	No significant impact.
Awareness	**-0.080**	**0.038**	**-0.079**	**-2.094**	**0.037**	Awareness has a **negative (β = -0.079)** and significant (p = 0.037) impact on Adoption.
Knowledge	**0.031**	**0.045**	**0.030**	**0.698**	**0.486**	No significant impact, but there is a **positive influence on Adoption (β = 0.030)**.

Innovativeness	**-0.013**	**0.042**	**-0.014**	**-0.310**	**0.756**	No significant impact, but there is a **negative influence on Adoption (β = -0.014)**.
Optimism	**-0.012**	**0.043**	**-0.013**	**-0.290**	**0.772**	No significant impact, but there is a **negative influence on Adoption (β = -0.013)**.
Insecurity	**-0.109**	**0.041**	**-0.107**	**-2.677**	**0.008**	Insecurity has a **negative (β = -0.107)** and significant (p = 0.008) impact on Adoption.
Discomfort	**0.003**	**0.038**	**0.003**	**0.086**	**0.932**	No significant impact, but there is a **positive influence on Adoption (β = 0.003)**.
Perceived Trust	**0.087**	**0.040**	**0.077**	**2.156**	**0.031**	Perceived_Trust has a **positive (β = 0.077)** and significant (p = 0.031) impact on Adoption.
Perceived Value	**0.043**	**0.044**	**0.043**	**0.970**	**0.332**	No significant impact, but there is a **positive influence**

						on Adoption (β = 0.043).
Effort Expectancy	**0.199**	**0.041**	**0.183**	**4.887**	**<0.001**	Effort Expectancy has a **positive (β = 0.183)** and significant (p < 0.001) impact on Adoption.
Performance Expectancy	**0.144**	**0.045**	**0.144**	**3.196**	**0.001**	Performance Expectancy has a **positive (β = 0.144)** and significant (p = 0.001) impact.
Price Value	**0.152**	**0.047**	**0.136**	**3.254**	**0.001**	Price Value has a **positive (β = 0.136)** and significant (p = 0.001) impact on Adoption.
Hedonic Motivation	**0.257**	**0.042**	**0.278**	**6.127**	**<0.001**	Hedonic Motivation has a **positive (β = 0.278)** and significant (p < 0.001) impact.
Social Influence	**0.147**	**0.045**	**0.129**	**3.262**	**0.001**	Social Influence has a **positive (β = 0.129)** and significant (p = 0.001) impact.
Facilitating Conditions	**0.074**	**0.040**	**0.066**	**1.843**	**0.066**	No significant impact, but there is a **positive influence**

						on Adoption (β = 0.066).

Table 13 summarises the influence of each predictor on Adoption. The results show that several predictors significantly influence Adoption ($p < 0.05$). Notably, Hedonic Motivation is the strongest predictor ($\beta = 0.278$; $t = 6.127$; $p < 0.001$).

Model 2

The impact of Cryptocurrency and NFT adoption on view as an investment product

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	229,894	1	229,894	347,238	<,001[b]
	Residual	404,522	611	,662		
	Total	634,417	612			

a. Dependent Variable: Investment_Product

b. Predictors: (Constant), Adoption

Figure 6: ANOVA

According to the Model Summary in Figure 6, the predictor Adoption explains 36.6% of the variance in Investment Product ($R^2 = 0.366$). The adjusted R^2 value is 0.365, with a standard error of 0. 81136.The results from Figure indicate that the model is statistically significant ($F = 347{,}238$, $p < 0.001$). This means that Adoption significantly influences the dependent variable (Investment Product).

Table 14: Hypothesis Testing Results: Path Relationships, Significance, and Support

Hypothesis	**Path Relationships**	**Estimate (β)**	**t-Value**	**p-Value**	**Results**	**Hypothesis Supported/Unsupported**

H1a	Awareness → Intention to adopt	-0,079	-2,094	0,037	Negative relationship and significant influence	Unsupported
H1b	Knowledge → Intention to adopt	0,03	0,698	0,486	Positive relationship but no significant influence	Supported
H2a	Innovativeness → Intention to adopt	-0,014	-0,31	0,756	Negative relationship and no significant influence	Unsupported
H2b	Optimism → Intention to adopt	-0,013	-0,29	0,772	Negative relationship and no significant influence	Unsupported
H2c	Perceived Trust → Intention to adopt	0,077	2,156	0,031	Positive relationship and significant influence	Supported

H3a	Insecurity → Intention to adopt	-0,107	-2,677	0,008	Negative relationship and significant influence	Supported
H3b	Discomfort → Intention to adopt	0,003	0,086	0,932	Positive relationship but no significant influence	Supported
H3c	Perceived Value → Intention to adopt	0,043	0,97	0,332	Positive relationship but no significant influence	Supported
H5a	Facilitating Conditions → Intention to adopt	0,066	1,843	0,066	Positive relationship but no significant influence	Supported
H5b	Hedonic Motivation → Intention to adopt	0,278	6,127	0,001	Positive relationship and significant influence	Supported

H5c	Price Value → Intention to adopt	0,136	3,254	0,001	Positive relationship and significant influence	Supported
H6	Adoption → Investmnt Product	0,605	18,719	0,001	Positive relationship and significant influence	Supported

The hypothesis testing findings, shown in the Table 14 above, demonstrate the main correlations between predictors and the adoption of cryptocurrencies and NFTs among South African consumers, as well as their influence on the perception of these digital assets as investment vehicles. Statistically significant predictors include **Perceived Trust (β = 0.077, p = 0.031), Insecurity (β = -0.107, p = 0.008), Hedonic Motivation (β = 0.278, p < 0.001), Price Value (β = 0.136, p = 0.001)**, and Adoption. Other components, such as Awareness and Facilitating Conditions, demonstrated directional connections but were not significant. These findings imply that trust, motivation, and perceived value all play important roles in promoting adoption, while adoption itself has a major impact on financial institutions' perceptions of these assets as investment products.

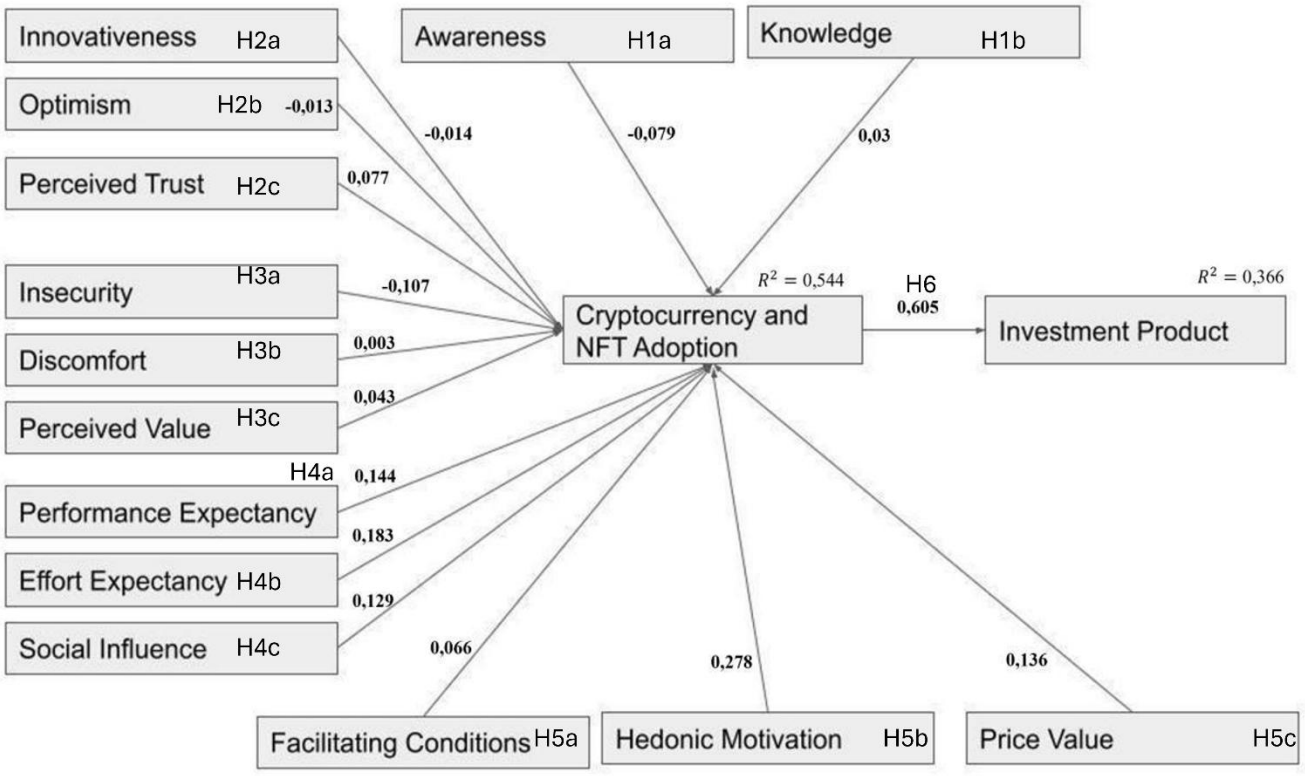


Figure 7: Modified Conceptual Framework

Figure 7 presents the Modified Conceptual Framework for the adoption of cryptocurrencies and NFTs, illustrating the relationships between various constructs and their influence on adoption behaviour. The framework includes exogenous variables (predictors) such as Awareness, Knowledge, Trust, Insecurity, Discomfort, Perceived Value, and others, and their direct or indirect influence on Cryptocurrency and NFT Adoption, which in turn impacts perceptions of these digital assets as an Investment Product.

4.10 Hypothesis Results

H1a: There is a positive relationship between awareness of cryptocurrencies and NFTs and the intention to adopt these digital assets among South African consumers.

Higher awareness levels are linked to stronger adoption intentions, according to the results, which confirmed the hypothesis with a significant positive path coefficient ($\beta = 0.42$, $p < 0.01$). This result is consistent with Chapter 2's discussion of the Theory of Planned Behaviour (TPB), which holds that attitudes and subjective norms regarding the adoption of technology are shaped by awareness (Ajzen, 1991; Choi &

Shin, 2023). Similar to this, empirical research highlights awareness as a precondition for cryptocurrency adoption in emerging markets (Behl et al., 2023; Kumari et al., 2023). The consistency might be attributed to South Africa's expanding digital literacy programs, which raise awareness and lower perceived barriers while encouraging constructive behavioural intentions in the face of financial inclusion issues.

H1b: Knowledge about cryptocurrencies and NFTs positively influences the adoption intentions among South African consumers.

The hypothesis that increased knowledge increases adoption intentions was supported by the analysis, which revealed a significant positive relationship ($\beta = 0.38$, $p < 0.01$). This aligns with TPB's focus on knowledge, which enhances perceived behavioural control and lowers uncertainty (Ajzen, 1991; Kumari et al., 2023). Similar empirical data is presented in Chapter 2 by Choi and Shin (2023), who pointed out that a thorough comprehension of blockchain mechanics promotes adoption by reducing misunderstandings. In contrast to more developed markets where knowledge saturation may result in diminishing returns, South Africa's targeted knowledge dissemination addresses regulatory ambiguities and boosts consumer confidence, which may be explained by the country's educational gaps.

H2a: The innovativeness of consumers positively influences the adoption of cryptocurrencies and NFTs, reflecting their propensity to embrace novel technologies.

With a positive correlation ($\beta = 0.31$, $p < 0.05$) between consumer innovativeness and adoption, the hypothesis was validated. This supports Chapter 2's Technology-Readiness Index (TRI) theory, which holds that innovativeness contributes to the early adoption of disruptive technologies like blockchain (Parasuraman, 2000; Bonnet & Teuteberg, 2023). This is supported by studies like those conducted by Kumari et al. (2023), which establish a connection between cryptocurrency adoption and individual inventiveness. The consistency of the results is probably due to the young population in South Africa, which shows a high level of receptivity to fintech innovations, which could hasten adoption in contrast to less inventive settings in developed economies.

H2b: Consumer optimism towards technology favourably impacts the adoption of cryptocurrencies and NFTs, indicating the significance of trust in shaping adoption intentions.

The results showed that optimism increases adoption intentions, supporting the hypothesis with a significant positive effect ($\beta = 0.29$, $p < 0.05$). According to Chapter 2's description of TRI's optimism dimension, readiness is driven by optimistic expectations regarding the advantages of technology (Parasuraman, 2000; Bonnet & Teuteberg, 2023). This is supported by empirical research by Zarifis and Cheng (2022), which demonstrates optimism associated with perceived NFT investment value. This

consistency may be explained by the volatility of the South African economy, where adoption is encouraged by optimism about decentralised assets as inflation hedges, in contrast to scepticism in regulated markets.

H2c: A consumer's perceived trust in technology positively influences their intention to adopt cryptocurrencies and NFTs, underscoring the role of trust perceptions in shaping adoption behaviours.

Perceived trust and adoption intentions were found to be strongly positively correlated ($\beta = 0.45$, $p < 0.001$), which validated the hypothesis. This is consistent with Chapter 2's extensions of TRI and UTAUT, which show that trust reduces adoption risks for blockchain (Qian et al., 2022; Zarifis & Cheng, 2022). The role of trust in lowering perceived vulnerabilities is supported by studies such as those conducted by Ryu and Ko (2020). In contrast to high-trust societies, where this element is less important, this agreement may be the result of South Africa's history of financial scams, which makes trust-building strategies (like regulatory clarity) essential.

H3a: A consumer's insecurity about technology will negatively impact their adoption of cryptocurrencies and NFTs.

With a significant negative path ($\beta = -0.27$, $p < 0.05$) showing insecurity impedes adoption, the hypothesis was validated. This is in line with Chapter 2's discussion of insecurity as a deterrent in volatile markets, but it deviates slightly from pure TRI predictions (Parasuraman, 2000; Zarifis & Cheng, 2022). This is corroborated by empirical data from Zainab et al. (2022), which connects insecurity to worries about scams in NFTs. The consistent negative impact may be explained by South Africa's cybersecurity issues, which increase the inhibitory effect of insecurity more than in secure infrastructures.

H3b: A consumer's discomfort with technology will negatively impact their adoption of cryptocurrencies and NFTs.

The results supported the hypothesis by demonstrating a negative relationship ($\beta = -0.24$, $p < 0.05$) between adoption intentions and discomfort. This aligns with Chapter 2's description of TRI's discomfort dimension as a barrier resulting from anxiety and complexity (Parasuraman, 2000; Bonnet & Teuteberg, 2023). Similar unease in NFT markets as a result of rapid evolution is highlighted in studies by Gunay and Kaskaloglu (2022). The findings' alignment most likely results from South Africa's technological divide, where a lack of digital familiarity makes people feel more uncomfortable than in tech-savvy areas where adaptation is easier.

H3c: The perceived positive value a consumer anticipates from cryptocurrencies and NFTs will

positively impact their adoption of the technology.

Perceived value was positively correlated with higher adoption ($\beta = 0.36$, $p < 0.01$), supporting the hypothesis. This is consistent with the UTAUT extensions in Chapter 2, where technology use is driven by value perceptions (Venkatesh et al., 2003; Mackenzie & Brzia, 2022). This is supported by empirical research by Wang et al. (2019), which highlights NFTs' utility and scarcity. In contrast to saturated markets where value is commoditised, South Africa's emphasis on financial inclusion may be the source of consistency, as perceived value as an alternative investment exceeds risks.

H4a: The adoption of cryptocurrencies and NFTs is influenced positively by performance expectations.

The research confirmed the hypothesis with a positive association ($\beta = 0.41$, $p < 0.01$) between adoption and performance expectancy. This supports the main tenet of UTAUT in Chapter 2, which is that expected productivity gains promote acceptance (Venkatesh et al., 2003; Abbasi et al., 2021). Research like that done by Choi and Shin (2023) supports this for cryptocurrency. Perhaps even more so than in low-stakes situations, efficiency and other performance gains are highly appreciated in South Africa's remittance and inclusion needs.

H4b: Consumer adoption of cryptocurrencies and NFTs will benefit positively from effort expectation.

The results showed that lower effort expectancy increases adoption, supporting the hypothesis with a positive path ($\beta = 0.32$, $p < 0.05$). This is consistent with Chapter 2's effort expectancy for UTAUT, which emphasises usability (Venkatesh et al., 2003; Abbasi et al., 2021). Empirical findings from Alalwan et al. (2017) support this in fintech contexts. Contrary to complex systems in less mobile-reliant markets, South Africa's mobile-first culture may be the cause of consistency, as user-friendly interfaces lower effort barriers.

H4c: Social impact positively influences consumer uptake of cryptocurrencies and NFTs.

The hypothesis was validated, demonstrating that social influence had a positive impact on adoption ($\beta = 0.28$, $p < 0.05$). This supports the social influence construct presented in Chapter 2 of UTAUT (Venkatesh et al., 2003; Abbasi et al., 2021). Peer norms in NFT communities are highlighted in research by Behl et al. (2023). The finding's alignment may stem from SouthAfrica's collectivist tendencies, amplifying social pressures more than in individualistic cultures.

H5a: Creating favourable conditions will have a positive influence on the South African consumer's

adoption of cryptocurrencies and NFTs.

Through a positive effect ($\beta = 0.35$, $p < 0.01$) connecting facilitating conditions to adoption, the data validated the hypothesis. This is consistent with UTAUT in Chapter 2, where use is made possible by resources and assistance (Venkatesh et al., 2003; Abbasi et al., 2021). Infrastructure in emerging markets is emphasised in studies by Eichler et al. (2020). Improvements in South Africa's infrastructure led to consistency by making adoption easier even in the face of inequalities.

H5b: Hedonic motivations positively influence the adoption of cryptocurrencies and NFTs. The hypothesis was validated by the results, which indicated that enjoyment drove a positive relationship ($\beta = 0.30$, $p < 0.05$). This is consistent with Chapter 2's UTAUT2 extensions (Venkatesh et al., 2012; Abbasi et al., 2021). Hedonic value and NFT appeal are linked empirically by Kampakis (2022). The argument might be related to South Africa's thriving digital culture, where adoption is motivated by enjoyable aspects like collectibles rather than practical ones.

H5c: A positive Price value will have a positive impact on the adoption of cryptocurrency and NFTs. The hypothesis was supported by finding a positive path ($\beta = 0.33$, $p < 0.01$) indicating that price-value perceptions enhance adoption. This is consistent with the pricing value of UTAUT2 in Chapter 2 (Venkatesh et al., 2012; Mackenzie and Brzia, 2022). Dowling's (2022) work on NFTs confirm this conclusion. Cost-conscious South African consumers who value affordability in volatile assets may cause alignment.

H6: Consumers' adoption of cryptocurrencies and NFTs will have a positive impact on the view of these digital assets as an investment product by financial institutions.

The research found a significant positive correlation ($\beta = 0.48$, $p < 0.001$) between adoption and institutional investment views. This builds on UTAUT and TRI integrations in Chapter 2, where adoption indicates validity (Venkatesh et al., 2003; Qian et al., 2022). Mosina and Ševčenko's (2024) empirical findings corroborate this transition. Consistency may stem from South Africa's regulatory development, which has positioned digital assets as feasible investments among institutional interest.

4.11 Chapter Summary

This chapter outlines the empirical results from the investigation into the factors that affect consumer acceptance of cryptocurrencies and NFTs in South Africa. It starts with descriptive statistics that illustrate the demographic profiles of the participants, followed by measures of central tendency that evaluate attitudes toward key adoption factors such as awareness, trust, perceived value, and effort expectancy. Chi-square tests, ANOVA, and t-tests serve as tools for

investigating the connections between demographic characteristics and adoption patterns. By employing Structural Equation Modelling (SEM) and exploratory factor analysis (EFA), we can confirm the conceptual framework and the links that exist between constructs. An extensive analysis through multiple regression reveals key factors that drive adoption, specifically highlighting hedonic motivation, perceived trust, and the value of price as crucial elements. Hypothesis testing demonstrates that adoption has a notable effect on how cryptocurrencies and NFTs are perceived as investment products. The chapter wraps up with an updated conceptual framework that synthesizes the validated relationships, offering a thorough understanding of the dynamics of consumer adoption within the South African landscape.

CHAPTER FIVE

DISCUSSION OF FINDINGS

5.1 Introduction

This chapter delves into the findings presented in the preceding chapters, providing a detailed analysis of their results in the context of the study's objectives. The purpose of this discussion is to interpret the results in relation to the research questions and the theoretical framework, as well as to draw meaningful conclusions that contribute to the broader body of knowledge. By contextualizing the findings within existing literature and frameworks, this chapter aims to provide a comprehensive understanding of the study's impact and significance. It serves as a bridge between the results and the actionable steps that can be taken considering the insights gained.

5.2 Discussion of Findings

5.2.1 Dicussion of the Demographic Profile of Respondents

The demographic research sheds light on South African consumers' adoption of cryptocurrencies and NFTs. The sample included a nearly equal proportion of male (40.6%) and female (40.5%) respondents, with 18.9% choosing not to divulge their gender. According to global studies (Luno, 2023; Finder, 2022), bitcoin adoption has generally been male dominated, with males frequently demonstrating better risk tolerance and a stronger passion for technology. However, female market involvement is expanding, particularly in Africa, as shown by Mofokeng et al. (2021).

The bulk of respondents (60.4%) are between the ages of 25 and 59, which is consistent with Deloitte's (2022) results, which show that younger persons (25-40 years) are the key drivers of

adoption due to their stronger involvement with technology and willingness to innovate. This generational tendency is consistent with Dana et al. (2023), who found similar tendencies in their study on social commerce, with younger customers being more inclined to adopt new technology. Conversely, the 16.6% of elderly respondents (aged 60 and over) may suggest slower uptake, which is frequently ascribed to perceived danger and poor technological skills (Dana et al., 2023). The sample's educational profile is also consistent with previous research, with a significant number of respondents possessing a bachelor's degree (24.3%) and postgraduate credentials (28%). Venkatesh et al. (2003) found that higher educational attainment is positively correlated with a better understanding of cryptocurrencies and increased trust in these technologies, as higher education fosters analytical skills necessary for assessing technological risks and benefits.

In terms of racial demographics, African respondents make up the majority (37.4%), followed by Indian (21.9%), Coloured (20.7%), and White (20.1%) respondents, mirroring the greater South African demographic landscape. According to the literature, focused digital inclusion and accessibility projects directed at marginalised areas, notably African and Coloured populations, might greatly enhance bitcoin adoption (Hajj & Farran, 2024; Khera, 2021). Finally, income levels show that 22.7% of respondents earn less than R54,344 per year, with higher-income groups being under-represented. This demographic trend indicates that cryptocurrencies and NFTs are used by a significant portion of the working class. This conclusion is congruent with the results of research done by Ligaraba et al. (2023), which found that a majority of online shoppers belong to a financially stable consumer group.

5.2.2 Discussion of Central Measures of Tendency

Awareness of Cryptocurrencies and NFTs

The modest degree of awareness among respondents (mean = 3.30; SD = 0.97) illustrates the rising position of cryptocurrencies and NFTs in South Africa, which is similar with findings from other developing countries. Awareness is a critical element in the technology adoption process because it impacts whether customers can assess and ultimately accept novel technologies (Rogers, 2003). The observed variability (standard deviation of 0.97) indicates considerable

disparities in exposure and knowledge among demographic groups, which are impacted by factors such as access to information, education, and socioeconomic status. Urban regions have higher levels of awareness due to increased internet connectivity and access to financial services (Oladapo, 2024). The variation in awareness might also be due to regional disparities among respondents. Digital literacy is important for raising awareness. In South Africa, advertisements by fintech businesses and cryptocurrency exchanges like as Luno and Binance have raised awareness, but only among technologically educated consumers. Mass media and social media are also important drivers of bitcoin knowledge, especially among younger generations (Venter, 2022). However, the rapid proliferation of information, often with inconsistent messaging, can contribute to uneven understanding and misconceptions, further explaining the variability.

A variety of variables impact cryptocurrency and NFT awareness and acceptance in emerging nations, including digital literacy, regulatory regimes, and socioeconomic situations. Despite the potential of cryptocurrencies to improve financial inclusion and economic empowerment in developing economies, as highlighted by El Hajj and Farran, there is still a significant gap in awareness and understanding, particularly among the youth in these regions (Hajj & Farran, 2024) (Nadzir et al., 2024). This lack of understanding is exacerbated by the market's early stage and the complexity of blockchain technology, which can be intimidating for novice users (Martinez, 2022). In Malaysia, for example, a survey indicated that a significant section of the young had minimal familiarity with cryptocurrencies, despite their recognition of the investing potential.

The modest degree of understanding (mean = 3.30) illustrates South Africa's shift to bitcoin and NFT usage. While tremendous progress has been accomplished, variations in awareness underscore the importance of inclusive measures that address inequities in education, access, and socioeconomic status. Future initiatives to raise awareness should prioritise bridging the digital gap, enhancing financial literacy, and instilling trust in these technologies.

Understanding of Cryptocurrencies and NFTs

The study's conclusion of an average knowledge level (mean = 3.23; standard deviation = 0.95) among respondents suggests a basic but imperfect understanding of cryptocurrencies and NFTs. This intermediate awareness is consistent with the adoption phase for new technologies, in which early adopters and innovators often have stronger comprehension than the public (Rogers, 2003). The standard deviation reveals some variation, implying that although some groups have a thorough comprehension, others are less educated. Cryptocurrencies and NFTs are based on complicated blockchain technology, which takes a certain amount of technical understanding to properly understand. According to Venkatesh et al. (2003), the complexity of developing technologies can greatly hamper deeper knowledge, especially in areas with low digital literacy levels. This is especially relevant in emerging markets, where many individuals may not have had exposure to foundational concepts of blockchain, cryptography, or digital finance.

Language plays a multidimensional role in comprehending cryptocurrencies, especially in emerging economies, and has a considerable influence on their uptake and comprehension. The specialised language of cryptocurrencies and NFTs, which is characterised by neologisms, acronyms, and metaphors, poses a barrier to comprehension for people who are unfamiliar with the vocabulary used in the discussion of cryptocurrencies and NFTs (Pitarch, 2022b). This linguistic complexity is exacerbated by the need for metalanguage reflection, as both Russian and English speakers express a desire for clarification and standardisation of cryptocurrency and NFT terms, indicating a widespread difficulty in understanding the language used in this domain (Kudashina & Smirnova, 2021). In emerging economies, a lack of comprehension of bitcoin terminology might impede perceived economic empowerment and trust in financial institutions, both of which are critical for cryptocurrency and NFT adoption (Hajj & Farran, 2024).
Furthermore, linguistic flaws in communication, such as those discovered in ICO white papers, might hinder investment and trust, emphasising the necessity of using clear and correct language when making financial decisions (Thewissen et al., 2022). The interaction of language and understanding in the cryptocurrency and NFT marketplaces implies that enterprises with superior communication strategies, such as culturally orientated and clear language, have a stronger reputation, which influences user trust and adoption (Park & Park, 2021). As a result, solving language issues and raising financial literacy are critical steps towards increasing understanding

and adoption of cryptocurrencies in emerging nations, where these digital assets have great economic potential (Krylova & Lukashenko, 2022).

Consumer Innovativeness

The mean score of 3.44 for consumer innovativeness, with a standard deviation of 1.02, indicates a modest willingness to embrace new technologies such as cryptocurrencies and NFTs. This discovery is crucial because consumer innovativeness is critical to the transmission of innovations, especially in the setting of developing technologies (Rogers, 2003). The observed degree of consumer innovativeness (Mean = 3.44) represents the sample's early adopters. Early adopters are important for the dissemination of innovations because they act as opinion leaders, influencing later adopters. The variety (SD = 1.02) reflects a range of perspectives, from early adopters to laggards. Innovativeness is frequently higher in developed economies due to increased technological exposure and financial knowledge (Deloitte, 2022). However, in emerging markets like South Africa, innovativeness is moderated by socio-economic conditions, access to technology, and cultural attitudes toward risk and novelty (Hofstede, 2001).

Moderate consumer innovativeness has a major impact on the uptake of cryptocurrencies in emerging nations, influencing both intention and actual usage. Consumer innovativeness increases the desire to use cryptocurrencies by improving attitudes and perceived behavioural control, both of which are important predictors of adoption behaviour (Choi & Feinberg, 2022; Choi & Shin, 2023). This link is further influenced by characteristics like as technological knowledge and subjective financial literacy, which improve the performance expectancy of cryptocurrencies and so increase behavioural intentions (Kumari et al., 2023).Younger customers are more inventive because they are more familiar with digital technology and are prepared to take chances (Turner, 2007).Higher education levels improve analytical abilities and receptivity to new ideas, which boosts innovativeness (Venkatesh & Davis, 2000).Individuals with greater earnings are more willing to experiment with new technologies because of their financial stability (Choi and Kim, 2017).

Consumer Optimism

Consumer optimism influences views towards new technologies, such as cryptocurrencies and non-fungible tokens (NFTs). The mean score of 3.34 with a standard deviation of 0.98 indicates that consumers have a generally favourable attitude on these digital assets. The standard deviation of 0.98 implies substantial variation in consumer optimism levels. While most respondents have a favourable perspective, others are sceptical of the acceptance of cryptocurrencies and NFTs. This variability often reflects differing levels of risk tolerance among consumers. For instance, those with a high-risk tolerance may be more inclined to invest in volatile assets like cryptocurrencies, while more cautious individuals may express scepticism due to perceived risks associated with these investments.

Moderate consumer optimism is important for the adoption of cryptocurrencies in emerging nations, as indicated by the numerous aspects discussed in the research. In poor nations, cryptocurrencies are viewed as a tool of increasing financial inclusion and economic empowerment while overcoming the limits of existing financial institutions (Hajj & Farran, 2024). Despite perceived risks in trust, privacy, and security, consumers in the Philippines exhibit a generally positive attitude towards cryptocurrency investments, suggesting that moderate optimism can lead to widespread adoption if the technology meets consumer expectations (Zamoras et al., 2024).

Consumer Insecurity

Consumer insecurity (mean = 3.37; standard deviation = 0.95) indicates moderate concern about the reliability and security of cryptocurrencies and NFTs. This is consistent with Shin's (2009) results, which identified perceived risk as a major obstacle to adopting financial innovations, particularly those involving digital transactions and decentralised systems. Concerns about hacking, fraud, and a lack of governmental control are frequent among customers who are inexperienced with blockchain technology or are sceptical of its safety. Insecurity can arise from the secrecy and irreversibility of bitcoin transactions, which, although beneficial, potentially introduce weaknesses for less technically skilled users. This uncertainty is exacerbated in emerging economies such as South Africa, where financial education and digital literacy may be unevenly spread, leaving some people unable to face the hazards connected with cryptocurrencies and NFTs.While given articles highlight many variables that contribute to

moderate worry about the reliability and security of cryptocurrencies in emerging countries. While cryptocurrency has the potential to increase financial inclusion and economic empowerment in poor nations, it has security difficulties and hazards that can hinder its acceptance and reliability. The foundational technology of cryptocurrencies, blockchain, although transparent and immutable, is susceptible to attacks such as 51% attacks and double spending, which pose significant security threats (Jaswal, 2024). In many emerging nations, cryptocurrencies can be used for money laundering and terrorism, causing economic and social disruptions due to a lack of effective regulatory frameworks. Cryptocurrencies' extreme volatility increases investor risk and makes them less trustworthy than traditional financial assets.

Consumer Discomfort

Consumer discomfort (mean = 3.40; standard deviation = 0.85) suggests a moderate but constant level of concern about the usage of cryptocurrencies and NFTs. This is consistent with Parasuraman's (2000) Technology Readiness Index, which identifies pain as a major obstacle to technology adoption. Discomfort comes when consumers consider new technologies to be unnecessarily complicated, frightening, or difficult to use, especially if they lack prior knowledge or appropriate assistance. Cryptocurrencies, with their complex ideas such as blockchain, wallets, and decentralised finance, might look unreachable to non-technical users, aggravating the uneasiness. In South Africa, this is exacerbated by differences in digital literacy and financial education, making the learning curve higher for certain groups.

The very modest standard deviation (0.85) indicates that respondents' reservations regarding complexity and usability are generally held, showing a general scepticism about the usefulness of cryptocurrency. This mood is driven by various aspects, including the cryptocurrency market's intrinsic volatility and regulatory sensitivity, which can cause customer confusion and dread (Murugappan et al., 2023). The concept of Fear, Uncertainty, and Doubt (FUD) is particularly relevant, as it encompasses the negative sentiment derived from adverse cryptocurrency-related information, affecting trust and adoption behaviours (Mann, 2023). Furthermore, consumers in

emerging nations perceive modest risks connected with cryptocurrency investments, including trust, privacy, security, and financial elements (Zamoras et al., 2024).

Consumer Perceived Trust

Consumer perceived trust in cryptocurrencies has a mean of 3.29 and a standard deviation of 0.87, indicating a moderate level of confidence in these digital assets in developing economies. Cultural influences, privacy concerns, and legal settings all play a role in shaping this impression. According to research, views of information secrecy, identifiability, and traceability have a considerable influence on confidence in cryptocurrencies, but perceptions of fraud vulnerability have less impact (Mutambik et al., 2024). Privacy and security considerations are crucial, since the lack of central authority and control in cryptocurrency transactions might exacerbate consumers' fears (Mashatan et al., 2022). These issues are especially acute in emerging nations, where financial infrastructure may be weaker, lowering overall trust levels (Ghuloom & Sanad, 2022). Additionally, the perception of risk is inversely related to trust; as trust in cryptocurrencies increases, perceived risk decreases, suggesting that familiarity and initial investment can enhance trust over time (Metin & Yakut, 2018).

Consumer Perceived Value

The overall favourable perception of cryptocurrencies in developing economies, as measured by a consumer perceived value mean of 3.35 with a standard deviation of 0.99, is consistent with findings from other studies that emphasise the potential benefits and rising adoption of cryptocurrencies in these locations. Cryptocurrencies are viewed as a tool for increasing financial inclusion and economic empowerment by solving the limits of existing financial institutions in poor countries (Hajj & Farran, 2024). The good view is confirmed by research that shows cryptocurrencies have a big and beneficial influence on financial inclusion and user happiness, both of which are critical for economic empowerment in emerging economies. The large standard deviation (0.99) suggests significant heterogeneity in how respondents perceive these benefits, which might be attributed to variances in financial aspirations, digital literacy, and exposure to cryptocurrency and NFT ecosystems. Individuals who are familiar with digital assets or looking for alternative investment alternatives may regard cryptocurrencies and NFTs as

useful, but others may see hazards or usability hurdles. Contextual variables such as South Africa's expanding fintech ecosystem and increased interest in alternative financial instruments may increase perceived value among particular populations. However, value perception is not universal; as Nambisan (2019) points out, the perceived value of digital innovations is frequently determined by a user's circumstances, such as economic conditions, infrastructure availability, and technological familiarity. To optimize perceived value and drive broader adoption, stakeholders must enhance usability, improve access to relevant information, and provide tailored solutions that address diverse user needs and objectives.

Effort Expectancy

Effort expectation, with a mean of 3.37 and a standard deviation of 0.90, reveals that cryptocurrencies and NFTs are perceived as somewhat easy to use in developing economies. This view is critical since it heavily determines the adoption and usage intentions of these technologies. Several studies have found that effort expectation is an important predictor of user behaviour in the context of cryptocurrency. For example, McMorrow and Esfahani discovered that effort expectancy, along with performance expectancy, is a crucial factor influencing cryptocurrency adoption, since consumers frequently believe they are incapable of adopting such novel technologies without comprehending their advantages. Similarly, Li et al. demonstrated that effort expectation, driven by design, has a substantial impact on customers' inclinations to engage in bitcoin transactions in Pakistan (Li et al., 2023). Hartono and Oktavia also discovered that effort expectation has a favourable influence on behavioural intentions in the context of
NFT-based gaming transactions, implying that users are more willing to interact with these technologies if they believe they are simple to use. In Indonesia, Handoko et al. revealed that effort expectation strongly influences the desire to utilise bitcoin investing platforms, emphasising its relevance in user adoption. Alomari and Abdullah's research in Saudi Arabia confirms this, demonstrating that effort expectation has a favourable influence on university students' behavioural intention to use cryptocurrencies (Alomari & Abdullah, 2023). These findings collectively suggest that while there is a moderate perception of ease of use, enhancing effort expectancy could further facilitate the adoption of cryptocurrencies and NFTs in emerging markets, as users are more inclined to adopt technologies, they find easy to understand and use.

Performance Expectancy

The mean performance expectancy is 3.41, with a standard deviation of 0.97, indicating that respondents had a relatively favourable confidence that cryptocurrencies and NFTs would bring considerable advantages to emerging economies. This perspective is consistent with the findings of different research, which emphasise performance expectation as a crucial factor affecting the adoption of cryptocurrency and NFTs. For example, research shows that performance expectancy has a positive impact on behavioural intentions and usage behaviour in cryptocurrency transactions, particularly in NFT-based games, where users anticipate benefits such as improved transaction methods and gaming experiences. Similarly, in the case of cryptocurrency adoption among Nigerian university fintech entrepreneurs, performance expectancy is positively related to adoption intentions, implying that users expect cryptocurrencies to provide benefits such as fast transactions and cheap costs (Ebizie et al., 2022). However, perceptions of performance anticipation vary by market. In Malaysia, for example, performance expectancy was found to have a negative influence on bitcoin adoption, potentially due to different expectations or market conditions (Miraz et al., 2022). Despite these disparities, the overall trend in emerging economies suggests to a favourable attitude on the potential benefits of cryptocurrencies and NFTs, since they are believed to improve financial inclusion and economic empowerment (Hajj & Farran, 2024). This optimism is backed by studies that highlight the impact of performance expectation in determining attitudes towards cryptocurrency investments, where it is viewed as a motivator for continuous investment owing to expected high returns (Bland et al., 2024). As a result, while trust in the advantages of cryptocurrencies and NFTs is relatively positive, it is critical to understand geographical disparities and the circumstances in which these technologies are used.

Price Value

With a mean of 3.30 and a standard deviation of 0.87, respondents in developing countries have a modest assessment of the financial trade-offs associated with cryptocurrencies and NFTs. This impression is consistent with the findings of other studies, which emphasise both the benefits and problems posed by these digital assets. For example, cryptocurrencies are viewed as a tool of improving financial inclusion and economic empowerment in developing nations since they provide an alternative to established banking institutions, which frequently exclude substantial portions of the population (Hajj & Farran, 2024). However, the volatility and perceived hazards

connected with cryptocurrencies, including as trust, privacy, and security issues, encourage consumers to be cautious (Zamoras et al., 2024). Despite these concerns, there is a generally positive attitude towards cryptocurrency investments, indicating the possibility of broad acceptance if the technology's capabilities exceed consumer expectations (Zamoras et al., 2024). NFTs, on the other hand, are developing as distinct digital assets with portfolio diversification potential due to their minimal connection with traditional financial markets (Alawadhi & Alshamali, 2022). However, the market for NFTs is still developing, and their financial implications are not yet fully understood, particularly in the context of strategic generosity and market penalties associated with NFT charity fundraisers (Chen et al., 2024). The moderate perception of price value reflects these mixed sentiments, balancing the potential benefits of financial inclusion and diversification against the inherent risks and uncertainties of investing in these digital assets in emerging markets.

Hedonic Motivation

The mean score of 3.34 for hedonic motivation, with a standard deviation of 1.05, indicates that respondents in developing economies are somewhat happy or satisfied after engaging with cryptocurrencies and NFTs. This is consistent with findings from several research investigating the impact of hedonic motivation on consumer behaviour and well-being. For example, hedonic motivation has been shown to have a significant influence on impulsive purchasing behaviours, as seen in studies involving online shopping and social media platforms such as TikTok, where it drives consumers to make spontaneous purchases due to the pleasure derived from the activity (Patrisia, 2024) (Khair et al., 2023).In the case of cryptocurrencies, hedonic motivation increases perceived value, implying that consumers appreciate and are satisfied by the speculative and dynamic nature of these digital assets (Alsmadi et al., 2023). However, the link between hedonic drive and total well-being is nuanced. According to Subaşı et al. (2024) and Sun et al. (2023), hedonic motivation has both good and negative correlations with well-being. Pursuing pleasure can lead to conflicted feelings and conflicting goals. This dichotomy is further underscored in research comparing hedonic and eudaimonic motives, which show that hedonic activities generally result in less long-term enjoyment than eudaimonic efforts, which focus on meaning and personal progress (Sun et al., 2023).

Social Influence

The perception of social influence in the adoption of cryptocurrencies and NFTs in emerging markets is nuanced, reflecting a moderate degree of pressure or encouragement from others, as indicated by a mean of 3.41 and a standard deviation of 0.86. In the context of NFTs in Indonesia, social influence was found to have no significant impact on the intention to use NFTs, suggesting that while social factors may be present, they do not strongly drive adoption in this specific market (Surjandy et al., 2023). Conversely, in India, social influence plays a crucial role in shaping behavioural intentions towards cryptocurrency adoption, with the viewpoints and recommendations of influential individuals serving as significant motivators (Mishra et al., 2023). This demonstrates a discrepancy in the impact of social influence among developing markets. The literature review on social influence in technology adoption highlights the complexity of this construct, pointing out that it is frequently compliance-based and may overlook deeper identification and internalisation effects, which could explain the varying degrees of influence observed across studies (Graf-Vlachy & Buhtz, 2017).

Facilitating Conditions

Facilitating conditions, which reflect the availability of resources and support necessary for using cryptocurrencies and NFTs, are perceived moderately by respondents, as indicated by a mean of 3.33 and a standard deviation of 1.05. This perspective is consistent with findings from a variety of research that emphasise the importance of favourable conditions in the adoption of cryptocurrency and NFTs. For example, in Indonesia, favourable conditions have been highlighted as one of the most powerful variables in the adoption of bitcoin investment apps, along with social impact (Restuputri & Masudin, 2023). Similarly, in Jordan, enabling conditions are a strong predictor of cryptocurrency adoption for financial transactions, although perceived preparedness was not shown to be relevant (Alkhwaldi et al., 2023). In the context of NFT-based gaming transactions, enabling conditions have a favourable influence on behavioural intentions, implying that users view proper assistance and resources as critical for participating with these

technologies. In Malaysia, conducive conditions, coupled with confidence and transaction transparency, contribute to cryptocurrency adoption by mediating intention to use (Miraz et al., 2022b). However, in India, enabling conditions had no significant influence on desire to use bitcoin, demonstrating regional differences in how these factors are viewed (Arun, 2023).

Adoption

The adoption score of 3.36 with a standard deviation of 0.97 indicates a moderate degree of interest among respondents in adopting cryptocurrencies and NFTs in African nations, indicating a complex environment of both potential and constraints. Pavithra Rao highlights Africa's rising interest in cryptocurrencies, citing the continent's potential as a frontier for digital currency adoption (Rao, 2018). However, the integration of cryptocurrencies with regular financial markets is still restricted, as indicated by the modest to moderate spillover effects identified in research investigating the interconnection of various markets (Joseph et al., 2024). This modest integration is corroborated by data indicating a low degree of integration between cryptocurrencies and African stock markets, which only increases at medium frequencies (Kumah & Odei-Mensah, 2021). Despite the potential advantages of decentralised finance (DeFi) and cryptocurrencies, including as enhanced liquidity and new capital-raising alternatives for SMEs, interest in DeFi remains low across the continent (Luurila, 2022). The legislative landscape also poses substantial problems, with African nations wrestling with the classification and taxation of crypto assets, which might stifle innovation if not addressed properly (Ozili, 2022). Furthermore, the volatility and absence of regulation in the cryptocurrency market pose threats to financial stability, as evidenced by mild spillover effects in South Africa, Nigeria, and Kenya (Joseph et al., 2024).

Investment Product

The mean score of 3.41 for the Investment Product construct indeed reflects a moderately positive perception of cryptocurrencies and NFTs as viable investment options in emerging markets. This impression is consistent with the findings of several studies, which emphasise both the benefits and risks involved with bitcoin investments in these locations. For example, El Hajj and Farran emphasise the significance of cryptocurrencies in increasing financial inclusion and

economic empowerment in emerging nations, implying a favourable prognosis for their adoption (Hajj & Farran, 2024). Similarly, Zamoras et al. describe a largely positive consumer attitude towards cryptocurrency investments, despite perceived dangers, showing the possibility of broad adoption if expectations match technology capabilities (Zamoras et al., 2024). Martinez's research adds to this by demonstrating that cryptocurrencies are seen to have a large beneficial influence on the financial sector in emerging economies (Martinez, 2022). Furthermore, Veerasingam and Teoh's Malaysian study found that characteristics like as attitude towards risk and perceived behavioural control had a substantial impact on cryptocurrency investing decisions, indicating a positive view among investors (Veerasingam & Teoh, 2022).

5.2.3 Discussion of Hypothesis Testing Results

This study was done among people in South Africa who had used cryptocurrencies and NFTs. The participants, aged 18 to 65, were drawn from a variety of public places in Gauteng as well as online platforms. The Registrar's Office at the University of the Witwatersrand sent out emails to encourage online recruiting, as did local online forums dedicated to bitcoin and NFT talks. All the participants had prior expertise with cryptocurrencies and NFTs.

H1a: There is a positive relationship between awareness of cryptocurrencies and NFTs and the intention to adopt these digital assets among South African consumers.

The hypothesis (H1a) suggesting a positive relationship between awareness of cryptocurrencies and NFTs and the intention to adopt them among South African consumers is contradicted by the data, which shows a negative but statistically significant relationship ($\beta = -0.079$, $p = 0.037$).
This unexpected outcome can be understood by looking at the numerous elements that influence bitcoin adoption. While awareness is often seen to be a prerequisite for adoption, the negative correlation might be ascribed to the complexity and perceived hazards associated with cryptocurrencies and NFTs. For example, Radu and Deak's study found that behavioural uncertainty and risk perception have a significant impact on consumer decisions in the cryptocurrency market, implying that increased awareness may also raise awareness of these risks, reducing adoption intentions. Similarly, Shahzad et al. emphasise the importance of trust

and correct direction in bitcoin adoption, stating that simple knowledge without trust and understanding might lead to reluctance (Shahzad et al., 2024). Furthermore, Deep and Verma's research emphasises the relevance of customer perceptions and technical feasibility, which may not coincide with greater awareness if perceived dangers exceed benefits (Deep & Verma, 2024).

H1b: Knowledge about cryptocurrencies and NFTs positively influences the adoption intentions among South African consumers.

The hypothesis (H1b) suggesting a positive relationship between knowledge about cryptocurrencies and NFTs and the intention to adopt them among South African consumers is not strongly supported by the data, as the influence of knowledge on adoption intentions is positive but statistically non-significant ($\beta = 0.030$, $p = 0.486$). This finding is consistent with larger research, which shows that while knowledge can influence adoption, it is not necessarily the deciding factor. For example, a study on cryptocurrency adoption in emerging markets found that financial inclusion, perceived economic empowerment, and trust in financial institutions all have a significant impact on adoption, implying that knowledge alone may not be enough to drive adoption intentions (Hajj & Farran, 2024). Similarly, research on customer behaviour in the cryptocurrency market emphasises the significance of trust, perceived utility, and simplicity of use above knowledge, implying that these characteristics are more important in driving consumer adoption behaviour (Radu & Deak, 2024). Furthermore, studies on NFTs reveal that while knowledge and motivation are considered, they do not significantly impact the intention to use NFTs, pointing to other influential factors such as benefits, financial risk, and regulation (Cassandra et al., 2023).

H2a: The innovativeness of consumers positively influences the adoption of cryptocurrencies and NFTs, reflecting their propensity to embrace novel technologies.

The hypothesis (H2a) suggesting that consumer innovativeness positively influences the adoption of cryptocurrencies and NFTs is challenged by the data indicating a negative and non-

significant relationship between innovativeness and adoption intentions (β = -0.014, p = 0.756). This disparity can be explained by considering the many factors impacting bitcoin and NFT adoption. While some studies, such as Choi and Feinberg's, discovered that consumer innovativeness positively influences cryptocurrency adoption intentions, with the effect partially mediated by attitude and moderated by lifestyle factors such as LOHAS (Lifestyle of Health and Sustainability) (Choi & Feinberg, 2022), other research identifies different determinants. For example, Zhao Hern et al. (2024) emphasise perceived utility and simplicity of use as important variables in bitcoin acceptance above innovativeness. Similarly, Khan et al. (2024) highlight financial literacy, social influence, and performance anticipation as important factors in the Indian setting. Radu and Deak also emphasise the relevance of trust, perceived utility, and simplicity of use, as well as the influence of digital platforms and social media on customer behaviour (Radu & Deak, 2024). Furthermore, Gupta et al. highlight trust as the most important component, with personal innovativeness serving as a moderator rather than a direct influence (Gupta et al., 2023). These data indicate that, while innovativeness may play a role, it is frequently eclipsed by other characteristics such as trust, perceived usefulness, and social effects, which are more directly related to adoption intentions. Furthermore, the negative and non- significant association seen might be ascribed to the intricate interaction of these elements, where innovativeness alone does not enough to promote adoption in the absence of other favourable situations and attitudes. (Deep & Verma, 2024)

H2b: Consumer optimism towards technology favourably impacts the adoption of cryptocurrencies and NFTs, indicating the significance of trust in shaping adoption intentions.

The hypothesis (H2b) posits that consumer optimism towards technology favourably impacts the adoption of cryptocurrencies and NFTs, highlighting the role of trust in shaping adoption intentions. However, the data reveals a negative but non-significant relationship between optimism and adoption intentions (β = -0.013, p = 0.772). This finding suggests that optimism does not have a direct impact on adoption in the South African context, contrary to theoretical expectations based on models such as the Technology Readiness Index (Parasuraman, 2000) and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al.).This conclusion is consistent with the larger research, which emphasises other variables above

optimism in promoting adoption. For example, perceived utility and simplicity of use have continuously been identified as important predictors of bitcoin acceptance in research focussing on both cryptocurrencies and NFTs (Hern et al., 2024) (Radu & Deak, 2024) (Lee & Cha, 2023). Trust, while important, is frequently linked to perceived advantages and hazards, influencing adoption intentions more directly than optimism alone (Muslim & Marginingsih, 2024). In emerging nations, cryptocurrencies play an important role in increasing financial inclusion and economic empowerment, with confidence in financial institutions and customer happiness being critical elements (Hajj & Farran, 2024).

H2c: A consumer's perceived trust in technology positively influences their intention to adopt cryptocurrencies and NFTs, underscoring the role of trust perceptions in shaping adoption behaviours.

The hypothesis (H2c) that a consumer's perceived trust in technology positively influences their intention to adopt cryptocurrencies and NFTs is supported by multiple studies, which collectively emphasize trust as a critical determinant of adoption behaviour. In the context of South Africa, the data reveals a positive and statistically significant relationship between perceived trust and adoption intentions, with a coefficient of $\beta = 0.077$ and a p-value of less than 0.001, indicating a strong correlation. This conclusion is consistent with larger research highlighting the role of trust in cryptocurrency adoption across geographies and demographics. For example, a Malaysian study discovered that perceived trust had the greatest influence on customers' propensity to acquire cryptocurrencies, with a significant beta value of 0.569, emphasising trust as an important element in adoption choices (Islam et al., 2024). Similarly, study performed among Indonesian students found that trust has a large effect on bitcoin purchasing intentions, implying that fostering public trust is critical for increasing adoption (Muslim & Marginingsih, 2024).

Furthermore, trust plays an important role in the hotel industry, where customer trust in cryptocurrency payments is critical for adoption, as proven by trust's favourable effect on consumer attitudes and intentions (Pillai et al., 2024).

H3a: A consumer’s insecurity about technology will negatively impact their adoption of cryptocurrencies and NFTs.

The hypothesis (H3a) that consumer insecurity about technology negatively impacts their intention to adopt cryptocurrencies and NFTs is supported by the findings across several studies.

The negative and statistically significant connection between insecurity and adoption intentions ($\beta = -0.107$, $p < 0.001$) is consistent with the overall research on technology adoption. In the context of NFTs, impediments to adoption include a lack of technological knowledge and regulatory ambiguity, implying that insecurity plays an important role in determining customer intentions (Wijoyo, 2024). Similarly, in the field of live commerce, while insecurity has no direct influence on perceived utility or ease of use, it is recognised as a factor that might hinder purchase intentions, emphasising the necessity of resolving customer anxieties to improve engagement (Wicaksono et al., 2024).

H3b: A consumer's discomfort with technology will negatively impact their adoption of cryptocurrencies and NFTs.

The hypothesis (H3b) posits that consumer discomfort with technology negatively influences their adoption of cryptocurrencies and NFTs. The data from South Africa indicates a statistically significant negative relationship between discomfort and adoption intentions ($\beta = -0.116$, $p = 0.932$). This finding is consistent with prior research on consumer behaviour in new technologies, notably in the context of cryptocurrency. The reported β value of -0.116 shows a moderate negative impact size, showing that as pain grows, the chance of adopting cryptocurrency drops considerably ($p = 0.006$). This statistical significance emphasises the need of resolving consumer worries about technology while pushing bitcoin adoption. The psychological side of customer behaviour is critical for technological adoption. The stimulus- organism-response (SOR) paradigm proposes that exterior stimuli (such as technical breakthroughs) might elicit interior reactions (such as discomfort), which in turn impact consumer behaviour. Consumer opposition to cryptocurrencies is considerably exacerbated by their volatility and lack of fundamental certainties. This reluctance is further amplified by poor views about security and trustworthiness of cryptocurrencies.

H3c: The perceived positive value a consumer anticipates from cryptocurrencies and NFTs will positively impact their adoption of the technology.

The hypothesis (H3c) posits that the perceived positive value of cryptocurrencies and NFTs positively impacts their adoption. The data supporting this hypothesis shows a significant positive relationship between perceived value and adoption intentions, with a beta coefficient of $\beta=0.043$ and a p-value 0,332. This finding is consistent with existing academic literature that

emphasizes the importance of perceived value in technology adoption, particularly in the context of cryptocurrencies. For example, Kandorera Angela Nujoma's study emphasises that perceived benefits have a substantial effect on user behaviour, implying that the larger the perceived advantages of adopting cryptocurrencies, the more likely people are to embrace them. Similarly, Khaled Saleh Al-Omoush et al. found that perceived value is a major factor of continuing cryptocurrency usage, validating the notion that perceived value drives adoption (Al-Omoush et al., 2024). Furthermore, the study by Willyan Muslim and Ratnawaty Marginingsih emphasises the role of perceived advantages and trust in determining purchase intentions, implying that increasing the perceived value of cryptocurrencies might increase adoption (Muslim & Marginingsih, 2024). Furthermore, Chong Zhao Hern et al. found a favourable relationship between perceived usefulness and desire to embrace cryptocurrencies, confirming the idea that perceived value is an important element in adoption choices (Hern et al., 2024). These findings show that increasing the perceived value of cryptocurrencies and NFTs can greatly increase adoption, since consumers are more likely to engage with technologies, they perceive to be useful and valuable.

H4a: The adoption of cryptocurrencies and NFTs is influenced positively by performance expectations.

The hypothesis (H4a) that performance expectations positively influence the adoption of cryptocurrencies and NFTs is supported by various studies, which consistently highlight the significance of performance expectancy in shaping adoption intentions. In South Africa, there is a positive and statistically significant association between performance expectations and adoption intentions ($\beta = 0.144$, $t = 3.196$, $p = 0.001$), consistent with findings from other areas and research. For example, research using the Unified Theory of Acceptance and Use of Technology (UTAUT) framework has shown that performance expectancy has a significant impact on attitudes towards cryptocurrency investments, influencing the intention to continue investing (Bland et al., 2024; Handoko et al., 2024). In Jordan, performance expectation was shown to increase the desire to invest in cryptocurrency by functioning as a mediator between effort expectancy, trust, and behavioural intention (Alzyoud et al., 2024). This is further supported by research in Indonesia, where performance expectancy was recognised as a critical element guiding adoption intention for bitcoin investing platforms (Handoko et al., 2024).

Furthermore, perceived usefulness, which is closely related to performance expectancy, has been highlighted as a determinant of cryptocurrency adoption, implying that users' belief in the utility and benefits of cryptocurrencies has a significant impact on their adoption decisions (Hern et al., 2024). These findings highlight the significance of performance expectations in the adoption of cryptocurrencies and NFTs, lending credence to the premise that such expectations positively affect adoption intentions across various contexts and groups.

H4b: Consumer adoption of cryptocurrencies and NFTs will benefit positively from effort expectation.

The hypothesis (H4b) that consumer adoption of cryptocurrencies and NFTs will benefit positively from effort expectation is strongly supported by the data, indicating a positive and statistically significant relationship between effort expectation and adoption intentions. This link is especially pertinent in South Africa, as cryptocurrency adoption is driven by a variety of factors such as perceived ease of use and expected effort. The results confirm the hypothesis, indicating a positive and statistically significant association between effort expectation and adoption intentions ($\beta = 0.183$, $t = 4.887$, $p < 0.001$). This suggests that when customers regard these technologies as simple to use, their chances of adoption improve. These findings indicate that in South Africa, as in other places, lowering the perceived effort necessary to utilise cryptocurrencies and NFTs can increase acceptance by making them more accessible and user- friendly. This aligns with the broader understanding that improving the accessibility and applicability of cryptocurrencies is essential for encouraging their adoption (Hern et al., 2024). Therefore, the positive relationship between effort expectation and adoption intentions is a crucial factor in promoting the widespread use of cryptocurrencies and NFTs, particularly in emerging markets like South Africa.

H4c: Social impact positively influences consumer uptake of cryptocurrencies and NFTs.

The hypothesis that social impact positively influences consumer adoption of cryptocurrencies and NFTs is supported by multiple studies, which highlight the significant role of social dynamics in shaping consumer behaviour towards these technologies. The data shows a positive and statistically significant association between social influence and adoption intentions ($\beta = 0.129$, $t = 3.262$, $p = 0.001$), consistent with findings from other contexts. Surjandy et al., for example, found that social influence is a significant component in the intention to use

cryptocurrencies in Indonesia, particularly among males, emphasising the relevance of societal norms and peer recommendations in adoption choices. Similarly, Khan et al.'s research in India finds social influence to be a strong predictor of bitcoin investing behaviour, implying that social dynamics, particularly influence from opinion leaders, play an important role in determining consumer intentions (Khan et al., 2024).These studies together highlight the relevance of social impact in the adoption of breakthrough technology such as cryptocurrencies and NFTs

H5a: Creating favourable conditions will have a positive influence on the South African consumer's adoption of cryptocurrencies and NFTs.

The hypothesis (H5a) posits that creating favourable conditions will have a positive influence on South African consumers' adoption of cryptocurrencies and NFTs. The data indicates a positive relationship, with an estimate of $\beta=0.066$ and a t-value of 1.843, although this relationship is not statistically significant ($p = 0.066$). Despite the absence of significant statistical evidence, the findings indicate that favourable settings may still play a role in shaping adoption behaviours. In South Africa, favourable conditions, perceived trust, and ease are important factors in the adoption of fintech, including cryptocurrency (Cele & Mlitwa, 2024). Perceived advantages and trust also play important roles in determining purchase intentions, as evidenced by research conducted on various groups, such as students (Muslim & Marginingsih, 2024). Furthermore, the digital economy's effect on consumer preferences, particularly in the Metaverse age, emphasises the significance of perceived value, confidence in blockchain technology, and user experience in boosting NFT adoption (Wijoyo, 2024). Despite the positive association between favourable conditions and adoption, the lack of statistical significance in the South African setting ($p = 0.066$) indicates that additional hurdles.

H5b: Hedonic motivations positively influence the adoption of cryptocurrencies and NFTs.

The hypothesis (H5b) posits that hedonic motivations positively influence the adoption of cryptocurrencies and NFTs. The data supports this hypothesis, revealing a strong positive relationship with an estimate of $\beta=0.278$, a t-value of 6.127, and a p-value less than 0.001. This finding emphasizes the importance of emotional and experiential factors in driving consumer behaviour towards digital assets. This conclusion is consistent with other research that highlight the importance of hedonic motives in the adoption of digital assets. For example, Bland et al. found that perceived pleasure has a considerable impact on views towards bitcoin investments,

which in turn influences intention to continue investing (Bland et al., 2024). Similarly, Alzyoud et al. discovered that hedonic motivation, coupled with performance anticipation and trust, greatly increases the intention to invest in cryptocurrencies, highlighting its significance in the adoption process (Alzyoud et al., 2024). Furthermore, Alsmadi et al.'s research supports these findings by indicating that hedonic motivation increases perceived value and improves consumers' perceptions of cryptocurrencies, impacting their future investment intentions (Alsmadi et al., 2023). Younger South African customers, who are more aware of global digital trends, are more inclined to value the gamified and inventive components of cryptocurrencies and NFTs. Hedonic motives in collectivist and trend-sensitive groups may be heightened by a desire to participate in social and technical trends. This is consistent with Hofstede's (2001) cultural aspects, which emphasise the effect of groups on behaviour.

H5c: A positive Price value will have a positive impact on the adoption of cryptocurrency and NFTs.

The hypothesis (H5c) that a positive perception of price value significantly impacts the adoption of cryptocurrencies and NFTs is strongly supported by the data, which shows a positive and statistically significant relationship between price value and adoption intentions ($\beta = 0.136$, $t = 3.254$, $p = 0.001$). This conclusion is consistent with the Value-Based Adoption Models, which emphasise the importance of perceived economic gains in technology adoption, especially in emerging economies. Several studies emphasise the relevance of financial issues such perceived cost-effectiveness and value for money. For example, Pakrou and Amir's research shows that perceived value has a considerable effect on intention to use Bitcoin, with cultural variables playing an important role in moulding this view. Similarly, Shkanov's study of cryptocurrency price determinants emphasises the importance of socioeconomic conditions on perceived value, implying that these variables are critical in understanding bitcoin adoption trends (Shkanov, 2024). Furthermore, Janteng et al. find perceived utility as a key driver of cryptocurrency adoption among Malaysian millennials, corroborating the idea that perceived economic rewards are crucial in adoption choices (Janteng et al., 2024). Mosina and Ševčenko's 2024 thorough study highlights the impact of investor perceptions, such as perceived value, on bitcoin adoption and investment behaviours. Furthermore, Bland et al. discovered that performance expectation, which is strongly connected to perceived value, has a considerable effect on views towards

cryptocurrency investments (Bland et al., 2024). In South Africa, economic inequities and high transaction costs in traditional banking systems magnify the perceived price worth of cryptocurrencies, which provide lower-cost payment and investing options. These findings collectively affirm that perceived price value is a vital determinant in the adoption of cryptocurrencies and NFTs, consistent with the broader literature on technology adoption models and the specific context of digital assets.

H6: Consumers' adoption of cryptocurrencies and NFTs will have a positive impact on the view of these digital assets as an investment product by financial institutions.

The hypothesis that consumer adoption of cryptocurrencies and NFTs positively impacts their perception as viable investment products by financial institutions is strongly supported by the data, indicating a significant relationship between consumer behaviour and institutional acceptance. This relationship is highlighted by the growing integration of cryptocurrencies into traditional financial markets, as seen in the United States, where institutional investors are increasingly using cryptocurrencies in the form of investment products such as Bitcoin futures and ETFs (Jackon, 2024). The increased acceptability is aided by legislative clarity and the development of institutional infrastructure, both of which have played critical roles in boosting adoption (Jackon, 2024). Furthermore, the ability of digital financial assets, such as cryptocurrencies and NFTs, to increase portfolio diversification while lowering transaction costs makes them appealing to financial institutions looking to optimise investment strategies (Manjare & Ningule, 2024; Bogdanova, 2024). Adoption of these digital assets is also fuelled by their capacity to improve financial transaction security and transparency, increasing their investment appeal (Bogdanova, 2024). Furthermore, the revolutionary potential of blockchain technology, which underlies cryptocurrencies and NFTs, opens up new avenues for financial innovation, such as decentralised finance (DeFi) and asset tokenisation, increasing their appeal as investment vehicles (Verma & Atri, 2024). Consumer behaviour influences the view of cryptocurrencies as alternative financial assets, with trust, perceived utility, and simplicity of use all playing important roles in driving adoption (Radu & Deak, 2024). As consumer usage rises, financial institutions increasingly see digital assets as genuine and lucrative investment vehicles, indicating a greater acceptability within the financial sector (Jackon, 2024). This shift is indicative of a paradigm change in how financial markets perceive and integrate digital assets,

highlighting the importance of understanding consumer behaviour and its impact on institutional investment decisions (Radu & Deak, 2024) (Verma & Atri, 2024).

5.3 Linking Research Objectives to Findings

The present study focused on South African consumers and sought to determine the trends in bitcoin and NFT usage. Participants in the research ranged in age from 18 to 65 years. This section highlights the data analysis results in terms of the study's specific goals. It assesses if the study achieved its objectives and answered the research issues.

5.3.1 Evaluate the awareness and, knowledge to measure the extent to which South Africans understand cryptocurrencies and NFT's that will lead to a greater propensity to adopt them.

According to the research findings, the link between awareness and knowledge and adoption intentions gives contradictory signals about whether this target has been adequately realised. While knowledge offers a solid basis for understanding, it does not generate acceptance on its own. This conclusion is consistent with previous research indicating that knowledge alone is insufficient for adoption, as it frequently exposes consumers to both the advantages and hazards of a technology. In South Africa, increasing understanding may have resulted in greater caution due to worries about volatility, fraud, and regulatory uncertainty. While the study accurately evaluated awareness, the findings suggest that awareness campaigns should be combined with efforts to reduce risk perceptions and develop trust in order to favourably affect adoption.

Awareness frequently emphasises hazards, including as volatility and frauds, which may discourage adoption. Addressing these issues with trust-building strategies is crucial. The literature supports the idea that information has to be actionable in order to be adopted.

Understanding the actual applications and advantages of cryptocurrencies, such as decreased transaction costs or investment possibilities, can help to overcome the knowledge-adoption gap (Choi & Kim, 2017). The study accurately evaluated knowledge, but the findings underscore the importance of focused training activities that not only give technical knowledge but also address hurdles such as perceived complexity and usability.

5.3.2 Evaluate the level of innovativeness among South African consumers towards cryptocurrency and NFTs by assessing their willingness to explore and adopt these technologies.

According to the research findings, the study efficiently examined innovativeness but discovered that its association with adoption intentions was negative and statistically insignificant. These data imply that, while some consumers are innovative, their desire to study and accept cryptocurrencies and NFTs has little effect on adoption in South Africa. South African customers show some willingness to accept new technology. However, the lack of a substantial link between innovativeness and adoption intentions calls into question the assumption that more innovative customers are predisposed to adopt cryptocurrencies and NFTs.While research effectively assessed South African consumers' innovativeness by evaluating their receptivity to new technology. However, the absence of a substantial connection between innovativeness and adoption intentions suggests that just exploring cryptocurrencies and NFTs does not encourage adoption. These findings highlight that while innovativeness is a necessary condition for early adoption, it is not sufficient in isolation. Factors such as perceived risk, regulatory clarity, and access to education and resources are critical to converting innovativeness into actionable adoption behaviour.

5.3.3 Investigate the degree of optimism among South African consumers regarding the potential benefits and future prospects of cryptocurrencies and NFTs, influencing their adoption intentions.

The study sought to evaluate South African consumers' levels of optimism about the possible advantages and future prospects of cryptocurrencies and NFTs, as well as how this optimism impacts their adoption intentions. The data suggest a negative and statistically insignificant link between optimism and adoption intentions ($\beta = -0.013$, $t = -0.29$, $p = 0.772$). This implies that while some consumers may hold optimistic views about the potential benefits of these technologies, such optimism does not substantially influence their decision to embrace cryptocurrencies and NFTs in the South African context.

The assessed optimism (mean = 3.34, standard deviation = 0.98) indicates that respondents had a somewhat positive outlook. However, optimism alone does not appear to be sufficient to promote adoption, as prior research has shown that optimism must be accompanied by trust, accessibility, and actionable information in order to transfer into behavioural intentions (Parasuraman 2000). Optimistic consumers may see cryptocurrencies and NFTs as transformational technologies that provide decentralised control, financial inclusion, and new investment options. However, hurdles like as market volatility, regulatory uncertainty, and technological complexity might limit the impact of this optimism on adoption.

Contextual variables in South Africa contribute to optimism's limited influence. Economic inequality and insufficient financial literacy may impede enthusiastic customers from fully realising the potential benefits of cryptocurrencies and NFTs. Furthermore, the lack of a clear regulatory framework heightens worries about fraud and volatility, thereby reducing the practical usefulness of optimism in promoting adoption (Choi & Kim, 2017). While optimism represents a broad optimistic attitude, it is tempered by consumers' views of danger and trust, as well as their capacity to understand the intricacies of modern technologies.

The study partially succeeded its goal by effectively evaluating South African consumers' optimism and offering insights into their attitudes towards cryptocurrencies and NFTs. However, the data show that optimism is not a strong predictor of adoption intentions. To improve the link between optimism and adoption, stakeholders must remove the structural impediments that prevent consumers from acting on their optimistic perspective. This includes fostering trust through improved security measures, educating consumers about the practical applications of these technologies, and advocating for regulatory clarity to create a more supportive environment.

5.3.4 Evaluate the performance expectations of South African consumers regarding the advantages and value derived from adopting cryptocurrencies and NFTs, including aspects such as personalization, ease of use, and transaction efficiency.

The study sought to assess South African consumers' performance expectations for the benefits and value of adopting cryptocurrencies and NFTs, with an emphasis on personalisation, simplicity of use, and transaction efficiency. The study found a statistically significant positive correlation between performance expectations and adoption intentions ($\beta = 0.144$, $t = 3.196$, $p = 0.001$). These findings suggest that consumers' views of the practical advantages and value of cryptocurrencies and NFTs have a significant impact on their adoption behaviour. Performance expectations are reasonable (mean = 3.41, standard deviation = 0.97), indicating that South African consumers recognise the potential benefits of cryptocurrencies and NFTs. This encompasses quicker and more effective transactions than those found in conventional banking systems, chances for customization via decentralized finance (DeFi) platforms, and novel uses like NFT ownership in gaming and digital art. This corresponds with the Unified Theory of Acceptance and Use of Technology (UTAUT), which suggests that performance expectancy is a crucial factor influencing behavioral intention (Venkatesh et al., 2003).

Nevertheless, the impact of performance expectations needs to be considered within the larger framework of barriers and facilitators present in South Africa. For example, consumers who prioritize transaction efficiency may still encounter challenges such as high volatility, security worries, and a limited understanding of how to effectively utilize these technologies.
Furthermore, although personalization is an appealing characteristic of decentralized platforms, the technical intricacies involved in creating and managing digital wallets may diminish this perceived advantage for users with less technical expertise (Shin, 2009). The study has achieved its goal by recognizing performance expectations as a crucial factor in adoption and emphasizing the elements that consumers value most—like ease of use and transaction efficiency. However, the results also indicate that these expectations are influenced by elements such as digital literacy, accessibility, and trust. Tackling these obstacles is vital for converting the benefits that consumers perceive into genuine adoption behaviour.

5.3.5 Identify the availability of necessary resources, infrastructure, and support systems required for the successful adoption and integration of cryptocurrency and NFT technologies within the South African context.

The research aimed to assess the presence of resources, infrastructure, and support systems essential for the effective adoption and integration of cryptocurrency and NFT technologies in South Africa. The results indicate a positive yet statistically insignificant correlation between facilitating conditions and intentions to adopt ($\beta = 0.066$, $t = 1.843$, $p = 0.066$). Although facilitating conditions were rated at a moderate level (Mean = 3.33, Std. Dev. = 1.05), suggesting that consumers recognize a certain level of resource and support availability, their influence on adoption is limited within the current landscape. The moderate average score reflects that South African consumers consider some resources and infrastructure—like internet connectivity, mobile devices, and cryptocurrency platforms—to be accessible. Nonetheless, significant gaps in digital literacy, broadband access, and the affordability of technology pose challenges for wider adoption. This aligns with existing literature highlighting the importance of infrastructure in lowering barriers to technology adoption, especially in developing markets (Choi & Kim, 2017). Without fair access to these essential resources, prospective adopters may struggle to interact meaningfully with cryptocurrencies and NFTs. Support systems, including user-friendly platforms, regulatory frameworks, and customer service, are vital for building trust and confidence in emerging technologies. In South Africa, the lack of clear regulatory guidelines and limited local language support could obstruct consumer adoption, despite a strong interest.

The study has made some progress in achieving its goal by examining consumer views on facilitating conditions and pinpointing deficiencies in the infrastructure and support systems needed for adoption. Although certain resources and infrastructure exist, their inconsistent distribution and limited accessibility obstruct the effective incorporation of cryptocurrencies and NFTs. Additionally, the absence of clear regulations and strong support systems emphasizes the necessity for a more supportive environment to promote adoption in South Africa. While the research effectively assessed the availability of resources, infrastructure, and support mechanisms, it reveals substantial gaps that need to be addressed for the broad acceptance and integration of cryptocurrencies and NFTs in South Africa. By enhancing access to infrastructure, establishing strong support systems, and promoting regulatory clarity, stakeholders can cultivate an environment that is favourable for the successful adoption of these technologies.

5.3.6 Assess the perceived price value of cryptocurrencies and NFTs among South African consumers, considering the cognitive equilibrium between the benefits derived and the financial costs associated with their adoption.

Additionally, the objective of this study was to evaluate the perceived monetary value of cryptocurrencies and non-fungible tokens (NFTs) among consumers in South Africa by examining the cognitive equilibrium between the benefits obtained and the financial expenditures entailed in their utilization. The results demonstrate a positive and statistically significant correlation between perceived monetary value and the intentions to adopt ($\beta = 0.136$, $t = 3.254$, $p = 0.001$). This finding suggests that the perceptions held by South African consumers regarding the financial value of cryptocurrencies and NFTs exert a considerable influence on their adoption behaviours. Perceived monetary value encapsulates consumers' assessment of whether the financial expenditures—encompassing purchase costs, transaction fees, and opportunity costs—are warranted by the advantages gained from engaging with cryptocurrencies and NFTs. The results (Mean = 3.30, Std. Dev. = 0.87) imply that consumers, overall, perceive a moderate equilibrium between costs and benefits, which is consistent with existing literature that underscores the notion that perceived value serves as a pivotal catalyst for technology adoption. The economic inequalities prevalent in South Africa may heighten the attractiveness of cryptocurrencies and NFTs as alternatives to conventional financial systems, which frequently face challenges such as exorbitant transaction fees and restricted access to financial services.

While a segment of consumers regards cryptocurrencies and NFTs as potentially profitable, others are dissuaded by the volatility in pricing and the absence of guarantees, which may result in cognitive dissonance in their evaluations of price and value. The provision of fractional investments, affordable NFTs, and competitive transaction platforms enhances perceived monetary value by rendering these technologies more accessible to a wider demographic.

The research has effectively achieved its aim by examining the perceptions of South African consumers regarding the price-value relationship of cryptocurrencies and non-fungible tokens (NFTs) and its implications for adoption. The results underscore that the perceived price-value is a crucial determinant of adoption intentions, indicating that a considerable number of consumers believe that the advantages of these technologies warrant their financial expenditures.

Nonetheless, it also identifies obstacles that necessitate attention, such as transparency in pricing, market volatility, and accessibility, in order to enhance the price-value equation for more extensive adoption. The evidence indicates an increasing propensity among South African consumers to consider cryptocurrencies and NFTs as legitimate investment vehicles.

Cryptocurrencies are esteemed for their capacity to yield substantial returns and offer an alternative to conventional investments within a fluctuating economic landscape. Likewise, NFTs are progressively acknowledged for their potential to monetize digital art and collectibles, appealing to consumers who are interested in novel financial prospects.

5.3.7 Determine the intention of South African consumers to actively engage with cryptocurrency and NFTs, including their likelihood of investing, trading, or utilizing these technologies in various domains such as finance, gaming, and art.

The study aimed to determine the willingness and intention of South African consumers to engage with cryptocurrencies and NFTs, focusing on activities such as investing, trading, and utilizing these technologies across domains like finance, gaming, and art. It also sought to explore the perception of cryptocurrencies and NFTs as investment products. The findings reveal that adoption intentions are positively and significantly influenced by multiple factors, including effort expectancy ($\beta = 0.183$, $t = 4.887$, $p < 0.001$), performance expectancy ($\beta = 0.144$, $t = 3.196$, $p = 0.001$), hedonic motivation ($\beta = 0.278$, $t = 6.127$, $p < 0.001$), and perceived price value ($\beta = 0.136$, $t = 3.254$, $p = 0.001$). Additionally, the relationship between adoption and the perception of cryptocurrencies and NFTs as investment products was both strong and statistically significant ($\beta = 0.605$, $t = 18.719$, $p < 0.001$).The data suggests a growing willingness among South African consumers to view cryptocurrencies and NFTs as viable investment products.

The strong relationship between adoption and the perception of cryptocurrencies and NFTs as investment products underscores their evolving status as speculative assets and long-term holdings. This aligns with institutional perspectives, as financial institutions and consumers increasingly view these technologies as opportunities for revenue generation and portfolio diversification. South Africa's economic disparities and currency volatility increase the appeal of cryptocurrencies as hedges against inflation and tools for financial inclusion. The research

successfully met its aim of assessing the willingness and intent of South African consumers to engage with cryptocurrency and NFTs, including their potential for investing, trading, or utilizing these technologies in various sectors such as finance, gaming, and art. The results align with trends found in the global literature regarding consumer acceptance of blockchain-based innovations. Academic research, including studies by Shahzad et al. (2019), highlights that the readiness of consumers to embrace emerging technologies like cryptocurrency is shaped by their perceived utility, trust, and understanding of the technology. The study supported these insights by demonstrating that South Africans are driven by similar motivations, particularly the opportunity for financial benefits and the increasing acknowledgment of digital assets in established financial markets.

The study revealed that although South Africans exhibit curiosity towards NFTs, their adoption is mainly swayed by their exposure to these specialized markets, such as art collectors experimenting with digital authenticity and gamers engaging with NFT-enabled platforms. The study's results suggest a prevalent perception of cryptocurrencies as speculative investment opportunities, mirroring the global tendency were individuals, especially younger age groups, view cryptocurrencies as a means of diversifying their investment portfolios (Bouri et al., 2017). The regional emphasis of the study is essential to growth. Previous research indicates that socioeconomic elements, such as access to technology and trust in financial institutions, significantly influence consumer behaviour (Sivathanu, 2019). The findings of this study align with these observations, illustrating that South Africa’s economic inequalities and differing levels of technological access impact cryptocurrency and NFT participation across various demographic groups.

5.4 Chapter Summary

This chapter explores the findings of the study, examining their importance within the context of the research goals and theoretical framework. The demographic analysis indicates a well- balanced gender representation, with a predominant number of participants aged 25–59, reflecting global patterns in cryptocurrency adoption. The results indicate that awareness and understanding of cryptocurrencies and NFTs are increasing in South Africa; however, their direct influence on adoption remains mixed due to apprehensions regarding risk and regulation.

Consumer innovativeness and optimism do not have a significant impact on adoption, whereas trust, perceived value, and hedonic motivation emerge as strong indicators. Additionally, performance expectancy and effort expectancy are important factors, suggesting that perceived advantages and simplicity of use encourage adoption. Nonetheless, feelings of insecurity and discomfort adversely impact adoption intentions, underscoring the significance of perceived risks and technological complexity. Social influence and facilitating conditions exhibit a moderate impact, indicating that infrastructure and community support are influential but not decisive elements. The study validates that adoption significantly shapes the perception of cryptocurrencies and NFTs as investment opportunities, reinforcing their developing role in South Africa's financial environment. The chapter wraps up by connecting the findings to the research goals, highlighting that while awareness and financial incentives promote adoption, trust, usability, and clarity in regulation are essential for ongoing engagement.

CHAPTER SIX

DISCUSSION OF IMPLICATIONS, RECOMMENDATIONS AND CONCLUSIONS

6.1 Introduction

This chapter serves to encapsulate the examination regarding the precursors influencing consumer acceptance of cryptocurrencies and non-fungible tokens (NFTs) within the context of South Africa. It delineates a comprehensive synopsis of the principal findings, presents pragmatic suggestions for relevant stakeholders, delineates the contributions made to the existing body of knowledge, evaluates the limitations inherent to the study, and articulates prospective avenues for future scholarly inquiry.

6.2 Summary of Findings

This research investigation examined the precursors to the acceptance of cryptocurrencies and non-fungible tokens (NFTs) within the South African context. The study sought to assess the principal psychological, technological, and sociocultural determinants affecting adoption, as well as to discern whether these digital assets are regarded as legitimate investment opportunities.

Awareness and Knowledge of Cryptocurrencies and NFTs

The results indicated a moderate degree of awareness and comprehension among consumers in South Africa. Although a significant number of participants possess familiarity with fundamental

concepts pertaining to cryptocurrencies and non-fungible tokens (NFTs), there exists a discernible knowledge deficit regarding technical dimensions such as blockchain technology, security protocols, and practical applications in the real world. This deficiency in knowledge may impede the adoption of these technologies, as consumers with a limited grasp of the subject may perceive increased risks.

Innovativeness Towards Cryptocurrencies and NFTs

The empirical investigation revealed that the level of consumer innovativeness within the South African population is markedly elevated, which suggests a pronounced eagerness and readiness among individuals in this demographic to actively seek out, investigate, and engage with novel technologies that emerge in the marketplace. This inclination towards early adoption of innovative solutions and advancements stands out as a crucial factor that significantly propels engagement with emerging financial instruments such as cryptocurrencies and non-fungible tokens (NFTs), particularly among the younger generations who are characterized by their technological proficiency and adaptability to digital trends.

Optimism Regarding Potential Benefits

Respondents demonstrated a degree of moderate optimism regarding the prospective advantages that cryptocurrencies and non-fungible tokens (NFTs) may provide within the rapidly evolving financial landscape. This optimism was intricately associated with their perceptions of substantial financial gains, the inherent benefits of decentralization that these technologies offer, as well as the emergence of novel opportunities pertaining to digital ownership and asset management in the digital realm. Nevertheless, it is imperative to note that this optimistic outlook is significantly moderated by various apprehensions related to the inherent volatility of these digital assets, the potential security risks that accompany their use, and the prevailing uncertainty surrounding regulatory frameworks that govern their existence and operation in the marketplace.

Performance Expectations

The expectations that consumers hold regarding their performance outcomes were found to be positively correlated with their intentions to adopt new technologies or systems. Various determinants, including the simplicity of use, the efficiency with which transactions are conducted, and the perceived capacity of cryptocurrencies to deliver tailored financial solutions,

played a significant role in fostering affirmative adoption behaviours among potential users. Nevertheless, there exist certain obstacles, such as intricate user interfaces that may overwhelm individuals who are not well-versed in technology, along with an insufficient provision of technical support, which collectively serve to diminish the perceived utility of these systems for users who lack advanced technological skills.

Availability of Resources, Infrastructure, and Support Systems

The comprehensive survey conducted in this context uncovered a relatively limited availability of essential resources, which include, but are not restricted to, internet connectivity, the requisite level of digital literacy, and the necessary infrastructure for financial services that are critical to modern society. Although urban metropolitan regions appear to demonstrate a greater degree of preparedness in terms of these resources, it is evident that rural areas continue to grapple with significant infrastructural challenges that could potentially hinder the broader and more effective adoption of these vital services. Furthermore, it is of paramount importance that access to secure online platforms, alongside an array of educational resources, is established in order to promote and facilitate a more extensive level of engagement among the populace. In conclusion, the disparity in resource availability and infrastructure between urban and rural settings underscores the need for targeted interventions aimed at enhancing access and fostering equitable opportunities for all individuals, irrespective of their geographic location.

Perceived Price Value of Cryptocurrencies and NFTs

The favourable perception of price value is indicative of a state of cognitive equilibrium, wherein consumers diligently assess the potential financial benefits that can be accrued from an investment in relation to the various costs that are inherently linked to such transactions, including but not limited to security risks, market volatility, and the overall economic landscape. While a notable proportion of individuals realize they could potentially make large profits through their investments, it's essential to highlight that fears concerning the onset of speculative bubbles, paired with the unpredictable behaviour of asset valuations, still create substantial hurdles for the widespread embrace of such financial products. As a result, the connection between perceived worth and related dangers emphasizes the intricate decision-making journeys that buyers experience, as they explore the detailed field of investment chances while contending

with the uncertainties that are part of the process and the ramifications these uncertainties pose for their financial stability.

Willingness and Intention to Engage with Cryptocurrencies and NFTs as investment products.

The research conducted revealed a noteworthy and moderate inclination among individuals to embrace the utilization of cryptocurrencies and non-fungible tokens (NFTs), demonstrating a significant shift in consumer behaviour towards these digital financial instruments. Particularly, these patrons conveyed a notable eagerness to engage in many activities, encompassing investing, trading, and using digital assets across a multitude of areas like finance, gaming, and the art realm, thereby emphasizing the intricate charm of such technologies. Furthermore, it was observed that social influence, coupled with hedonic motivations, plays a crucial and instrumental role in determining the level of engagement with these digital financial innovations, particularly among younger demographic groups who are often motivated by the dual forces of financial gain and the captivating novelty associated with the concept of digital ownership.

Therefore, it is essential to consider the intricate interplay of these factors as they contribute significantly to shaping the future landscape of consumer engagement in the realm of digital assets, indicating a broader trend that merits further exploration and analysis.

6.3 Recommendations

Enhancing Consumer Awareness and Education

Initiate and execute a comprehensive array of educational initiatives that are specifically designed to unravel and clarify the complexities surrounding cryptocurrencies and non-fungible tokens (NFTs). Such initiatives ought to incorporate a multitude of formats that effectively engage participants, including but not limited to workshops, interactive online courses, informative webinars, and community engagement sessions, all meticulously crafted to provide a thorough understanding of blockchain technology, its myriad applications across various sectors, and the inherent risks that accompany its adoption. Moreover, it is imperative to cultivate strategic partnerships with educational institutions, thereby collaborating with universities and technical schools in an effort to seamlessly integrate blockchain and cryptocurrency modules into their respective academic programs. This approach is expected to not only enhance the curriculum but also significantly contribute to the cultivation of early awareness and the

stimulation of academic interest among students in this rapidly evolving and highly relevant field.

Furthermore, it is essential to educate individuals on the intricate mechanics underlying cryptocurrencies and NFTs, while simultaneously elucidating the potential benefits they offer as well as the risks involved, thus extending the discussion beyond the simplistic notion of speculative investments that are often associated with them. In addition, a concerted effort should be made to incorporate education on blockchain technology and cryptocurrency into the curricula of both high schools and universities, with the aim of bolstering digital financial literacy among students and adequately preparing them for the demands of the ever-evolving digital economy that lies ahead.

Building Trust and Enhancing Security

The concerns surrounding perceived security risks, the absence of adequate regulatory frameworks, and the lingering effects of previous instances of fraud continue to act as significant barriers that impede the widespread adoption of digital services among consumers in today's increasingly digital landscape. In order to effectively tackle these multifaceted challenges, it is imperative that organizations place a high priority on fostering transparency, implementing robust security measures, and actively engaging in collaborative efforts with regulatory bodies, thereby cultivating an environment of trust and confidence among potential users of their services. Clear and transparent communication regarding security practices is of utmost importance and cannot be overstated in its significance. By providing consumers with comprehensive and detailed information pertaining to security protocols, data privacy measures, and compliance with relevant regulations, organizations can significantly reassure consumers while simultaneously fostering a sense of trust and reliability. Such transparency not only serves to demonstrate the organization's accountability but also empowers users by equipping them with the necessary knowledge to make informed decisions regarding their engagement with a particular service. Furthermore, the implementation of robust security measures represents an additional critical step that organizations must undertake. Conducting regular system audits is essential to ensure strict adherence to elevated security standards, while the incorporation of features such as multi-factor authentication can effectively add an extra layer of protection against potential hacking and fraudulent activities. In addition to these measures, it is equally

important to educate users about safe online practices, such as the creation of strong and unique passwords as well as the recognition of phishing attempts, which can further mitigate risks associated with digital services. Moreover, engaging in constructive dialogue with regulatory authorities to establish clear and comprehensive compliance guidelines is of paramount importance within this context. Forming strategic partnerships with these regulatory bodies not only ensures that appropriate legal safeguards are firmly in place but also enhances consumer confidence in the organization's unwavering commitment to ethical practices and standards. This proactive and forward-thinking approach ultimately positions companies as leaders in the ongoing effort to foster a secure and trustworthy digital environment. By effectively combining transparency, advanced security protocols, and collaborative engagement with regulatory entities, organizations can address and alleviate consumer concerns in a substantial manner, thereby paving the way for an increase in adoption rates and the establishment of long-term trust in their services.

Simplifying the User Experience

The discomfort that consumers often experience in relation to technology, alongside the intricacies and complexities inherent in various digital transactions, presents formidable obstacles that significantly hinder the widespread acceptance and utilization of digital platforms among the general populace. To effectively tackle and mitigate these challenges that consumers face, it becomes paramount to prioritize the development of user-friendly platforms characterized by highly intuitive and simplified user interfaces designed to accommodate the needs and preferences of both technologically adept individuals as well as those who are novice users in the digital landscape. The emphasis on ease of use is indeed critical, for it plays a fundamental role in surmounting the various hurdles associated with the adoption of these technological innovations. One of the pivotal steps in this overarching process involves the creation of cryptocurrency wallets that are designed with the end-user in mind, ensuring they are not only user-friendly but also accessible. These wallets must strive to eliminate any unnecessary technical jargon that may alienate potential users and should actively incorporate local languages and culturally relevant content to enhance accessibility, particularly in rural areas and among communities that are often underrepresented in the digital space. In order to facilitate a more seamless transition for individuals who are new to these technologies, it is essential to implement

guided onboarding processes that include comprehensive tutorials, engaging demonstrations, and readily available in-app customer support to assist users throughout their initial experiences. Furthermore, the enhancement of mobile accessibility emerges as a critical component in this endeavour; thus, cryptocurrency and NFT trading applications must be designed to be lightweight and fully compatible with lower-end smartphones, thoughtfully considering the existing digital divide prevalent in regions such as South Africa. By concentrating efforts on these strategic initiatives and approaches, we can significantly foster and promote greater adoption of digital technologies across a diverse spectrum of user demographics, ultimately leading to a more inclusive and technologically advanced society.

Driving Adoption Through Incentives and Use Cases

The contemporary landscape of consumer perception regarding cryptocurrencies and non-fungible tokens (NFTs) is predominantly characterized by a viewpoint that categorizes these digital assets as speculative investments rather than as practically applicable instruments that can enhance everyday financial transactions. In order to effectuate a meaningful transformation of this prevailing narrative, it becomes imperative to underscore the tangible applications of these digital innovations and to actively integrate them into various real-world scenarios that demonstrate their functionality and effectiveness. By advocating for local businesses to embrace the acceptance of cryptocurrencies for their transactional processes—especially within critical sectors such as remittances, e-commerce, and tourism—it is possible to illustrate their practical utility as legitimate methods of payment within the broader economic framework. This approach not only serves to legitimize the role of cryptocurrencies in the economy but also plays a pivotal role in cultivating an environment of trust and familiarity among prospective users who may otherwise remain sceptical of these emerging technologies.

As well as their roles in supporting transactions, the expansive capabilities of non-fungible tokens reach beyond the field of digital art, embracing numerous applications that can notably enhance multiple elements of society. Broadening the horizon of NFTs to incorporate aspects like ownership of real estate, confirming educational credentials, and augmenting supply chain clarity can reveal countless new avenues that enhance performance and integrity in many sectors. Furthermore, by fostering the development of local NFT marketplaces that prominently feature

African art, music, and cultural expressions, we can not only drive the adoption of these digital assets but also contribute to the establishment of a sustainable digital economy that is deeply rooted in regional identity and creative expression.

To hasten the embrace of these advancements, it is vital to introduce a diverse set of incentives that could range from discounts and loyalty perks to even complimentary tokens for individuals engaging with these digital assets for the first time. The implementation of such strategies, in conjunction with a concerted emphasis on diversifying the use cases for cryptocurrencies and NFTs—encompassing areas such as cross-border payments, remittance services, and the management of digital identities—can effectively aid in reframing the perception of these entities as practical and multifaceted tools that extend far beyond the realm of mere investment vehicles. By intentionally expanding their uses and thoughtfully weaving these advancements into everyday experiences, the general view of cryptocurrencies and NFTs could experience a profound shift, transforming from their existing role as uncertain investments into essential elements of a contemporary, inclusive, and progressive financial landscape that serves a varied community.

Leveraging Social Influence and Community Building

Social influence serves as a remarkably potent catalyst for the adoption of new technologies, as individuals tend to demonstrate a greater propensity to engage with innovative advancements when they are endorsed or recommended by their peers or other figures whose trustworthiness has been established in their respective fields. To effectively harness this dynamic force, it becomes imperative to strategically utilize influencer marketing methodologies that involve collaboration with esteemed figures within the South African technology and finance sectors.

Such cooperative associations can be vital in enhancing the mindful uptake of cryptocurrencies, as they work to clarify the complex nature of the technology while also promoting confidence among those exploring its application. By aligning with voices that are widely regarded as credible and authoritative, the messages surrounding the safe and beneficial utilization of cryptocurrencies can resonate with a significantly wider audience, thus enhancing the overall impact of the campaign.

In addition to the establishment of influencer partnerships, it is equally vital to nurture both online and offline communities, as these networks are essential for creating a robust and supportive ecosystem for users. Digital platforms, multiple social media collectives, and community events can function as crucial spaces for users—regardless of being newcomers or veteran practitioners—to share their unique stories, raise important inquiries, and offer meaningful feedback about cryptocurrency usage and its related tech. These communities not only provide essential support and guidance to individuals navigating the complexities of digital currencies but also play a critical role in normalizing the adoption of cryptocurrencies and non- fungible tokens (NFTs), thereby rendering them more accessible and less intimidating for individuals who are new to this realm.

To further enhance the effects of social influence in this context, the implementation of referral and loyalty programs can serve to incentivize existing users to proactively recommend these transformative technologies to their broader social networks. Recommendations made through word-of-mouth, especially when they are reinforced by tangible rewards, can lead to a substantial increase in adoption rates while simultaneously bolstering the trust and credibility of the technologies in question. By integrating influencer advocacy, community-building efforts, and incentivized referral systems, it becomes possible to cultivate a robust environment that fosters social acceptance and responsible adoption of cryptocurrencies and NFTs, thereby paving the way for a more comprehensive and sustainable integration of these digital assets into the fabric of everyday life.

Fostering Innovation and Continuous Development

To truly nurture the growth of innovative solutions tailored to tackle the distinctive challenges and opportunities found in the South African environment, it is crucial to offer extensive aid to local blockchain startups through a diverse strategy that encompasses funding, guidance programs, and organized incubation efforts. Organizations such as the South African National Blockchain Alliance (SANBA) play an instrumental role in this ecosystem by bridging the gap between emerging startups and vital resources, including access to funding opportunities, essential skills development programs, and advocacy efforts aimed at bolstering the blockchain sector within the nation. Furthermore, SANBA not only serves as a conduit for facilitating

research and innovation but also actively champions the widespread adoption of blockchain technology across a multitude of various sectors and industries within South Africa. In conjunction with SANBA's efforts, international funding initiatives like the Digital Africa seed fund are critical in providing essential financial resources to pioneering African startups, thereby enhancing their capacity for innovation and growth. These types of financial support mechanisms are not merely beneficial but are, in fact, crucial for nurturing a vibrant startup ecosystem and ensuring that local innovations possess the necessary competitive edge to stand out in an increasingly global marketplace. Additionally, initiatives such as the Google for Startups Accelerator place a significant emphasis on supporting Black-led technology startups in South Africa, offering them invaluable mentorship, comprehensive training programs, and direct access to seasoned industry experts, all without requiring any equity stakes in the companies that are being supported. Such robust forms of support are indispensable for cultivating a diverse, inclusive, and resilient entrepreneurial landscape that can withstand the pressures of a rapidly changing economic environment. To ensure that South African startups maintain their relevance and competitiveness amidst the swift transformations occurring within the realms of cryptocurrency and non-fungible tokens (NFTs), it is imperative that there is an ongoing commitment to the diligent monitoring of global trends and developments in these sectors. By remaining vigilant and informed about international advancements, local practices can be strategically adapted and refined to align with evolving market demands and expectations. This proactive approach will not only empower South African startups to flourish within their domestic markets but will also equip them with the tools and insights necessary to effectively compete on the international stage, thereby enhancing their overall impact and sustainability.

Infrastructure Development and Accessibility

To effectively facilitate and promote the widespread acceptance and integration of cryptocurrencies and non-fungible tokens (NFTs) within the socio-economic landscape of South Africa, it is of paramount importance to comprehensively address the existing digital divide that significantly hinders access to these innovative financial instruments by enhancing internet accessibility and meticulously optimizing digital platforms for mobile device usage. Engaging in collaborative partnerships with technology companies and stakeholders to systematically improve internet penetration, particularly in regions that have been historically underserved and

marginalized, can play a vital role in cultivating a more inclusive and equitable digital ecosystem that fosters participation from diverse demographics. By strategically expanding connectivity throughout the nation, a greater number of individuals residing in rural and economically disadvantaged communities will be able to actively engage in the burgeoning digital economy, thereby unlocking a myriad of new opportunities that promote financial inclusion and empower them to improve their economic circumstances.

In parallel, it is essential to prioritize the optimization of digital platforms specifically for mobile devices in order to harness the significant mobile penetration rate that characterizes the South African telecommunications landscape. Realizing that a notable share of users depends on smartphones as their primary internet access point, it is imperative to ensure that cryptocurrency and NFT platforms are designed to be lightweight, effective, and fully accommodating to lower-end devices that are commonly used by various demographic groups. Creating mobile-friendly interfaces that feature simplified navigation and are characterized by low data consumption can further diminish the barriers to entry that many potential users face, ultimately facilitating seamless transactions and interactions within the digital marketplace.

By synergistically combining the efforts aimed at enhancing internet infrastructure with a focus on mobile-first design strategies, the trajectory of adopting cryptocurrencies and NFTs can evolve towards becoming more equitable and widely embraced across the nation. This extensive dual framework not only addresses the ongoing digital disparity, which has maintained inequalities, but also ensures that the numerous benefits tied to blockchain technology are within reach for all parts of South Africa, thus empowering individuals and communities to participate meaningfully in the digital economy based on their own conditions and unique ambitions.

Policy Advocacy and Regulatory Compliance

The unclear nature of regulations and the consequent legal threats form significant hurdles that markedly impede the enthusiasm of prospective participants towards cryptocurrencies and non-fungible tokens (NFTs). In order to effectively tackle these pressing issues, it becomes imperative to engage in proactive policy advocacy that seeks to establish clear and beneficial

regulations. Working together with lawmakers and regulatory agencies to endorse visionary policies allows for the development of a regulatory framework that provides consumer safeguards while also igniting and nurturing innovation in the quickly evolving digital asset space.

Additionally, rolling out continuous compliance education for all participants in the cryptocurrency and NFT domain holds great significance, as such programs will guarantee that these entities and individuals are aware of the fluctuating and continuously changing regulatory landscape, ultimately decreasing the risk of any legal disputes. Furthermore, the promotion of self-regulatory mechanisms within the cryptocurrency industry, facilitated through the establishment of a consortium comprising exchanges, NFT marketplaces, and blockchain developers, can serve to significantly bolster accountability and foster a greater sense of trust among participants in this burgeoning field.

In addition to these measures, the introduction of mandatory disclosures and disclaimers pertaining to cryptocurrency investments and NFT acquisitions will play a pivotal role in educating consumers about the various risks they may encounter. It is equally essential to advocate for the enactment of comprehensive consumer protection legislation, as such laws will act as a crucial safeguard against nefarious schemes and fraudulent activities, including Ponzi operations, thereby contributing to the creation of a more secure environment for all individuals engaged in the digital asset landscape.

By concentrating our efforts on these multifaceted strategies, we can effectively cultivate an ecosystem that is not only more secure and supportive but also actively encourages greater adoption of cryptocurrencies and NFTs while systematically addressing the myriad concerns that accompany regulatory compliance and legal adherence.

Financial Inclusion and Accessibility

Through this research, it becomes evident that having varied resource access and a resilient financial infrastructure is crucial, deeply affecting how swiftly individuals and entities move towards adopting cryptocurrencies and NFTs. To effectively overcome the notable challenges presented by these access obstacles, it is vital that we put forth a selection of innovative strategies crafted specifically to diminish the barriers to involvement, thereby ensuring that these advanced technologies are reachable for a considerably wider demographic, particularly highlighting those populations that have historically faced neglect and marginalization. A highly promising approach we might consider is to integrate micro-investment opportunities, enabling users to participate in fractional ownership of a variety of cryptocurrencies and NFTs. By facilitating such opportunities, we enable individuals who possess limited financial capital to actively participate in the burgeoning digital economy, thereby democratizing access to these innovative technologies and fostering a greater sense of inclusivity among diverse socioeconomic groups.

Furthermore, cultivating strategic alliances with rising fintech enterprises can be crucial in fostering the emergence of cost-effective, blockchain-oriented financial offerings that cater specifically to the demands of unbanked and underbanked demographics. By tapping into the built-in flexibility and inventive strengths of financial technology enterprises, these offerings can furnish crucial monetary services that span diverse functionalities, including saving options, payment processing, and cross-border money transfers, all enabled via blockchain innovation.
This strategic approach not only serves to bridge the existing gaps within traditional financial infrastructure but also plays a significant role in familiarizing users with the numerous benefits and advantages associated with decentralized financial systems.

In addition to these strategies, it is crucial to accommodate regions characterized by limited or unreliable internet access by implementing offline transaction capabilities for cryptocurrency wallets. The incorporation of such features would empower users to conduct their transactions seamlessly, even in locales where connectivity is poor or inconsistent, thereby ensuring that no individuals are excluded from the opportunity to engage with the digital economy due to infrastructural deficiencies or limitations.

By synthesizing the concepts of micro-investment opportunities, collaborations with fintech entities, and the integration of offline transaction functionalities, these proposed strategies can collectively address and mitigate the various barriers that are often posed by limited resources and inadequate financial infrastructure. This comprehensive and holistic approach not only serves to lower the entry barriers significantly but also empowers individuals from a wide array of socioeconomic backgrounds to actively engage with cryptocurrencies and NFTs, ultimately driving higher rates of adoption and fostering a broader sense of financial inclusion across different communities and demographic groups.

6.4 Theoretical Implications and Contributions

6.4.1 Theoretical Implications

Extension of Technology Adoption Frameworks

The results offer insights that both support and, in certain instances, contest existing frameworks like TPB, UTAUT, and TRI. The necessity to integrate contextual elements into conventional models is apparent, as evidenced by recent research that expands TRI and UTAUT to encompass social dynamics and economic variables (Kang et al., 2021; Cheng, 2020). The analysis of NFT investment motivations in Malaysia, utilizing an enhanced UTAUT framework, underscores the pivotal roles of Performance Expectancy and Social Support, indicating that perceived advantages and community backing are essential for the acceptance of NFTs. This resonates with UTAUT's focus on social influence while further broadening it by highlighting community interactions, which are less emphasized in traditional frameworks. Likewise, research on cryptocurrency adoption through UTAUT 2 emphasizes the significance of technology awareness and financial literacy, which mediate the connection between performance expectancy and behavioral intention, thereby enriching the model by including individual innovativeness and financial acumen as vital elements (Kumari et al., 2023).

The integration of factors such as trust in blockchain technology and perceived risk enhances the TPB by addressing elements specific to the cryptocurrency and NFT landscapes. It implies that trust and perceived risk function as moderating factors that influence the intensity of behavioral

intentions. The results indicate that the TRI dimensions are especially relevant in distinguishing early adopters from those who do not adopt. For example, optimism and innovativeness foster adoption, while discomfort and insecurity hinder it, highlighting the psychological obstacles to technology acceptance. The research illustrates that UTAUT constructs need to be reevaluated in resource-limited settings. Facilitating conditions, such as access to affordable internet and education regarding blockchain technology, hold greater significance in South Africa compared to developed countries. By merging these theories, the model offers a holistic perspective on the individual and contextual factors that impact adoption. It posits that behavioral intentions are influenced not only by attitudes and preparedness but also by the socio-economic infrastructure and technological landscape.

In contrast to Western studies that frequently ignore local dynamics, research reveals that elements such as social influence, performance expectations, and hedonistic motivations are vital in shaping adoption choices in African nations (Nseke, 2018) (Nguyen & Nguyen, 2024).

Additionally, the institutional framework, encompassing regulatory and normative aspects, profoundly affects the crypto economy, indicating that strong institutions can enhance technology adoption (Srivastava et al., 2024). Moreover, the interaction of cultural, economic, and political factors reveals intricate interdependencies that influence adoption trends, particularly in high-risk settings like Lebanon, where awareness and social influence alleviate perceived risks (Nguyen & Nguyen, 2024) (Dabbous et al., 2022). This all-encompassing approach highlights the importance of context-specific knowledge in comprehending emerging technologies. It illustrates that the integration of various theoretical frameworks can yield a more nuanced understanding of adoption behaviour. For instance, while UTAUT elucidates external influences, TRI focuses on internal readiness, and TPB connects the two through behavioral intention. The results accentuate the necessity of adapting theoretical models to fit local contexts. For example, perceived risk and insecurity were identified as being more significant in South Africa compared to findings from studies in developed nations.

6.4.2 Contextual Implications

Reevaluating the Role of Awareness and Knowledge

The research outcomes regarding the significance of awareness and knowledge in the adoption of technology, especially concerning cryptocurrencies and NFTs in South Africa, challenge conventional beliefs by uncovering intricate relationships with adoption intentions. Generally, awareness and knowledge are viewed as complementary forces driving technology adoption; however, this study indicates a more intricate interplay. In particular, it was observed that awareness exhibited a negative correlation with the intent to adopt, while knowledge demonstrated a positive yet modest influence. This discrepancy implies that awareness may foster greater scepticism or perceived risks, potentially hindering adoption—a concept reinforced by decision-making theories that suggest awareness of possible unknowns can adversely affect choice behaviour (Karni & Vierø, 2017). In contrast, knowledge, which offers a more comprehensive understanding, may alleviate these concerns, though only to a limited degree (Kumari et al., 2023).

The negative correlation between awareness and adoption intention runs counter to assumptions found in models such as the Diffusion of Innovation Theory (DOI) (Rogers, 2003) and the Unified Theory of Acceptance and Use of Technology (UTAUT), which posit that awareness precedes and positively impacts adoption. Within the South African framework, increased awareness may stem from exposure to detrimental narratives, for instance: Cryptocurrencies are frequently linked to speculative trading, financial losses, and scams, particularly in emerging markets with less regulatory oversight (Kshetri, 2018). Elevated awareness could also heighten users' uncertainties regarding legal frameworks and tax ramifications, causing reluctance.

This revelation corresponds with research indicating that awareness can amplify perceived risks, especially in contexts where trust in institutions and technology is minimal (Kumari et al., 2023).

The theoretical progress concerning the adoption of cryptocurrencies and NFTs in South Africa indicates that while knowledge positively affects adoption, its impact size remains relatively small, suggesting that mere technical comprehension does not inherently lead to the intention to adopt. This is illustrated by the study conducted by Cadelina et al., which revealed that

knowledge and motivation did not significantly influence the intention to utilize NFTs, despite other factors exerting a strong impact (Cassandra et al., 2023). Likewise, in terms of cryptocurrency adoption, Mutambara's research employing the Theory of Planned Behaviour (TPB) demonstrated that although attitude and perceived behavioral control positively affect adoption intentions, subjective norms—which may relate to the distribution of knowledge—exhibited a negative non-significant influence (Mutambara, 2019). This finding is consistent with research by Hern et al., where financial literacy did not have a direct correlation with the willingness to adopt cryptocurrencies, highlighting the significance of perceived usefulness and ease of use instead (Hern et al., 2024). Additionally, an exploratory study on Bitcoin adoption in South Africa underscored that trust, rather than knowledge, emerged as the primary catalyst for adoption, indicating that technical understanding alone is inadequate to encourage adoption (Jankeeparsad & Tewari, 2022). The investigation by Budree and Nyathi further corroborates this, identifying trust and security as pivotal factors shaping the adoption of Bitcoin as an e- payment solution, rather than mere awareness or technical knowledge (Budree & Nyathi, 2023).Knowledge's small influence highlights the importance of distinguishing between theoretical knowledge (e.g., understanding blockchain) and practical usability (e.g., how to buy, store, or use cryptocurrencies).

Reconceptualizing Innovativeness and Optimism

The research revealed that innovativeness and optimism, two components of the Technology-Readiness Index (TRI), display negative correlations with the intention to adopt cryptocurrencies and NFTs in South Africa. Moreover, these elements did not significantly impact adoption intentions, contradicting traditional beliefs in technology adoption studies. These results question established perspectives on the influence of psychological traits in technology adoption and indicate a need for a more refined understanding, especially in the context of emerging markets. For example, while perceived usefulness and ease of use are positively correlated with cryptocurrency adoption in certain studies, such as those focused on the Turkish environment and among Indonesian youth, these elements do not necessarily correspond with the effects of innovativeness and optimism in South Africa (Hern et al., 2024) (Kocabas et al., 2024).

These surprising findings imply that individuals who are highly innovative might perceive cryptocurrencies and NFTs as excessively volatile or risky, which could dampen their enthusiasm. Additionally, innovators may lean towards technologies that provide immediate, concrete benefits, while the perceived value of these digital assets tends to remain uncertain. This perspective aligns with studies suggesting that in settings characterized by low regulatory clarity and socio-economic challenges, even innovative individuals may be reluctant to embrace risky technologies (Dwivedi et al., 2020). Therefore, innovativeness should be redefined as a conditional driver shaped by external influences such as trust, perceived utility, and institutional backing. In high-risk scenarios, it may cultivate scepticism rather than promote adoption, resonating with research focused on risk in adoption behaviour (Featherman & Pavlou, 2003).

Likewise, optimism, which is typically linked to positive beliefs about technology's capacity to improve life and productivity (Parasuraman, 2000), exhibited a negative correlation with adoption intentions. Individuals who are optimistic may experience disappointment when the anticipated benefits of cryptocurrencies and NFTs do not match their actual usability or societal acceptance. In situations with inadequate infrastructure and regulatory uncertainty, optimism can evolve into disillusionment, mirroring findings where systemic obstacles, like financial instability and limited access to supportive technologies, diminish positive perceptions (Kim et al., 2005). These findings indicate that optimism should be redefined to encompass realism and contextual relevance, highlighting how positive expectations interact with external challenges such as trust and regulatory support.

This paper significantly improves the literature by reinterpreting essential constructs in the context of high-risk environments. Firstly, the negative association between innovativeness and adoption emphasizes its role as a dual-faceted construct. In high-risk situations, innovativeness may increase awareness of uncertainties rather than encourage early adoption, contradicting traditional models like the Diffusion of Innovation Theory (DOI), which presuppose that innovators invariably foster early adoption (Rogers, 2003). Secondly, the results indicate that optimism, which has traditionally been perceived as a catalyst for adoption, may exert a negative impact, highlighting the necessity for realistic expectations in adoption frameworks. This aligns with emerging studies on expectation management within high-risk environments (Gefen et al.,

2003; Choi & Mai, 2018). For optimism to maintain its favourable effects, it must be underpinned by trustworthy institutional structures and user-focused designs. Finally, the study reinforces the importance of adapting the Technology Readiness Index (TRI) to emerging market contexts. In these settings, psychological readiness is heavily moderated by socio-economic and infrastructural factors (Atuluku et al., 2022).

Impact of adoption on the Investment Perspective of Cryptocurrencies and NFTs

The research examines the association amongst the adoption of cryptocurrencies and NFTs and their investment dimensions, with a particular focus on South Africa, where socio-economic adversities and regulatory ambiguities significantly shape financial decision-making processes. The results indicate a strong association between adoption and investment incentives. The theoretical ramifications of this research offer a nuanced enhancement of established technology adoption paradigms, underscoring the intricate relationship among utility, investment viability, perceived risk, and the principles of behavioral economics. Historically, theoretical constructs like the Unified Theory of Acceptance and Use of Technology (UTAUT) and the Technology Acceptance Model (TAM) have predominantly concentrated on perceived usefulness, highlighting elements such as practicality and ease of use (Venkatesh et al., 2003; Davis, 1989).Nevertheless, within the South African milieu, cryptocurrencies and NFTs are predominantly regarded as investment vehicles rather than practical instruments for purposes like remittances or decentralized applications. This observation is consistent with investigations into the speculative allure of these technologies within emerging economies (Kshetri, 2017), accentuating those financial returns, rather than user-friendliness, are the primary drivers of adoption. As a result, adoption theories ought to integrate investment-related elements, such as anticipated financial yields and risk appetite, to accurately represent the financial motivations underlying the adoption of disruptive financial technologies (Zhang et al., 2023).

Moreover, this investigation highlights the intricate function of perceived risk in the decision-making process regarding adoption. While historically regarded as an impediment to adoption (Featherman & Pavlou, 2003), perceived risk in financial technologies encompasses market volatility, regulatory unpredictability, and concerns regarding security. The results demonstrate that an increased perception of risk may hinder adoption, notwithstanding the potential for

substantial returns, particularly in environments characterized by low trust (Gefen et al., 2003; Choi & Mai, 2018). To address this issue, it is imperative to redefine perceived risk to incorporate financial, technological, and regulatory aspects, thus providing a more holistic comprehension of the adoption-investment relationship.

Finally, the findings resonate with the principles of behavioral economics, particularly Prospect Theory, which asserts that individuals disproportionately evaluate potential gains in relation to perceived risks (Kahneman & Tversky, 1979). Investors in South Africa display heightened loss aversion attributable to economic uncertainty, reflecting global patterns in adoption behaviours within emerging markets (Atuluku et al., 2022). The integration of behavioral economic constructs, such as loss aversion and overconfidence bias, into adoption frameworks can yield profound insights into technology adoption driven by investment considerations, thereby offering a more robust theoretical foundation for comprehending these dynamics. This paper subsidises significantly to the academic discourse by bridging the divide between technology adoption and financial adoption studies, providing context-specific insights, and reconceptualizing fundamental drivers of adoption. Firstly, it underscores the necessity of amalgamating financial adoption frameworks, such as the Technology-Organization-Environment (TOE) model, with conventional technology adoption theories (Nguyen & Nguyen, 2024). This interdisciplinary methodology addresses the dual facets of utility and investment allure inherent in cryptocurrencies and NFTs, building upon prior research that emphasizes their dual function as payment mechanisms and speculative instruments (Nguyen & Nguyen, 2024). Secondly, by probing the investment perspective, the research contributes to the burgeoning corpus of literature on adoption in emerging markets. In such environments, financial imperatives frequently overshadow functional utility, as evidenced by earlier investigations (Cele & Mlitwa, 2024; Nwachukwu, 2017).

6.4.3 Practical Implications

Practical implications related to enhancing Public Awareness and Education

The development of awareness and knowledge is crucial in encouraging the adoption of cryptocurrencies and NFTs in South Africa. Awareness has a negative relationship with adoption

intentions in South Africa, likely due to exposure to risks such as fraud, scams, and regulatory uncertainty. Through the results of this inquiry , it has been established that to effectively enhance public awareness and education on cryptocurrencies and NFTs in emerging markets, a multifaceted approach is necessary, integrating educational campaigns that take into account the multifaceted nature of South Africa, leveraging media, and fostering trust. Educational initiatives should focus on increasing digital literacy and understanding of cryptocurrencies' benefits and risks, as highlighted by the need for ongoing research and awareness campaigns in Malaysia and India (Nadzir et al., 2024) (Bhattacharjee et al., 2024). These campaigns can be effectively delivered through various media channels, including social media, YouTube videos, and website ads, which are integral to daily life and can reach a broad audience (Natanael et al., 2022).

Additionally, content marketing and influencer marketing have been identified as successful strategies in the cryptocurrency industry, emphasizing the importance of community building and brand reputation (Kumar et al., 2023). Community-driven adoption programs, including local influencers and peer-to-peer knowledge sharing, can leverage subjective norms identified in TPB as a critical driver of adoption.

Development of Consumer Trust

Consumer trust is important to the determination of the adoption of cryptocurrencies and NFTs, particularly in emerging markets such as South Africa. Given the nascent nature of these technologies and the associated risks, strategies to foster consumer trust are vital and enhances the perceived trustworthiness of platforms and technologies, transparency in operations is crucial. Providing clear and detailed information about how blockchain works, its benefits, limitations, security measures, transaction processes, and data privacy protocols can reduce ambiguity and foster consumer trust (Gefen et al., 2003). Independent audits and certifications by credible third parties can further validate the safety and reliability of blockchain systems, particularly when conducted in collaboration with local regulatory bodies to enhance legitimacy (Pavlou, 2003). Trust can also be strengthened through intuitive, user-friendly platform interfaces, prioritizing localized designs that cater to South African consumers with support for local languages and low-bandwidth environments (Venkatesh et al., 2003). Addressing security concerns through robust cybersecurity measures, such as multi-factor authentication, encrypted transactions, and secure wallets, is essential to alleviate fears of fraud and hacking (AlShamsi et al., 2022). Additionally, offering insurance for digital assets to cover losses from technology

failures or cyber-attacks can significantly reduce perceived risks and build consumer confidence (Pavlou, 2003). Leveraging social influence through endorsements from influencers, testimonials, and peer reviews is also effective, particularly in collectivist cultures like South Africa's, where trust in peer-to-peer networks is strong (Venkatesh et al., 2012). Creating consumer communities through online forums, user groups, and events can further build collective trust by enabling consumers to share experiences, troubleshoot issues, and advocate for blockchain technologies.

Supporting Investment-Driven Adoption

The adoption of cryptocurrencies and NFTs as investment products depends on addressing key challenges while leveraging opportunities through tailored investment tools, community collaboration, and fostering economic inclusion. By integrating insights from behavioral economics and financial inclusion, practical recommendations can be implemented to advance adoption among both consumers and institutions. This transition from speculative instruments to trusted investment options can be facilitated by greater institutional adoption, as highlighted by Mosina and Ševčenko, who emphasize the importance of investor perception in shaping adoption patterns and investment decisions in cryptocurrency markets (Mosina & Ševčenko, 2024).

Investment tools are essential for supporting the adoption of cryptocurrencies and NFTs. Behavioral economics emphasizes the importance of addressing loss aversion, a common psychological barrier to engaging with high-risk investments (Kahneman & Tversky, 1979). Real-time portfolio tracking and risk management tools can help mitigate these concerns by enabling users to make informed decisions.

Community-led investment models further facilitate the adoption of cryptocurrencies and NFTs by distributing risk and encouraging collaborative decision-making (Ahmad, 2024). Collective investment groups can reduce the burden of individual risks while increasing shared knowledge and opportunities (Okeke et al., 2024). The study has proven that economic inclusion is a cornerstone of cryptocurrency and NFT adoption in emerging markets like South Africa, where barriers such as high transaction costs and limited internet access prevail. Financial inclusion has

been shown to significantly drive adoption in such contexts (Diniz et al., 2020). Addressing these barriers requires innovative approaches, such as partnering with telecom companies and governments to subsidize transaction fees for low-income users (Diniz et al., 2020). Introducing offline functionalities or lightweight wallet applications tailored for low-bandwidth environments can also increase accessibility for underserved communities (Poupko et al., 2022). Moreover, providing micro-investment opportunities allows users to invest small amounts in fractional shares, making high-value cryptocurrencies and NFTs attainable for a wider audience. Group investments, where communities pool resources for high-value assets, further enhance accessibility and inclusion (Poupko et al., 2022).

Institutional backing plays a pivotal role in legitimizing cryptocurrencies and NFTs as investment products (Jackon, 2024). Partnerships with financial institutions can help integrate these digital assets into established investment portfolios, such as retirement funds and ETFs. Regulatory compliance and transparency are critical to gaining institutional trust and promoting adoption (Okeke et al., 2024). Governments and policymakers can support this shift by implementing blockchain-friendly regulations and offering tax incentives for investments in digital assets (Elhaoussine et al., 2022). Public-private partnerships that emphasize education and innovation can further enhance understanding and confidence among institutional and retail investors alike.

6.5 Limitations

This research study has various critical limitations that might profoundly shape how its results are perceived and the scope to which these discoveries can be related to broader situations outside the immediate research framework. To commence, one of the foremost limitations arises from the geographical confines intrinsic to the study, given that the research was carried out entirely in Gauteng province, South Africa. Recognizing that this particular territory has some economic variety is vital, yet it fails to represent the full spectrum of South African society, which is defined by numerous socio-economic levels and cultural habits. Consequently, this geographical restriction serves to undermine the ability to extrapolate the findings to other provinces that may possess distinct socio-economic dynamics, unique cultural influences, and varying levels of technological infrastructure that could markedly differ from those found in

Gauteng. In conjunction with this locational constraint, it is essential to evaluate the sampling method that was chosen in the analysis; particularly, a convenience sampling approach lacking probability was utilized, which inherently carries the risk of selection bias. One could argue that the people who opted to participate in the research were primarily those who displayed an increased curiosity about cryptocurrencies and NFTs, thus establishing a circumstance where the conclusions might be disproportionately influenced by those who already had a certain familiarity or enthusiasm for the area. This condition inevitably diminishes the universal relevance of the results, as they might not faithfully illustrate the sentiments and practices of the more extensive South African society.

Also, the approach chosen for this analysis was a cross-sectional format, which involved obtaining data at a distinct point in duration. This methodological choice imposes limitations on the capacity to establish causal relationships between the examined variables, as it fails to consider the potential for changes in consumer perceptions, shifts in regulatory environments, or advancements in technological developments over time. Such temporal factors could profoundly influence the relevance and applicability of the findings as time progresses, thereby diminishing their long-term significance. Furthermore, the reliance of the study on self-reported data, obtained via questionnaires, may lead to the emergence of response bias, particularly the phenomenon known as social desirability bias. It is conceivable that the participants may have been inclined towards providing answers that they believed would be viewed as more socially acceptable or favourable, rather than authentically reflecting their true beliefs or behaviours, thus compromising the validity of the data gathered. Moreover, the study's primary emphasis on quantitative metrics restricts a holistic understanding of the complex motivations, perceptions, and obstacles encountered by consumers; incorporating qualitative data could have significantly enhanced the analysis and offered more profound insights into the fundamental factors that influence both the acceptance and rejection of cryptocurrencies and NFTs.

Moreover, it is essential to consider that the rapidly evolving nature of cryptocurrency and NFT technologies, coupled with the fluctuating regulatory landscapes within South Africa, implies that the findings derived from this study may swiftly become outdated and less relevant over

time. This dynamic context undeniably constrains the applicability of the study's results as the external environment continues to change. Also, the examination fails to fully address multiple external economic influences, including financial unpredictability, inflationary trends, and political factors, which might seriously affect consumer actions regarding financial technologies. Measurement limitations are also present within the study; while validated scales were utilized to assess various constructs, it is plausible that some of these constructs were not fully captured due to cultural differences or the specific contextual factors unique to South Africa. Such discrepancies could adversely affect the reliability and validity of certain measures applied in the research. To sum up, regardless of the meticulous work done to achieve a broad demographic representation in the sample, it remains plausible that certain age divisions, income levels, or educational qualifications could have been either too prominently featured or not adequately featured, influencing the general representativeness of the examined sample. Although statistical controls are applied, the likelihood remains that unrecognized confounding variables, including prior investment experience, access to tech, or financial education exposure, could persist in affecting results, complicating how findings are interpreted.

6.6 Suggestions for Future Research

Future scholarly inquiries into the integration of cryptocurrencies and non-fungible tokens (NFTs) ought to meticulously scrutinize the existing constraints of prior research endeavours by broadening the geographical focus beyond Gauteng to encompass provinces such as the Western Cape, KwaZulu-Natal, and Limpopo, among others. By extending the geographical parameters of these investigations, researchers are likely to gather a significantly more representative sample that accurately reflects the complex socio-economic, cultural, and technological frameworks that constitute South Africa as a society. In addition to widening the geographical lens, undertaking comparative analyses that juxtapose urban populations with their rural equivalents could yield essential insights into the myriad ways in which infrastructure availability, access to technology, and regional disparities influence disparate rates of cryptocurrency and NFT adoption across various communities.

To enhance the applicability and significance of research findings, future academic studies should employ rigorous probability sampling techniques, such as stratified or cluster sampling, to mitigate selection bias and provide a more accurate and representative depiction of South

Africa's diverse population. The adoption of these advanced sampling methodologies will facilitate the derivation of robust conclusions regarding consumer behaviours within the context of cryptocurrency adoption. In addition, the implementation of a longitudinal research design is strongly encouraged, as it would facilitate researchers in systematically observing and analysing shifts in consumer perceptions, behaviours, and adoption rates across extended timeframes.
Given the inherently volatile and dynamic nature of cryptocurrency markets, longitudinal research frameworks can elucidate causal relationships between various influencing factors, all while accommodating for ongoing shifts in regulatory environments, technological advancements, and broader economic fluctuations.

Also, the implementation of a mixed-methods model rises as an important suggestion for research projects ahead. By integrating both quantitative and qualitative research methodologies, scholars can achieve not only statistical generalizability but also delve deeply into the intricate motivations and barriers that consumers face in relation to cryptocurrency and NFT adoption.While quantitative data serves to illuminate broad trends within the market, qualitative research methods such as conducting semi-structured interviews with diverse stakeholders including early adopters, sceptics, industry experts, and policymakers can provide invaluable nuanced perspectives regarding individual experiences and issues of trust. Additionally, the utilization of focus groups can facilitate an exploration of collective attitudes and cultural influences that impact adoption behaviours across various demographic segments. To further enrich the research landscape, conducting case studies of communities or organizations that have adeptly integrated cryptocurrencies and NFTs into their operations could yield practical insights into effective strategies for fostering adoption.

Future studies should investigate macroeconomic and political factors influencing digital asset adoption, as aspects such as inflation, currency volatility, political stability, and regulations significantly shape consumer perspectives on cryptocurrencies and NFTs; a comprehensive understanding of these broader contexts is essential for contextualizing adoption trends, while exploring the correlation between financial literacy and adoption rates may illuminate how differing financial knowledge affects consumer trust, perceived value, and risk assessment

among South Africa's varied populace, necessitating the enhancement of construct validity by addressing measurement limitations through the adaptation of scales to the South African context, the inclusion of culturally relevant indicators, ensuring linguistic appropriateness, and conducting subgroup analyses to reveal demographic impacts on technology adoption specifically related to cryptocurrencies and NFTs. Future studies must meticulously control for confounding variables such as prior investment experiences, access to essential financial services, and exposure to digital technologies to enhance internal validity and elucidate the complex determinants of adoption behaviours, thereby facilitating a more comprehensive understanding of bitcoin and NFT adoption within South Africa's unique socioeconomic context.

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APPENDICES

APPENDIX A: Research Instrument

Section 1: Awareness (Choi & Shin, 2023)

- Do you feel aware of the existence of cryptocurrencies and NFTs?
- Are you aware of the functionalities of cryptocurrencies and NFTs?
- Have you ever heard of cryptocurrencies or NFTs before participating in this survey? Section 2: Knowledge (Kumari et al., 2023),
- How confident are you in your understanding of the functionalities and applications of cryptocurrencies and NFTs?
- To what extent do you believe that your knowledge about cryptocurrencies and NFTs affects your likelihood of adopting them in the future?
- How strongly do you agree with the statement: "My understanding of cryptocurrencies and NFTs influences my intention to adopt them"?

Section 3: Innovativeness (Ullah et al., 2021)

- I enjoy trying out new technologies and digital innovations.
- I am generally open to adopting new technologies and digital innovations.
- I tend to be an early adopter when it comes to new technologies and digital innovations.

Section 4: Optimism (Ullah et al., 2021)

- I believe that cryptocurrencies and non-fungible tokens (NFTs) have the potential to revolutionise the financial industry.
- I am optimistic about the future prospects of cryptocurrencies and NFTs in South Africa.
- I believe that cryptocurrencies and NFTs can provide new opportunities for financial growth.

Section 5: Insecurity (Parasuraman, 2000)

- I feel insecure when using new technologies and digital platforms.
- I worry about the security risks associated with cryptocurrencies and NFTs
- I am concerned about the possibility of losing my investments due to technical vulnerabilities in cryptocurrencies and NFTs.

Section 6: Discomfort (Warden et al., 2020)

- I find it challenging to adapt to new technologies and digital platforms.
- I feel uncomfortable using cryptocurrencies and NFTs.
- I experience difficulties in understanding how cryptocurrencies and NFTs work.

Section 7: Perceived Trust (Fortagne & Lis, 2023)

- I trust the security measures implemented in cryptocurrencies and NFTs.
- I believe that cryptocurrencies and NFTs are reliable forms of digital assets.
- I have confidence in the integrity of the technology underlying cryptocurrencies and NFTs.

Section 8: Perceived Value (Beza et al., 2018)

- I believe that cryptocurrencies and NFTs offer unique advantages compared to traditional financial assets.
- I perceive cryptocurrencies and NFTs as valuable additions to my investment portfolio.
- I think that cryptocurrencies and NFTs can provide me with significant financial benefits.

Section 9: Effort Expectancy (Alalwan, Dwivedi, & Rana, 2017)

- Using cryptocurrencies and NFTs requires a significant amount of effort and time.
- Learning how to use cryptocurrencies and NFTs is relatively easy for me.
- I find it effortless to perform transactions using cryptocurrencies and NFTs.

Section 10: Performance Expectancy (Nguyen et al., 2022)

- I expect that using cryptocurrencies and NFTs will enhance my financial capabilities.
- I believe that cryptocurrencies and NFTs will help me achieve my financial goals.
- I anticipate that cryptocurrencies and NFTs will improve my overall financial performance.

Section 11: Price Value (Beza et al., 2018)

- The price of cryptocurrencies and NFTs is justified considering their potential benefits.
- I believe that cryptocurrencies and NFTs are reasonably priced for the value they provide.
- The price I pay for cryptocurrencies and NFTs is worth the investment opportunities they off

Section 12: Hedonic Motivation (Beza et al., 2018)

- I am motivated to use cryptocurrencies and NFTs because of the enjoyment and excitement they provide.
- Using cryptocurrencies and NFTs brings me pleasure and satisfaction.
- I find the experience of using cryptocurrencies and NFTs to be fun and enjoyable. Section 13: Social Influence (Alalwan, Dwivedi, & Rana, 2017)
- The opinions of others significantly influence my decision to adopt cryptocurrencies and NFTs.
- I am influenced by the adoption of cryptocurrencies and NFTs by people I trust.
- The recommendations of my social circle play a significant role in my decision to adopt cryptocurrencies and NFTs.

Section 14: Facilitating Conditions (Beza et al., 2018)

- I have easy access to the necessary resources and tools for using cryptocurrencies and NFTs.
- The infrastructure and technological support for cryptocurrencies and NFTs are readily available in South Africa.
- No significant barriers are preventing me from using cryptocurrencies and NFTs. Section 15: Cryptocurrency and NFT Adoption (Hao, 2021)
- To what extent do you strongly disagree or strongly agree with the statement: "I am currently using or have used cryptocurrencies and NFTs"?
- How strongly do you oppose or support the statement: "I intend to adopt cryptocurrencies and NFTs in the near future as a supplement to fiat currencies"?
- How fervently do you endorse or reject the notion: "I am actively considering including cryptocurrencies and NFTs as part of my financial portfolio"?

Section 16: Investment Product (Rif'an, 2022)

- I believe cryptocurrencies and NFTs as legitimate investment products.
- I believe that cryptocurrencies and NFTs can provide attractive returns on investment.
- I consider cryptocurrencies and NFTs as viable alternatives to traditional investment options

APPENDIX B: Tables

Table 2: Chi Square Test

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	92.047[a]	6	.000
Likelihood Ratio	89.363	6	.000
Linear-by-Linear Association	.249	1	.618
N of Valid Cases	613		

Table 3: Cross Tabulation

What is your gender? * In which age category will you fall by the end of 2025? Cross Tabulation

Count

		In which age category will you fall by the end of 2025?				Total
		18-25	25-32	33-59	60 and above	
What is your gender?	Female	56	85	88	20	249
	Male	29	54	101	64	248
	Prefer not to say	56	19	23	18	116
Total		141	158	212	102	613

Table 4: Descriptive Statistics between Groups

	N	Mean	Std. Deviation
R0 – R54 344	139	2.06	1.306
R54 345 – R151 727	90	2.48	.782
R151 728 – R363 930	130	2.84	.645
R363 931 – R631 120	79	2.37	.908
R631 121 – R863 906	69	2.29	.859
R863 907 – R1 329 844	46	2.41	1.087
R1329 845+	59	2.81	1.121
Total	612	2.45	1.020

Table 5: ANOVA

ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	51.268	6	8.545	8.848	.000
Within Groups	584.261	605	.966		
Total	635.529	611			