A FRAMEWORK FOR BEHAVIOURAL INTENTIONS TO ADOPT CRYPTOCURRENCY AMONG PUBLIC UNIVERSITY STUDENTS IN THE KINGDOM OF SAUDI ARABIA

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by

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LIST OF ABBREVIATIONS

BI	Behavioral Intention
DLT	Distributed Ledger Technology
EE	Effort Expectancy
FC	Facilitating Condition
IDT	Innovation Diffusion Theory
IS	Information System
PE	Performance Expectancy
PU	Perceived Usefulness
RAD	Relative Advantage
MM	Motivational Model
SCT	Social Exchange Theory
SI	Social Influence
TAM	Technology Acceptance Model
TPB	Theory of Plan Behavior
UTAUT	Unified Theory of Acceptance and Use of Technology

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RANGKA KERJA NIAT PERILAKU UNTUK MENERIMA GUNA MATA WANG KRIPTO DALAM KALANGAN MAHASISWA UNIVERSITI AWAM DI ARAB SAUDI

ABSTRAK

Ramai individu percaya bahawa mata wang kripto mempunyai potensi untuk mengganggu sistem kewangan tradisional. Ini terbukti dalam beberapa kajian komersial dan ilmiah yang menunjukkan pelaburan besar yang dibuat oleh individu dalam mata wang kripto yang berbeza seperti Bitcoin dan Ethereum walaupun terdapat risiko seperti nilai yang tidak menentu dan kekurangan peraturan. Oleh itu adalah penting untuk memahami niat individu terhadap mata wang kripto untuk mengelakkan mereka daripada sebarang kerugian kewangan atau bagi pihak berkuasa untuk membuat keputusan termaklum dalam membuat dasar, strategi untuk menerima pakai mata wang kripto. Untuk itu, kajian terdahulu telah dirujuk dan beberapa faktor yang mempengaruhi niat individu untuk mengguna pakai mata wang kripto telah dikenal pasti. Walau bagaimanapun, kajian tersebut dijalankan dalam konteks tertentu seperti negara atau secara konsep sahaja. Memandangkan setiap konteks adalah berbeza kerana mempunyai ciri yang unik, penemuan kajian lepas tidak boleh digeneralisasikan kepada setiap negara di seluruh dunia. Oleh itu, masih terdapat jurang penyelidikan untuk memahami niat tingkah laku individu terhadap mata wang kripto dalam konteks negara yang berbeza. Bagi mengisi jurang ini, kajian ini bertujuan untuk memahami faktor-faktor yang mempengaruhi niat tingkah laku pelajar universiti awam untuk menerima pakai mata wang kripto di Kerajaan Arab Saudi (KSA). Pelajar universiti awam dipilih sebagai sampel untuk kajian ini kerana

mereka mewakili sebahagian besar populasi muda di KSA, yang dianggap sebagai pengguna awal inovasi seperti mata wang kripto. Kajian itu menggunakan versi lanjutan Teori Bersepadu untuk Penerimaan dan Penggunaan Teknologi (UTAUT) sebagai teori asas. Data dikumpul melalui tinjauan dalam talian dan dianalisis dengan perisian SmartPLS dan IBM SPSS. Hasil kajian menunjukkan bahawa kesedaran, jangkaan prestasi, jangkaan usaha, pengaruh sosial dan keselamatan secara signifikan mempengaruhi niat tingkah laku pelajar universiti awam untuk menerima pakai mata wang kripto dalam KSA. Keputusan juga menunjukkan bahawa kesediaan teknologi dan celik kewangan menyederhanakan hubungan faktor yang mempengaruhi niat tingkah laku. Kajian ini telah menyumbang secara teori dan praktikal dalam badan ilmu sedia ada. Kajian itu bukan sahaja mereplikasi penemuan kajian lepas mengenai niat individu untuk menerima pakai mata wang kripto, tetapi ia juga meluaskan dan mengesahkan model UTAUT dalam konteks KSA. Hasil kajian ini akan memberi faedah kepada pembuat dasar, pengamal, pengawal selia, dan pihak berkuasa kerajaan untuk membangunkan dasar dan strategi yang lebih baik untuk mata wang kripto di KSA.

A FRAMEWORK FOR BEHAVIOURAL INTENTIONS TO ADOPT CRYPTOCURRENCY AMONG PUBLIC UNIVERSITY STUDENTS IN THE KINGDOM OF SAUDI ARABIA

ABSTRACT

Many individuals believe that the cryptocurrencies have the potential to disrupt the traditional financial system. This is evidenced in several commercial and scholarly studies that show a significant investment made by individuals in different cryptocurrencies like Bitcoin and Ethereum despite the associated risks such as volatility in value and a lack of regulations. Although, cryptocurrency is a rapidly growing digital asset and its investment potential remain uncertain. Both pros and cons of cryptocurrencies can cause problems for individuals. Therefore, it is essential to understand individuals' intention toward cryptocurrency to prevent them from any financial loss or for the authorities to make informed decision in policymaking, strategies for adoption of cryptocurrency. By examining individual intentions, this study seeks to provide valuable insights into the behavioural drivers and barriers affecting cryptocurrency adoption. The study used a quantitative research method with developing a survey questionnaire. Using a purposive sampling technique, the study targeted the students in the Saudi Arabian universities. The study used SPSS software for demographic and descriptive statistics and Smart PLS for testing validity, reliability and research hypotheses. To achieve this, past research studies have identified several factors that influence behavioural intentions of individuals to adopt cryptocurrency. However, those studies are conducted either in a specific context e.g., country or are conceptual. Despite progress in understanding cryptocurrency adoption, financial

literacy and technology readiness's moderating roles in culturally unique contexts like Saudi Arabia still needs to be explored. Studies have focused on direct factors like awareness, effort expectancy, and security without adequately exploring how individual capabilities and preparedness affect these relationships. By studying the relationship between financial literacy, technology readiness, and cryptocurrency adoption, this study seeks to fill these gaps and better understand Saudi Arabian user intentions. To fill this gap, this study aims to understand the factors influencing behavioural intentions of public university students to adopt cryptocurrencies in the Saudi Arabia. Public university students are chosen as the population for this study because they represent the youth in Saudi Arabia who are early adopters of innovation like cryptocurrency. The study uses an extended version of the existing Unified Theory for Acceptance and Use of Technology (UTAUT) as a foundational theory. The results of the study show that awareness, performance expectancy, effort expectancy, social influence, and security significantly influence the behavioural intentions of public university students to adopt cryptocurrency in Saudi Arabia. The results also show that the technology readiness and financial literacy moderate the relationship of influencing factors and behavioural intention. The study contributes theoretically and practically into the existing body of knowledge. The study not only replicates the findings of the past studies on individuals' intention to adopt cryptocurrency, but it also extends and confirms the UTAUT model in the context of Saudi Arabia. The results of the study would benefit the policy makers, practitioners, regulators, and government authorities in developing better policies, and strategies for the adoption of cryptocurrency in Saudi Arabia.

CHAPTER 1

INTRODUCTION

1.1   Introduction

This chapter unfolds with an exploration of the background, providing context to the multifaceted interplay of cryptocurrency and Saudi Arabia. Section 1.3 delves into the specifics of cryptocurrency within the Saudi Arabian context, emphasizing economic diversification, the efficiency and security of digital payments, the implications for Islamic finance, and the role in fostering financial inclusion. The subsequent sections illuminate the core elements of the research, starting with the problem statement (Section 1.4) that articulates the challenges and gaps motivating the inquiry. Sections 1.5 and 1.6 outline the precise research objectives and questions, offering a clear roadmap for the investigation. The Scope of the Study (Section 1.7) defines the boundaries within which the research unfolds. The Significance of the Study (Section 1.8 and 1.9) is expounded upon, emphasizing both theoretical contributions and practical significance. A defined set of key terms is presented in Section 1.10, providing clarity to crucial concepts. The Organization of the Study (Section 1.11) offers insights into the structural flow of the thesis. Section 1.12 summarizes the key points, setting the stage for the comprehensive exploration that follows.

1.2   Background of the Study

The usage and exchange of information and money by economic agents has evolved in the digital age. The ability to use a mobile device to access the Internet is crucial. The widespread usage of electronic payments and the development of

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Distributed Ledger Technology (DLT) have made it possible to handle money more quickly, effectively, and transparently. Researchers and policymakers are becoming more interested in studying digital currencies as a result of the rise of DLT-based cryptocurrencies (Ali et al., 2014; Chiu, 2017). Though many have suggested that the cryptocurrency operates primarily as a financial instrument, it was initially intended to be used as money (Bohr & Bashir, 2014; Glaser et al., 2014; Grinberg, 2012; Presthus & O'Malley, 2017; Yermack, 2013). Currency is regarded as a pivotal element in businesses and managing reliable contracts among citizens globally. Since both perspectives are supported by the underlying technology, they might be valid in certain situations (Hileman & Rauchs, 2017). The earliest and most well-known cryptocurrency is called Bitcoin. Cryptocurrencies are online digital money and means of payment that operate through decentralized, autonomous networks using safe encryption along with sharing ledger data technology called blockchain. Hayes (2017). It works as a decentralized payment system, allowing money transfers without the use of middlemen in the financial system (Nakamoto, 2008a). The main goal of this development was to facilitate quick microtransactions and do away with the necessity for a reliable third party in financial transactions. Whilst there are various names for this new technology, such as distributed ledger technology, blockchain technology is the one that is most commonly utilized.

It was believed that cryptocurrency will fundamentally alter the current retail payment environment by eliminating the need for established financial institutions like banks, which serve as middlemen amongst customers as well as retailers. Furthermore, it was believed that they might even have an impact on the financial system if they were permitted to be employed widely (Stevens, 2017).

However, it appears that the money will endure for some time to come, with customers at its core by design, regardless of fad or revolutionary. Therefore, in order to elucidate the behavioral intention drivers of cryptocurrencies, the academic study needs to be specifically tailored to this sector. Customers cannot depend on a compensation policy in the event of deception, nor can they be protected by a deposit guarantee program for payments or Bitcoin holdings. Therefore, it is extremely crucial to gain an understanding of all the variables that impact the adoption for these potentially revolutionary payment systems.

According to Poongodi et al. (2020) the need for electronic payment has been furthered through the transformation of financial systems by enabling users to involve in financial transfers seamlessly. Moreover, inhabitants of any country are a crucial part of any digital system, such as smart government and smart cities, and the success of these digitalisation feats is contingent on their user's adoption preferences. Congruently, in view of Briere et al. (2015), digital currencies represent the financial tool widely applied in businesses worldwide. Thus, to satisfy the requirement of this new digitalised world, very few studies have investigated cryptocurrency adoption (Abbasi et al., 2021; Kshetri, 2017). In past research, it has been found that cryptocurrency use greatly influences the economy and democracy of the system in developing countries (Kshetri, 2017). In this regard, Hern (2013) asserted that for the wide success of these digital currencies, the role of individuals is necessary. Without individuals, digital currencies would not be widely accepted. Furthermore, the research have established the prospect of the cryptocurrency for contributing to the economic development for developing countries like KSA (Baabdullah et al., 2019; Kshetri, 2017).

1.3   Cryptocurrency and Saudi Arabia

Since 2016, the Kingdom of Saudi Arabia has been advancing under the guidelines outlined in Vision 2030, which was launched by the Saudi Crown Prince His Royal Highness Mohammad bin Salman (Saudi Government, 2023). Vision 2030 is an ambitious strategic plan that is designed to help Saudi Arabia to diversify its economy, reduce dependency on oil, enhance government effectiveness, and improve digitization in the country. To achieve these goals, one pillar of the Saudi Vision 2030 is the digital transformation of the country by adopting cutting-edge technologies like blockchain and cryptocurrency (NDU, 2022). These technologies can greatly help the Saudi government to increase its effectiveness through transparency and speed in public services (Lykidis et al., 2021). The technologies can also help Saudi enterprises to enhance efficiency in their operations (Zoair & Mohamed, 2022). Therefore, blockchain and cryptocurrency are important for Saudi Arabia. They can benefit the Kingdom in many ways. A few of them are given below. Since the blockchain is the underlying technology of cryptocurrency, the terms are used interchangeably.

1.3.1   Economic Diversification

At the moment, the Saudi economy is heavily dependent on oil exports, which account for around 45% of the country's GDP and around 90% of government revenue (Alkhathlan, 2013). This dependence on oil exports makes the Saudi economy vulnerable to fluctuations in oil prices and global economic conditions (Albassam, 2015). The adoption of cryptocurrency and blockchain technology can help Saudi Arabia to diversify its economy and reduce its dependence on oil. For example, it can help to develop new industries and services, such as digital identity, remittances, and digital payments (Swan, 2015). It can also create new business opportunities in the

information technology sector, which can help to attract foreign investment and create jobs for Saudi people. According to Alshareef and Tunio (2022), "blockchain will play an influential role in the development and modernization of the Saudi government, commercial, and financial sectors in the future". Therefore, cryptocurrency is certainly important for the Kingdom.

1.3.2 Efficiency and Security of Digital Payments

Saudi Vision 2030 requires numerous national and multinational organizations to restructure themselves to achieve the targets required to boost the country's economy. However, the Saudi national and international banking systems have service quality issues to meet those targets (Ishfaq et al., 2020). To improve the banking systems, the Saudi Arabian Monetary Authority (SAMA), the country's central bank, has been striving to achieve consumer satisfaction by reducing transaction costs and enhancing transaction security. Cryptocurrency can help SAMA by offering an efficient and secure digital payment system. The use of cryptocurrency can eliminate the need for intermediaries, such as banks, and reduce transaction fees and the risk of fraud (Hashemi Joo et al., 2020). This could make cryptocurrency an attractive option for businesses and consumers alike (Rejeb et al., 2021). Moreover, cryptocurrency and blockchain can also help Saudi National Digital Transformation Unit in achieving its goal to create "a world-leading digital community and digital government with a sustainable digital economy built on innovation and efficient digital capabilities" (Albarrak & Alokley, 2021).

1.3.3 Islamic Finance

Saudi Arabia is the world's largest holder of Islamic financial assets. As part of Vision 2030, the country seeks to become an Islamic financing hub by 2030 by focusing on promoting excellence, introducing new ideas, conducting scientific research, and implementing projects in the Islamic finance sector. Cryptocurrency can potentially help Saudi Arabia in achieving its goals for Islamic finance by providing a new platform for the implementation of sharia-compliant financial transactions (Hasan et al., 2020; Muneeza & Mustapha, 2019; SAMA, 2021). Saudi Arabia can use cryptocurrency to facilitate the creation of Islamic finance products such as sukuk (Islamic bonds) and murabaha (cost-plus financing) (Truby & Ismailov, 2022). Abu Dhabi's Al Hilal Bank has already concluded the world's first blockchain-enabled sukuk transaction (Alam et al., 2019). Since having a positive attitude toward crypto-assets, blockchain technology can help Saudi Arab to create smart contracts that automatically enforce sharia compliance in transactions (Alam et al., 2019). Cryptocurrency can also be used to facilitate cross-border transactions in a way that is compliant with Islamic finance principles. Furthermore, Cryptocurrency can also help to enhance the accessibility of Islamic financial services to customers who do not trust traditional banking systems.

1.3.4 Financial Inclusion

Saudi Arabia is in list of high income countries with large segment of population having access to the financial system. However, there are still a significant number, almost 28%, of individuals who do not have access to the traditional banking system in the country (Statista, 2021). This financial exclusion is especially more prominent in women (Shabir & Ali, 2022). Financial exclusion undermines the quality

of life of people. Al-Hanawi et al. (2022) found that individuals with low income were financially excluded and unable to access healthcare in Saudi Arabia. The main reasons for the financial exclusion in Saudi Arabia include a lack of trust in financial institutions, the high cost of financial services, and financial institutions being too far to open an account (Al-Hanawi et al., 2022). Cryptocurrency can help to overcome these challenges in financial inclusion by including the underbanked or unbanked in Saudi Arabia into the financial system. Through a crypto platform, financially excluded individuals can store and transfer funds without the need for a bank account. Unbanked individuals can access cost-efficient financial services, without the need of traditional banks, by using a cryptocurrency platform like Bitcoin, or Ethereum (Abdulhakeem & Hu, 2021; Agarwal et al., 2020; Ozili, 2022b)

Saudi individuals, organizations, and government are already aware of the benefits of blockchain and cryptocurrency, which are steadily gaining interest. This can be evidenced by the increasing number of blockchain and cryptocurrency related projects and startups in Saudi Arabia (BSV, 2022). A few of them are explained below.

The SAMA has been working on creating a regulatory framework for cryptocurrency and blockchain technology (SAMA, 2020). It has made efforts to establish guidelines for the operation of crypto assets in the country. Additionally, the SAMA is also looking into the potential of blockchain for issuing a Central Bank Digital Currency (CBDC). This initiative will increase the efficiency of the financial system and reduce the cost on the payments processing. The SAMA and the central bank of the UAE have jointly embarked on a pilot project for cross-border transactions between the two countries through a digital currency. Recently, SAMA hired a crypto chief to boost its digital ambitions (Gulf News, 2022). Previously, Saudi British Bank (SABB) and HSBC executed a crypto transaction to ship homogenized aluminum

billets from Bahrain to Saudi Arabia (USA, 2019). Aramco, a Saudi Arabian public petroleum and natural gas company, is an early adopter of the blockchain (Aramco, 2022).

All the above initiatives reflect the Saudi government's active involvement in the cryptocurrency space. Additionally, Saudi Arabia is also exploring the use of cryptocurrency and blockchain technology in various sectors, such as real estate, healthcare, and supply chain management (Albahli et al., 2020; Alsubaei, 2019; Azmi et al., 2022).

There is also high traction of cryptocurrency among Saudi people. According to a survey by KuCoin (2022), that approximately 3 million individuals in Saudi Arabia have engaged in cryptocurrency investment, either as current owners of cryptocurrencies or participants in trading activities within the past six months. Another report by Statista (2022) shows that the revenue for the Saudi cryptocurrency market is expected to reach $237.10 million in 2023, with an annual growth rate of 14.76% and a projected total of $411.20 million by 2027. The number of users in the market is estimated to increase to 1.09 million by 2027 and user penetration is expected to be 2.7% in 2023 and 2.9% by 2027. In a global survey of the World Bank Group (Feyen et al., 2022), 11.4% of Saudi people were found that use or own crypto assets. Among these studies, majority of the participants are young adults. A significant proportion of these participants may indeed include public university students who are recognized for their technological proficiency and openness to innovation. Therefore, the data collected from this demographic not only represents a subset of the public but also provides valuable insights into the perceptions and behavioral intentions of young adults, including potential university students, regarding cryptocurrency intention.

Notwithstanding the popularity and interest in cryptocurrency, the literature review reveals that little is known about the behavioral intention of individuals to adopt cryptocurrency in KSA (Alhusaynan & Alrwais, 2018; Almarashdeh et al., 2018b). Therefore, this study is timely to understand the factors that influence individuals to adopt this innovation.

1.3.5 Relevance of Focusing on University Students

The intention of Saudi Arabian University students was investigated instead of the general population that adopted cryptocurrency because the current state of cryptocurrency adoption in Saudi Arabia, is relatively low compared to global standard as report by the Saudi Arabian Monetary Authority (SAMA), that revealed that only 11.4% of the Saudi population adopted cryptocurrency (SAMA, 2023). University students often represent early adopters of new technologies due to their familiarity with digital platforms and emerging trends (Raman et al., 2023). Moreover, recent studies indicate that a growing number of Saudi Arabian university students are engaging with cryptocurrencies (Altunisi, 2024). Focusing on the intention of Saudi Arabian University students can provide valuable predictive insights into future trend of cryptocurrency in Saudi Arabia and help tailor strategies to enhance the adoption of cryptocurrency in broader Saudi Arabian population (Hajr et al., 2023). This make university students a crucial group for understanding the future of cryptocurrency adoption in the Kingdom of Saudi Arabia.

1.4   Problem Statement

Despite the benefits and the rising popularity of cryptocurrencies, there is a lack of understanding of the factors that influence individuals' behavioral intentions toward adopting these digital assets. This is particularly important given the potential risks associated with cryptocurrencies, such as volatility in value and a lack of regulations. It appears important to understand the behavioral intentions of individuals towards cryptocurrency because it can provide insights into the underlying motivations, attitudes, and perceptions that drive individuals to use or not use cryptocurrency (Hasan et al., 2022). Focusing on behavioral intentions can be important to predict the influence on an individual's likelihood of adopting a cryptocurrency (Bharadwaj & Deka, 2021). Understanding behavioral intention can inform the development of strategies to increase the adoption and usage of cryptocurrency by addressing the specific needs and concerns of different segments of the population (Alaklabi, 2022). Additionally, understanding the behavior intentions of individuals towards cryptocurrency can inform decisions on how to regulate and integrate cryptocurrency into the economy (Basiouni, 2022). For example, if research shows that individuals are primarily interested in using cryptocurrency for investment purposes, then regulators may focus on ensuring that cryptocurrency exchanges and platforms are operating transparently and fairly and that investors are protected from fraud and other forms of misconduct. Furthermore, understanding the behavior intentions of individuals towards cryptocurrency can also inform the development of new cryptocurrency-related products and services that meet the needs and preferences of users. This includes, for example, new forms of cryptocurrency that cater to specific use cases, or new types of digital wallets that offer enhanced security features.

Considering the importance of behavioral intentions, different studies have made efforts and identified factors such as awareness, Expectations related to performance, effort, social impact, and security that affect a person's behavioral intents to use cryptocurrency. Abbasi et al. (2021) and Schuh and Shy (2016) are two examples. Polasik et al. (2015) provided insight into the characteristics of sellers who accept cryptocurrencies, while Silinskyte (2014) investigated the uptake and application of cryptocurrencies among customers. Mazambani and Mutambara (2019) studied students predicting FinTech innovation adoption in South Africa the case of cryptocurrency. In addition, Dymek et al. (2020) examined the students' expectations toward new technologies a case of blockchain in Poland. Table 2.2 provides summary of the past studies. Findings of the past studies lack universal applicability due to the unique characteristics of the context wherein the research conducted, necessitating focused investigations for a more comprehensive understanding. In addition to the contextual limitations, past studies have mainly focused on various individual-level factors and there remains a notable gap in understanding the complex relationship like moderation between the factors in influencing behavioural intentions. Furthermore, the past studies have developed different models that encompasses distinct sets of factors specific to the cultural and contextual nuances of their respective countries (Bhimani et al., 2022; Malik et al., 2021). This raises concerns about the applicability of these models in diverse contexts (Hasan et al., 2022), particularly in nation like Saudi Arabia. Considering these gaps and limitations, the present study aims to develop a concise and robust model tailored to the unique dynamics of cryptocurrency intentions of students under different educational programs in the public university in the KSA. To achieve this, the study will identify the factors that facilitate to understand increased usage and future acceptance of cryptocurrency in KSA. Despite several

factors identified in the past studies that influence the behavioral intentions of individuals to adopt cryptocurrencies, the literature review reveals that no such effort has been made for the Saudi Arabia. Different studies and reports show a rise in the interest and investment in cryptocurrencies among Saudi people (Mehatha, 2022). However, it is still unclear what specific factors, among the plethora of factors identified in past studies, influence the intentions of Saudi individuals to adopt cryptocurrencies. Based on the extensive review of the extant literature, no detailed effort has been made to address this issue. Therefore, this study aims to understand behavioural intentions of individuals to adopt cryptocurrency.

The public university students are chosen as the population for this study because they mainly represent youth in KSA and are considered early adopters of innovation like cryptocurrency.

To succeed in the study aim, public university students are chosen as a sample population because they are young and represent the larger population in Saudi Arabia (Saudi Government, 2020; Jamal, 2021; Sohaib et al., 2019; Statista, 2017). The majority of Saudi students are enrolled in public universities (Government, 2020; OECD, 2022). Additionally, students are considered early adopters of innovation like cryptocurrency and readily available to participate in research as compared to other age groups (Gagarina et al., 2019; Park et al., 2019). Furthermore, university students are categorized as generation Y and considered drivers of innovations like cryptocurrency (Carroll et al., 2002), and studying their behavioral intentions toward cryptocurrency can provide insights into how this highly demanded innovation may be adopted by a wider population in the future (Sohaib et al., 2019). Additionally, university students are considered a population that has a good understanding of technology and are more likely to be exposed to and have knowledge about

cryptocurrency (Jadhav et al.). Therefore, studying the behavioral intentions of public university students toward cryptocurrency can provide valuable insights into how this digital innovation is perceived and used by a technology-savvy population in Saudi Arabia.

1.5   Research Objectives

The study's main aim is to develop a model to examine the factors affecting the behavioural intention to adopt cryptocurrency among public universities students in Saudi Arabia, while the following specific objectives are as follows:

1.   To examine the level of behavioural intention to adopt cryptocurrency by public university students in Saudi Arabia.

2.   To identify factors that influence the behavioural intention of public university students to adopt cryptocurrency in Saudi Arabia.

3.   To determine the moderating role of financial literacy in the relationship between the influential factors and behavioural intention of public university students to adopt cryptocurrency in Saudi Arabia.

4.   To determine the moderating role of technology readiness in the relationship between the influential factors and behavioural intention of public university students to adopt cryptocurrency in Saudi Arabia.

1.6   Research Questions

This study aims to find answers of the following research questions:

1.   What is the level of behavioural intention of public university students in Saudi Arabia to adopt cryptocurrency?

2.   What are the factors that influence the behavioural intention to adopt cryptocurrency among public university students in Saudi Arabia?

3.   How the financial literacy moderates the relationship between the influential factors and the behavioural intention to adopt cryptocurrency by public university students in Saudi Arabia?

4.   How technology readiness moderates the relationship between the influential factors and the behavioural intention to adopt cryptocurrency by public university students in Saudi Arabia?

1.7   Scope of the Study

Considering the current research gap, this study is contextualized in the Kingdom of Saudi Arabia and focuses on the factors influencing the behavioral intentions of public university students to adopt cryptocurrency. The study aims to quantitively investigate the direct relationship of "independent variables: performance expectancy, effort expectancy, social influence, facilitating condition, security, awareness, and dependent variable behavioral intentions" to adopt cryptocurrency. The study also aims to investigate the moderating effects of the factors, financial literacy and technology readiness, on the relationship of independent and dependent variables. An online survey-based research design has been used, with a structured questionnaire distributed to a sample of public university students selected through a non-probability sampling technique, i.e., purposive sampling method. Public university students are chosen due to being early adopters of innovation and readily willing to participate in research activities. The data is collected from the major public universities from each of the five geographical regions of the Kingdom of Saudi Arabia, namely, University of Hail (northern region) King Saud University (central

region), King Abdulaziz University (western region), King Khalid University (southern region), and the King Fahd University of Petroleum and Minerals (eastern region). Hence, the study is limited to "public university students in Saudi Arabia". "Data collection" was carried out for three months, from April 2021 to June 2021. This study focuses only on the behavioral intentions of individuals toward cryptocurrencies. The post-adoption such as the actual use and acceptance of cryptocurrency among Saudi individuals is out of the scope of the study.

1.8   Contributions of the Study

This study has several contributions starting from theoretical to practical. The following sections have further details.

1.8.1   Theoretical Contribution

This study makes significant theoretical strides by advancing the understanding of cryptocurrency adoption, particularly in the distinctive context of developing economies, with a focal point on the Kingdom of Saudi Arabia (KSA). The primary theoretical contribution lies in the development of a comprehensive framework tailored to the behavioral intentions of public university students in KSA towards cryptocurrency adoption. Extending traditional technology acceptance models, this research pioneers the application of theoretical frameworks to an individual context, contributing a nuanced understanding of cryptocurrency adoption. Moreover, it addresses critical gaps in the literature by empirically examining the relationship between the Unified Theory of Acceptance and Use of Technology (UTAUT) models and digital currency. The inclusion of financial literacy and technology readiness as moderators further enriches the theoretical framework, exploring their impact on key

variables and behavioral intentions. This approach distinguishes itself from prior literature, emphasizing the impact of cultural differences and shedding light on unique facets that may significantly influence cryptocurrency adoption in KSA.

1.8.2   Practical Contributions

The practical significance of this research lies in its potential to inform and guide key decision-makers, policymakers, and industry stakeholders involved in cryptocurrency adoption in Saudi Arabia. The findings, derived from a comprehensive analysis of factors influencing behavioral intentions among public university students, offer valuable insights into the dynamics of cryptocurrency adoption. Identifying determinants and moderators, the research provides practical implications for formulating effective policies, strategies, and interventions. While stakeholder verification could enhance practical significance, the robust methodology and quantitative analysis add credibility to its potential impact. Future engagement with stakeholders can strengthen practical significance by aligning research outcomes with real-world applications.

Additionally, the study offers practical implications for cryptocurrency developers, providing empirical evidence on how to enhance technology features for wider adoption in KSA. From a regulatory perspective, insights garnered from this research can guide the government in developing a regulatory framework for successful cryptocurrency adoption among public university students. This framework can empower the Saudi Arabian populace to diversify payment sources, fostering a more inclusive financial landscape. Finally, the findings emphasize the importance of cryptocurrency adoption for individuals, underlining the need for a diversified and technologically advanced payment ecosystem.

1.9   Significance of the Study

Beyond its contributions, this study holds paramount significance in the broader body of knowledge. By delving into cryptocurrency adoption in a developing economy like KSA, it contributes to the global understanding of how technological innovations permeate diverse socio-economic landscapes. The study's significance extends to universities, providing academic institutions with a basis for shaping curricula that align with emerging trends in financial technology. Additionally, government entities stand to benefit from insights into formulating policies that encourage innovation while safeguarding the interests of the populace.

Furthermore, the study has implications for the business sector, offering businesses a foresight into the potential trajectory of cryptocurrency adoption in KSA. Entrepreneurs and investors can leverage this knowledge to identify opportunities and challenges in the cryptocurrency market. In essence, the significance of this study reverberates through academia, government, and the business ecosystem, contributing to the collective understanding and informed decision-making in the evolving landscape of cryptocurrency adoption.

1.10   Definition of Key Terms

For the sake of clarity and increased comprehension, the important concepts that are heavily suggested in the overall setting of this study have been explained in the table below.

Table 1.1   Definition of Key Terms

Terms	Definition
Blockchain	Blockchain can be defined as a "digital, distributed transaction ledger, with identical copies maintained on multiple computer systems controlled by different entities"(Schatsky & Muraskin, 2015).
Cryptocurrency	It is an internet-based medium of exchange that uses cryptographical functions to conduct financial transactions (Gilpin, 2014).
Effort Expectancy	Is defined as the "degree of ease associated with the use of the system" (Venkatesh et al., 2003).
Performance Expectancy	Is defined as the "degree to which an individual believes that using the system will help him or her to attain gains in performance" (Venkatesh et al., 2003).
Facilitating Condition	Is defined as the "degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the system" (Venkatesh et al., 2003).
Social Influence	Is defined as the "degree to which an individual perceives the important others believe he or she should use the new system" (Venkatesh et al., 2003).
Financial Literacy	Financial literacy refers to the set of skills and knowledge that allows an individual to make informed and effective decisions with all of their financial resources (Hastings et al., 2013).
Security	Security represents the feeling of users when they process their financial information online for several purposes (Khalilzadeh et al., 2017).
Awareness	Awareness is the accumulation of users' awareness about a specific technology (Devanur & Fortnow, 2009; Shahzad et al., 2018).
Technology Readiness	Technology readiness refers to people's propensity to embrace and use new technologies for accomplishing goals in home life and at work (Ranaweera et al., 2008).
Intention to adopt	It is defined as the individual's subjective probability that they will perform a specified behavior (Venkatesh et al., 2003)

1.11   Organization of the Study

This study is divided into six chapters. The first chapter includes the study's history, description of the issue, research gap, aims, and research questions. It also defines key words and discusses the study's importance, the company, as well as overall structure. Chapter two provides a comprehensive overview of the literature regarding the theoretical model, background of cryptocurrency and its workings, and underlying theory. Chapter three generates the hypotheses. Subsequently, chapter four

gives a research methodology, which provides a brief description of the research design, the study population, sampling frame, sample size, data collection method, measures of the research, and analyses. It also covers an understanding of the underlying research questionnaire design and approach used for statistical analysis. Chapter five presents the results of the data analysis for this study. The outcomes of the study are discussed in detail in chapter six and compared to the existing empirical literature on cryptocurrency adoption in the individual context.

1.12 Summary

This chapter gives a broad overview of the study, outlining its background, issue statement, research gap, goals, and research questions. It also defines important words utilized throughout the study and discusses the study's significance. The arrangement of the thesis's chapters brings the chapter to a close.

CHAPTER 2

LITERATURE REVIEW

2.1   Introduction

The chapter provides a comprehensive analysis of the existing literature related to the research topic. It serves to identify and evaluate the gaps, controversies, and limitations in the current understanding of the subject matter. Additionally, it helps to provide a context for the research questions, hypotheses, and objectives of the study. This chapter aims to synthesize and critically evaluate the literature relevant to the research topic, as well as to highlight the theoretical and practical implications of the research findings. Figure 2.1 shows the overview of the literature review.
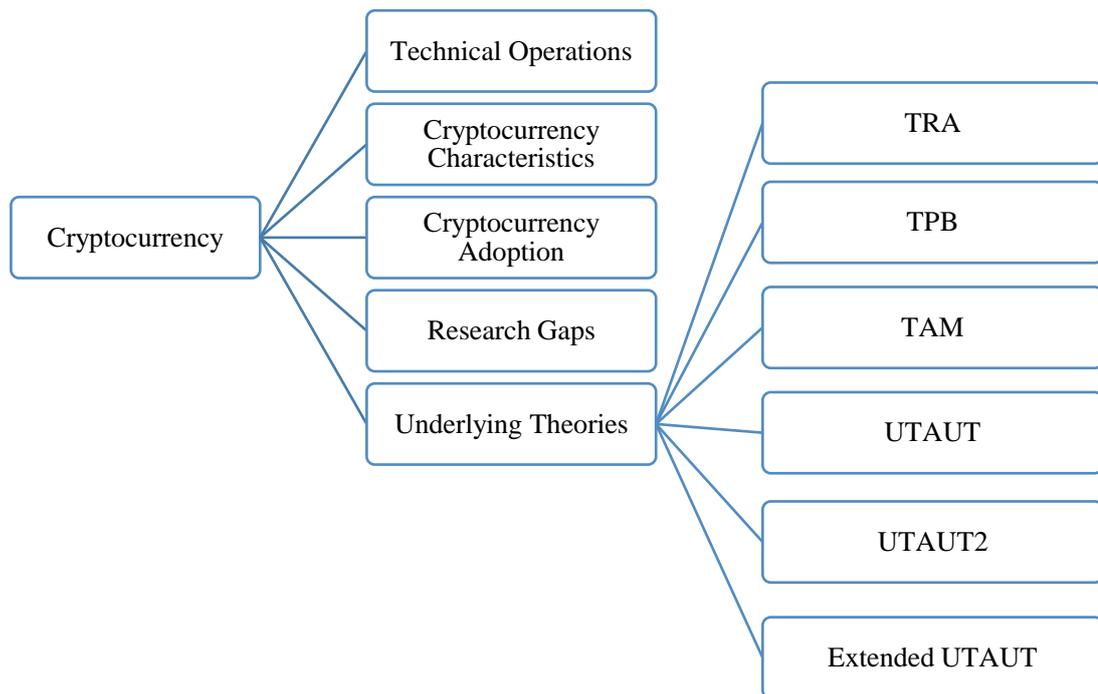

Figure 2.1   Overview of the Literature Review

2.2   Overview of Cryptocurrency

Cryptocurrency is a virtual, decentralized, semi-anonymous, irreversible, along with transaction system that uses digital tokens that are publicly traceable along with cryptographically signed. So, cryptocurrency is both a technology and a service made possible by technology. The "money" is often not backed by any authority or thing, like gold (Grinberg, 2012). The concept was first put forth by a programmer going by the pseudonym "Satoshi Nakamoto" in the seminal work "Bitcoin: A Peer-to-Peer Electronic Currency System" (Nakamoto, 2008). Furthermore, the anonymous Nakamoto claims that the currency is "trust-less" in because its counterparties do not require middlemen to ensure integrity. On several exchanges throughout the globe, fiat money is swapped for cryptocurrencies and alternatives in an open market. The cryptocurrency business has four subsectors, according to Hileman and Rauchs (2017): wallets, also known payments, mineral extraction, as well as marketplaces. Users exchange fiat currency for cryptocurrencies during deals. Next, the cryptocurrency is stored in a user wallet, which may be accessed online or offline. If it's offline, it can also be accessed via a USB storage device. The wallet permits payments and account balance computations while storing the user's cryptocurrency keys. The technological framework that underpins the cryptocurrency system includes mining, which is covered in more detail below. Hileman and Rauchs (2017) highlighted four use cases: non-monetary applications, medium of trade, payment rail (for cross-border transactions), along with speculation digital asset/investment.

It is crucial to understand that no taxonomy has evolved as a result, with each researcher offering a somewhat different interpretation of the key elements of cryptocurrencies. Although the terms "virtual," "digital," and "cryptocurrency" are often used interchangeably despite having clear distinctions, Schuh and Shy (2016)

noted that economists themselves have not come to an agreement. According to a recent research by the University of Cambridge, between 2.9 and 5.8 million active users with unique identities are managing Bitcoin wallets (Yermack, 2015). The oldest publications included in the literature study were from 2011, reflecting the recent (academic) interest in cryptocurrency.

While the several definitions offered by different scholars differ, they all have a common theme. Ahamad et al. (2013) define cryptocurrency as a sort of digital currency that uses cryptography to produce and manage money, often in conjunction with a proof-of-work system. "Transactions of stated cash transfer inside the network are created and verified by a decentralized network of peer-to-peer computer nodes operating in sync". Using the internet infrastructure and cryptographic security, Bitcoin may be instantaneously and safely exchanged between any two parties without the use of a reliable third party, according to Ametrano (2016). There is no one government or institution that supports its importance. A contemporary digital means of trade is cryptocurrency. It is a brand-new, peer-to-peer, decentralized payment system.

The majority of cryptocurrencies were developed to establish new, finite-amount units of money. All cryptocurrencies govern the production and transfer of money via encryption. Public-key cryptography is used by all cryptocurrencies, and Bitcoin is secure because it has both a public and private cryptographic key (Saito, 2015) "To enable electronic commerce in a fully anonymous, secure, peer-to-peer manner, Bitcoin depends on public/private key cryptography." (Bradbury, 2013). All of these definitions have the characteristics of a cryptocurrency: peer-to-peer, decentralized network, internet network use, and public-key cryptography. Therefore a cryptocurrency may be described as: "A digital medium of exchange that depends

on a decentralized system to enable peer-to-peer exchange of transactions protected by public-key encryption (Spenkelink, 2014). In its original form, cryptocurrency was intended to be a means of employing cryptography to send money from one person to another (or peer-to-peer) without the need of a middleman (Benbya & McKelvey, 2016). As a result, this research defines a cryptocurrency as a digital asset that, because to internet infrastructure, may be safely and instantly transferred among any two individuals cryptographic security without the involvement of a third party stated by Ametrano (2016).

2.2.1   Technical Operation of Cryptocurrency

As of March 2021, there are more than 8967 alt-coins active, making a market capitalization of worth US\$ 1,765, 894, 692, 712 (CoinMarketCap, 2017b). While the core technology of these altcoins has undergone several inventive modifications, a glance at the "Bitcoin technology" is informative. What follows is mostly based on the fundamental work of Nakamoto (2008), with support from a technical background study by Badev and Chen (2014) and other sources that are cited. The overview that follows shows that cryptocurrency architecture is complicated, and most customers won't understand how it works (Thakur & Banik, 2018).

| 1 | Alice sends **instructions** to **transfer** cryptocurrency to Bob. **Anyone** using the **network** can view the message. | 2 | **Miners** group the transaction together into a **'block'** with other recently sent transactions. | 3 | Information from the new **block** is transformed into a **cryptographic code.** |

Alice

Transaction
Block

66925f1da83c5435
da73d81e013974d

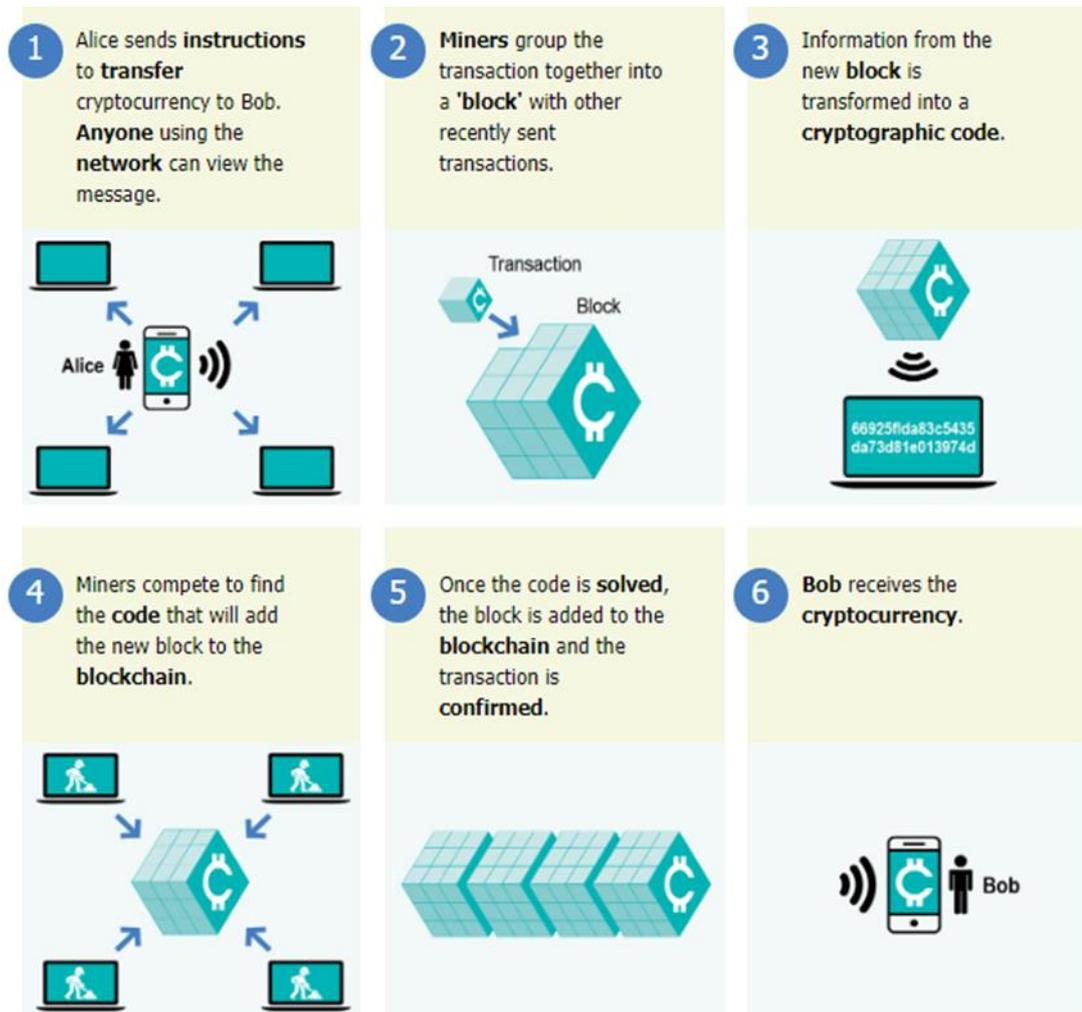| 4 | Miners compete to find the **code** that will add the new block to the **blockchain.** | 5 | Once the code is **solved,** the block is added to the **blockchain** and the transaction is **confirmed.** | 6 | **Bob** receives the **cryptocurrency.** |

Bob

Figure 2.2   Cryptocurrency Operations (RBA, 2023)

Figure 2.2 clearly shows the process of cryptocurrency transfer and the parties involved in it. Cryptocurrency transactions are facilitated through electronic messages disseminated across the entire network, containing pertinent details like the electronic addresses of involved parties, the amount of currency to be exchanged, and a timestamp.

Let's consider a scenario where Alice intends to transfer one unit of cryptocurrency to Bob. Imagine Alice decides to transfer one unit of cryptocurrency to Bob. To initiate this transaction, Alice broadcasts an electronic message across the entire cryptocurrency network. This message serves as a set of instructions,