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Retraction

Retracted: The Drivers of the Behavioral Adoption Intention of BITCOIN Payment from the Perspective of Chinese Citizens

Security and Communication Networks

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope

(2) Discrepancies in the description of the research reported

(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

[1] I. K. Mensah and D. S. Mwakapesa, "The Drivers of the Behavioral Adoption Intention of BITCOIN Payment from the Perspective of Chinese Citizens," *Security and Communication Networks*, vol. 2022, Article ID 7373658, 17 pages, 2022.

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Research Article

The Drivers of the Behavioral Adoption Intention of BITCOIN Payment from the Perspective of Chinese Citizens

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The bitcoin payment innovation has gained wider interest around the world, but its adoption among the general population has been a challenge. Bitcoin as a peer-to-peer technology works with no central authority or banks, and the transaction management and issuing of bitcoin is carried out collectively by the network. One major debate on bitcoin development and diffusion is the critical matter of nongovernment intervention through adequate policy and regulatory framework and thus hinders people's active participation (acceptance) in the bitcoin market. Consequently, this study is purposed to examine the role government policy and regulations (moderating impact) can have in driving the acceptance of bitcoin payment from the Chinese perspective. The UTAUT was used as the theoretical basis from which a model was developed for testing. The structural equation model (SEM) through the use of SmartPLS was employed to undertake the analysis. The results have demonstrated that government regulation moderates (significant) the influence of both performance expectancy and infrastructure support on the behavioral acceptance of bitcoin payment. However, government regulation contrary to expectations was not significant in moderating the influence of effort expectancy (EE) and security on the acceptance of bitcoin payments. Additionally, the study discovered that performance expectancy, security, EE, and infrastructure support were significant in encouraging bitcoin behavioral adoption. The practical and theoretical implications of these findings on the development and diffusion of bitcoin technology systems are dissected meticulously.

1. Introduction

The bitcoin technology (first introduced in 2009 was the world first decentralized cryptocurrency) development has brought about new waves of momentums in the digital payment industry which provides consumers with more options when completing business transactions. Bitcoin system which is based on blockchain technology is gaining wider acceptance around the world. Bitcoin innovation is considered a digital virtual currency that empowers P2P electronic payment [1, 2]. It is also considered a form of electronic cash that permits people to engage in payments unswervingly to another party without clearance from a financial entity [3, 4]. Transactions performed on bitcoin are deemed to be only between the two parties without any involvement of any central authority [1, 5, 6]. The bitcoin transaction trails and history are kept in chronological order in a public ledger (single digital file) called blockchain [5, 7]. The public ledger is a system/technology that keeps records of transactions (all) happening in the system [8, 9]. The two key characteristics of blockchain technology that drive bitcoin development are what is called distributed consensus and anonymity [3, 10–12]. These elements of distributed consensus and anonymity ensure that every transaction (online) which pertains to digital assets (past and present) can be thoroughly authenticated in the future without jeopardizing the privacy of parties and the digital asset held [3, 13]. Some major features of bitcoin are a decentralized system, no bank institution, absence of government, unlimited capital, cannot (account) be blocked, acts as currency, secured, and anonymous transactions [1, 14].

Though the novelty that comes with bitcoin technology is welcomed by a larger number of people, there is still fear lingering in the hearts and minds of some people (both individual and industry) who fear that the noninvolvement of third parties such as government and other key players in the digital currency industry may comprise the novelty of this payment technology (bitcoin). This is buttressed in [3] who indicated that bitcoin had to contend with many regulatory matters relating to governments (national) and financial institutions due to the fear that it can be used to undertake anonymous transactions (multidollar) without direct control from the government. The nonparticipation of key actors in bitcoin payment architecture could pose a danger of disrupting current payment (digital) systems and entire monetary systems [15]. It was designed to work independently from regulators and lawyers [15]. It has been highlighted that, to reduce the risk inherent in bitcoin, financial regulators and policymakers must endeavor to ensure that tradings (transactions) are properly organized to protect the parties involved [16]. Other scholars have elaborated that based on the unique characteristics of bitcoin, a proper regulatory framework (inevitable) is required to empower its legitimacy (digital currency) and protect both consumers [8]. With this, three key areas (bitcoin) have been proposed that need to be regulated such as prevention of financial crimes, taxation, and consumer protection (data security) [8]. People, who are in favor of government policy regulatory of bitcoin, have indicated that regulations can be broadly classified into, first, regulations that seek to protect bitcoin users (consumers and investors fraud and theft) and, second, ones that protect society from people who use bitcoin (like terrorists, violent criminals, and drug dealers) [17].

The rise of bitcoin started in China in 2013 which subsequently saw the growth of Chinese exchanges dominating the international exchange market with more bitcoin transactions being completed as compared to other countries [18]. During this period, it has been speculated that the Chinese government's official status on bitcoin trading was ambiguous and regulators were not ready to institute any tight controls even though they have grievous concerns regarding the potential of bitcoin to be utilized for unauthorized criminal activity [18]. The increase in demand for bitcoin trading (both Chinese users and investors) in 2017 leads the government and regulatory agencies to institute firm regulations on the bitcoin transaction industry [18, 19]. Despite these tight regulations (ban) on bitcoin, it was estimated that the sale of blockchain hardware systems for cryptocurrency mining in China rose to RMB 8.7 billion ($1.30 billion) representing 45% of the worldwide sales, and it was projected to reach 35.6 billion RMB in 2020 [19]. With the Chinese government's broad regulatory powers, it empowers it to influence directly the domestic bitcoin users, exchanges, and miners indirectly through externalities such as energy costs [18, 20]. Furthermore, the Chinese tight control on the Internet and all Internet Service Providers (ISPs) which permit the gathering and analysis of domestic traffic affects the bitcoin traffic [18]. In terms of computing power, China's five major mining pools such as BTC.com, AntPool, ViaBTC, F2Pool, and BTC.TOP accounted for about 70% of the bitcoin computing power globally as of 2018 [21]. The bitcoin full node data depict that the total number of nodes in China was ranked third globally trailing behind the USA and Germany as of 2018 while China's share of the worldwide full nodes fluctuates between 5% and 8% [21]. The number of bitcoin full nodes in China has been increasing, and as of 2018, the user rate of bitcoin full nodes increased to unprecedented levels of 17%, beating Germany to move to the second position behind the USA [21].

The goal of this research is thus to study the scope to which government policy and regulations can drive the adoption of bitcoin payments. Specifically, the moderating impact of government regulations on the bitcoin payment systems usage among a cross section of Chinese citizens was interrogated. Government policy is considered as the declaration of government political activities, plans, and intentions about a particular cause of action, and it impacts the quality of life of people in society [22]. Government policies are meant to guide as to why certain things must be done in a certain manner, and it applies at all levels (national to local government) to provide a safety net for the people and change social behavior. Government policies as a set of decisions are intended to influence change or tackle challenges that have been identified by society [23]. Public policy conveys the goals, decisions, and actions adopted by the government for political, social, and economic management [24]. Bitcoins become popular in China in 2013, and government regulators were deeply concerned over the potential criminal activity, subversion of capital controls, and speculative risk that bitcoins pose [18]. This eventually led to the Chinese government's ban on bitcoin transactions with the Central Bank of China refusing bitcoin trading/payments based on the absence of government regulations [25–27]. To accomplish the goals of this paper, UTAUT was used as the theoretical foundation, and it was integrated with infrastructure support, Internet security, and government regulations alongside the key constructs of UTAUT (performance and effort expectancy). While scholars have examined bitcoin adoption [28, 29], particularly from the Chinese angle [27, 30], these studies have failed empirically to tackle the critical issue of government regulations and how they can influence the Chinese citizens' decision to use bitcoin payment. This is the gap that this paper fills since the regulatory framework for bitcoin's digital currency is fundamental to the success of bitcoin both theoretically and managerially.

The innovation of this paper is the integration of government policy and regulations into the UTAUT model which empowers the study to demonstrate its theoretical contributions to the literature through the empirical validation of how government regulation can enhance the predictive powers of these factors (performance expectancy, effort expectancy, infrastructure support, and Internet security) on the bitcoin adoption behavior. The research questions are (1) to what extent does performance and effort expectancy, infrastructure support, and Internet security significantly drive the bitcoin payment adoption intention? (2) To what extent do government policy and regulations moderate the influence of performance expectancy, effort

expectancy, infrastructure support, and Internet security on the adoption of bitcoin payment? The interrogation of these questions does not only contribute to enriching the bitcoin and digital payment literature but also importantly provides key information for regulators especially in China to take adequate measures to integrate bitcoin digital currency into the financial architecture through the promulgation of relevant regulatory frameworks.

The reminder of this research is prepared as follows: literature review section which examines the development and current empirical studies on bitcoin, research framework and hypotheses development, research model, the methodology employed, results, discussion with implications (practical and research), and the conclusion along with the limitations and future works.

2. Literature Review

2.1. Understanding Bitcoin Technology. Bitcoin is a widely used cryptocurrency that accounts for all transactions in a distributed appended-only public ledger called blockchain [31, 32]. Bitcoin provides a system to engage in the management of currency without any form of central control, and it was believed to have been launched during the 2007 to 2008 financial crisis [33, 34]. Bitcoin applies the P2P (peer-to-peer) system (technology) which operates without third-party control such as banks, chartered accountants, notaries, or any other centralized government services [31, 32]. This means that the owners or users of bitcoin have full control of how they spend it with permission from any centralized government or public authority [31, 35].

Bitcoin operates in a decentralized format, and it is considered one of the first monetary systems that are fully decentralized beyond any limit of any monetary power system [33, 36]. The bitcoin decentralization is limited to the following areas [33]: (a) the ledger of transactions is maintained openly by every node; (b) transactions are validated by distributed node and not by any central authority; (c) new bitcoins can be generated by any node, as compared to a government-controlled economy that centralized; (d) bitcoin exchange value is dynamic, and there is the absence of principal controller of it. Under bitcoin, e-payments are performed by producing trades that transmit bitcoins between users through the undertaking of a sequence of permanent cryptographic hashing maneuvers on the public key of users [2, 31, 37]. Users in the bitcoin environment have obtained many addresses through the creation of manifold public keys, and these addresses can be linked with many wallets [31, 38]. The private key of the users is needed for bitcoins to be spent in the form of digitally signed transactions [1, 31]. The use of the hash of the public key as a delivery location/address gives consumers a level of obscurity, and it is often advised to use diverse addresses (bitcoin) for every operation/transaction that is received [39, 40]. Bitcoin transaction procedures are illustrated in Figure 1.

2.2. Empirical Studies on Bitcoin. The bitcoin payment technology has been indicated to drastically change the existing retail payment systems as well as the money system. Studies that therefore provide critical insights into the characteristics that drive the utilization of bitcoin are of great importance [41]. To make good on this call, many research studies have been completed to help provide the physiological motivations for bitcoin adoption and diffusion. A study demonstrating the adoption process of bitcoin by business executives showed that privacy has an important influence on perceived utility and that trust influences the privacy and ease of use of bitcoin payment [42]. Understanding the use of bitcoin adoption in Iran, it was demonstrated that compatibility, personal innovation in IT, and resistance to change had a positive influence on the behavioral intention, while the behavioral intention showed a significant effect on the acceptance of bitcoin [29]. In Malaysia, it was shown that the individual tendency to use bitcoin is high, and the elements of performance expectancy, social influence, facilitating conditions, and price value were directly linked to the people's adoption behavior of bitcoin [43].

Furthermore, to explore the factors (enablers and barriers) that affect bitcoin adoption in South Africa, it was revealed that factors such as perceived benefits, attitude toward bitcoin, subjective norms, and perceived behavioral control showed a direct impact on the intention to use bitcoin [44]. Also, the study demonstrated that perceived benefits, usefulness and ease of use, and trust had an indirect effect on the intention to use and that the complex nature of bitcoin and its higher nature of volatility were barriers to bitcoin adoption [44]. A similar study that examined the end-users perspective on bitcoin adoption in South Africa showed that visibility, perceived ease of use, relative advantage, observability, the voluntariness of use, the propensity to hoard, compatibility, and demonstrability (results) were directly related to the behavioral adoption of bitcoin [45]. However, the same study reported that gender and image (perception towards bitcoin) were not directly associated with the end-user acceptance of bitcoin [45]. Another study revealed that top management support and organizational readiness are major enablers for the adoption of bitcoin, and that large corporations have higher tendencies to adopt bitcoin technology than small to medium-sized companies (SMEs) [46].

Additionally, when it comes to bitcoin acceptance in Saudi Arabian, it was shown that subject norms, security risk, perception of utility, and enjoyment do influence the acceptance and utilization of bitcoin among Saudi Arabian citizens [47]. Another study demonstrated that intrinsic motivation in terms of hedonic motivation is important in the adoption of blockchain technology (bitcoin), while extrinsic motivations such as performance expectancy are a significant predictor of bitcoin use [48]. Effort expectancy, however, was not significant in driving the behavioral acceptance of bitcoin [48]. Also, a similar study reported that factors such as effort expectancy, performance expectancy, decentralization, adoption risk, perceived trust, and social influence were, respectively, directly associated with behavioral intention and future expectancy of bitcoin [28]. Lastly, further research revealed that the intention to adopt

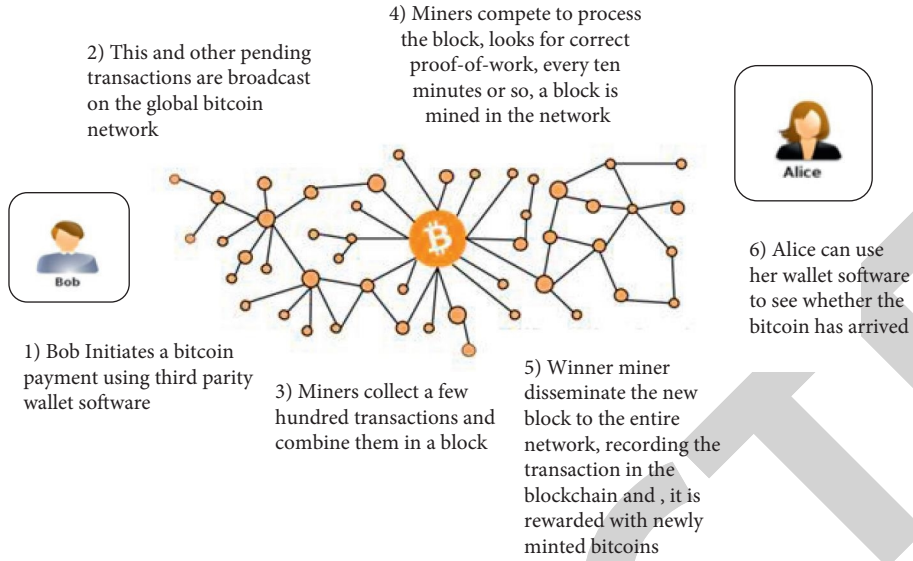

Figure 1: Nature of bitcoin transaction steps [31].

cryptocurrency (bitcoin) is driven by techno-stress and technology involvement [49]. Cryptocurrency compatibility and efficacy influenced techno-stress and technology involvement, respectively [49]. While cryptocurrency functional transparency showed a direct effect on techno-stress, it was, however, not significant in driving technology involvement [49].

2.3. Research Conceptual Framework and Hypotheses Development

2.3.1. Research Conceptual Framework

(1) Unified Theory of Acceptance and Use of Technology (UTAUT). The UTAUT advanced by Venkatesh, Morris [50], is among the major theories/models on the acceptance of new forms of technology. The UTAUT comprises four major variables such as performance expectancy, effort expectancy, social influence, and facilitation conditions [50]. These variables are considered to have a direct impact on the adoption intention and the actual use of technology. They are also moderated by factors such as age, gender, experience, and voluntariness [50]. It has been stipulated that the application of these constructs in research can empower researchers and practitioners to properly determine the individual decision to use a particular system [51, 52]. The UTAUT was combined with eight (8) theories/models, and they are the technology acceptance model (TAM), the theory of reason action (TRA), the motivational model (MM), the theory of planned behavior (TBP), the combined theory of planned behavior/technology acceptance model (C-TPB-TAM), innovation diffusion theory (IDT), the model of PC utilization (MPCU) and the social cognitive theory (SCT). All these theories/models contributed to providing a better explanation of the acceptance and use of any new technological system via the UTAUT model. This was demonstrated in a study that showed this performed better than the eight individual theories with an R^2 value of 69% [50]. The UTAUT model is depicted in Figure 2. Table 1 presents the UTAUT core constructs and their respective descriptions.

The UTAUT has been applied in several information systems application research such as communication systems (e.g., robot systems, mobile banking, information Kiosk, and mobile commerce) [53–55], general-purpose systems (e.g., information systems/technology, e-government services, e-filing systems, e-readiness, and knowledge management systems) [56–59], office systems (e.g., accounting information systems, computer-based assessment model, peer-to-peer academic network, and remote desktop applications) [60–62], and specialized business systems (e.g., medical support system, electronic HRM system, tax software system, and customer relationship management systems) [63–67]. The utilization of the UTAUT model in these diverse fields of studies/areas provides a testament to the relevance, reliability, adequacy, and robustness of the capacity of this model to augment the comprehension of the elements driving the acceptance of new information systems/technology. This accounted for its utilization in this paper to elucidate the adoption of bitcoin among Chinese citizens.

The main core constructs of the UTAUT model were modified and integrated with new constructs to enable the realization of the objective of this study. The modification saw the exclusion of two core constructs of the UTAUT which are social influence and facilitation conditions. The three new constructs added/integrated to develop a new model for testing (shown in Figure 2) are infrastructure support, Internet security, and government regulations along with the performance expectancy and effort expectancy of the UTAUT model. It has been elaborated that researchers are always in constant search for new drivers or factors to extend or modify technology adoption theories to better provide contextual systematic analysis psychological

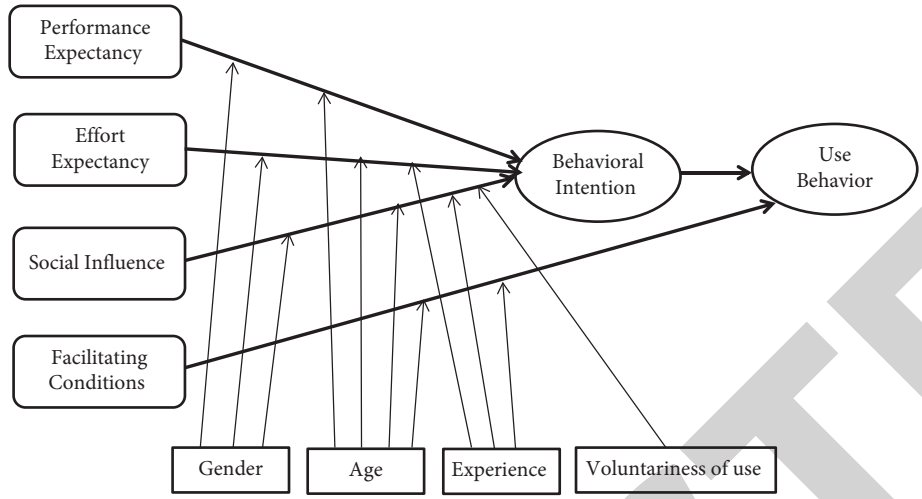

Figure 2: Original UTAUT model [50].

Table 1: UTAUT core constructs and descriptions.

UTAUT core constructs	Descriptions
Performance expectancy (PE)	Considered how utilizing technology can provide benefits/advantages to users in undertaking a specific task [50].
Effort expectancy (EE)	Degree of comfort/effort associated with users' utilization of specific technology [50]
Social influence (SI)	The level to which end users consider significant people (important, e.g., family and friends) to think that they should make use of a particular technology [50]
Facilitating conditions (FC)	The level end users' understanding that there are the required assets and support for them to utilize a specific technology system [50]

decision-making process of users toward the utilization of new forms of technology systems [68, 69]. The extension and modification of a theory (model) like the UTAUT provide alternative enhanced explanatory power (theoretical) of a model for user acceptance of a technology [68]. The incorporation of new constructs into a model is instrumental in reflecting the characteristics of the research context/object [68, 70]. Original models thus become the baseline for researchers to extend their conceptual model based on contextual conditions [69]. The model based on the modified UTAUT is to empower this paper to contribute to the e-commerce and bitcoin payment adoption literature from a new perspective. Especially, in the context of the integration of government regulation as a moderator in our model which seeks to moderate between these factors (performance expectancy, effort expectancy, Internet security, and infrastructure support) and behavioral adoption. This is quite different from the UTAUT model (shown in Figure 1) which proposes gender, age, experience, and voluntariness of use as moderators. The detailed explanation of the constructs leading to the developing of the model (shown in Figure 1) along with its theoretical foundation and hypothesis is discussed in the following section.

2.4. Hypothesis Formation

2.4.1. Performance Expectancy. Performance expectancy (PE) is the degree to which people are of the view that the use of a particular technology system empowers them to accomplish job goals [50]. It has to do with the appreciation of the benefits that arise from the use of any technology such as the bitcoin system. The more benefits resulting from technology use, the more people will be ready to adopt it. Bitcoin provides low transaction fees and speculation avenues as compared to other international money transfer payment systems [71, 72]. Thus, it follows that when users are able to exchange goods and services with bitcoin transactions, then they will more than ever be ready to adopt it. One important major benefit of bitcoin is the creation of a cashless society and therefore can lead to a situation where users will carry less physical cash on them to avoid being robbed. In addition, when virtual currency like bitcoin can ensure maximum consumer protection in the form of refunds as a result of a disagreement between consumers and merchants, then it will drive more people to adopt it. It has been highlighted that an online payment system offers a better and faster speed of transactions than other payment methods [73, 74]. It also promotes account/transaction security, stability, and reliance on decentralized payment methods through a refined mining process [44, 75]. Research has validated that PE is positively related to the decisions of users to adopt bitcoin [76, 77]. H1 was consequently proposed.

H1: performance expectancy has a significant impact on the behavioral adoption of bitcoin.

2.4.2. Effort Expectancy. The effort expectancy (EE) associated with any form of technology can drive its acceptance

among the people. EE is defined as the extent of simplicity connected with the usage of a technology [50]. That is, the easier it is for users to operate a technology system such as bitcoin, the more they are in readiness to use such a technology [78, 79]. In other words, users will be unwilling to use a technology that they perceive to be hard to use. It has to do with the efficiency of technology [42, 80]. For instance, the data sharing protocols can enable the creation of effective and efficient data recording systems with less use of traditional systems of data tracking [78, 80]. Past research has indicated a positive relationship between EE and adoption intention [30, 81, 82]. Consequently, H2 was advanced.

H2: EE has a significant impact on the behavioral adoption of bitcoin.

2.4.3. Infrastructure Support. The availability of adequate infrastructure to drive the expansion and circulation of any novel technological system is a paramount concern for both practitioners and users alike. The absence of adequate infrastructure which may include both managerial and technical support can spell doom for the wider of acceptance any technology. Particularly, in the case of bitcoin, the provision of adequate infrastructure support can drive the extensive development and acceptance of the bitcoin payment system [83, 84]. Adequate ICT infrastructure in the form of integration of hardware and software/networks is mandatory to promote better communication and interoperability between IT systems [85, 86]. IT capabilities, applications, platforms/systems, and information infrastructures are necessary for the proper development and diffusion of any technology-driven system such as bitcoin [85, 86]. The information infrastructure is a shared, open, and unbounded heterogeneous and evolving socio-technical system that includes IT capabilities and their users, operations, and design communities [85, 87]. Following the preceding arguments, it is advanced that the provision of adequate infrastructure to support the development of bitcoin payment systems can drive the adoption of bitcoin payment systems. Accordingly, H3 was proposed.

H3: infrastructure support has a significant impact on the behavioral adoption of bitcoin payments.

2.4.4. Internet Security. The provision and guaranteeing of security and a safe virtual environment for the smooth operation and engagement of users is necessary to drive higher confidence of users towards any form of technology like bitcoin. The success of bitcoin acceptance will be based on the extent of security provided to users as they interact with bitcoin payment systems. It has been elaborated that due to the decentralized nature coupled with an uncontrollable atmosphere, hackers and thieves find cryptocurrency (bitcoin) systems as an easy way to engage in fraudulent transactions [31, 88, 89]. Tight security protocols that can prevent these forms of attack such as bait and switch, direct stealing, fictitious transactions, unintentional transaction suppression, intentional transaction suppression, and rewriting chain can reduce the threat to privacy and security in bitcoin transactions and thus bolster confidence among users. In addition, the safeguarding of users' information and data from any unauthorized third-party access may have a corresponding negative effect on the adoption intention of users. It has been established that Internet security is directly related to the adoption intention of a technology [60, 90]. Consequently, H4 was advanced.

H4: Internet security has a significant impact on the behavioral adoption of bitcoin payment.

2.4.5. Moderating Impact of Government Regulations (GR). Bitcoin payment system technology adopts a peer-to-peer system that operates without any trusted third-party authority [31, 33]. This absence of a third-party authority to supervise the bitcoin transactions has been a concern for many players in the digital currency industry. It is been emphasized that it is time for the government stepping in to regulate bitcoin transactions through the imposition of taxes to prevent the black money market from growing [33, 91]. Proper government policy and regulations are needed to provide enforceable grounds rules and a level playing field for all participants in any bitcoin transaction. Government regulations (GR) empower the use of this transformational bitcoin technology innovation while at the same time protecting the financial market system to promote a safer and transparent bitcoin market environment [92, 93]. It has been stipulated that government regulations can be implemented in three methods: regulations that will promote better public-private partnership; regulations that will pursue tougher enforcement on noncompliance bitcoin exchanges; and lastly, regulations to encourage people to report suspicious bitcoin transactions to create a higher atmosphere of trust and certainty in the digital currency space [92, 94]. The promulgation of financial regulations to guide the development and implementation of bitcoin financial system technology is necessary to finish out illicit financial and money laundering transactions and fraudsters. The challenge of initiating and implementing proper regulatory practices and lack of guidance has resulted in a barrier to the extensive acceptance of digital currency (bitcoin) [95–97].

In addition to providing a level playing field, government regulations can influence the positive perspective of consumers toward digital currency (bitcoin) adoption. Thus, we proposed that government regulations (GR) can moderate the impact of these factors (PE, EE, infrastructure support ad security, and privacy) on the behavioral adoption of bitcoin. Accordingly, H5, H6, H7, and H8 were proposed.

H5: government regulations moderate significantly the impact of performance expectancy on the behavioral adoption of bitcoin.

H6: government regulations moderate significantly the impact of effort expectancy on the behavioral adoption of bitcoin.

H7: government regulations moderate significantly the impact of infrastructure support on the behavioral adoption of bitcoin.

H8: government regulations moderate significantly the impact of security and privacy on the behavioral adoption of bitcoin.

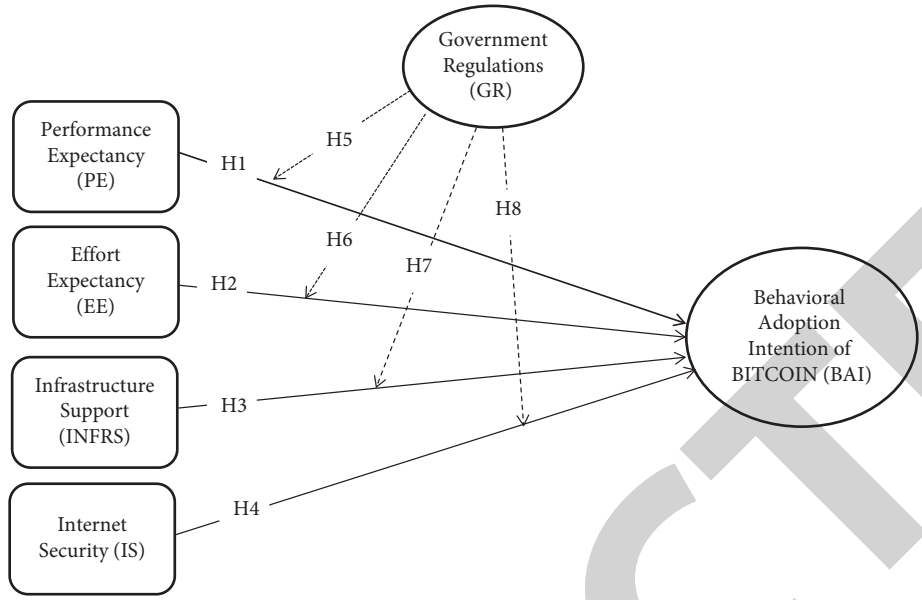

Figure 3: Research model.

3. Research Model

The research model to experiment in this study is illustrated in Figure 3. The research model is based on the hypothesis developed in the preceding section. It was developed from the modified UTAUT theory which was incorporated with new constructs such as infrastructure support, Internet security, and government regulations. Along with the core constructs of UTAUT (performance expectancy and effort expectancy), infrastructure support, Internet security, and government regulations are predicted to drive the adoption behavior of bitcoin. These interactions are moderated by government regulations.

4. Research Methodology

4.1. Measurement. To test the anticipated research model and assumptions in this, a self-developed research instrument was applied to gather relevant data and information from the respondents. The questionnaire instruments including items which were chosen based on a thorough literature review, however, were amended to mirror the settings of the present paper. The constructs were adopted from the literature as follows: performance expectancy, effort expectancy and adoption intention [50, 98], infrastructure support [99], Internet security [100], and government regulations (self-developed). The populations of this study are college graduates from the Jiangxi University of Science and Technology. The questionnaire instrument constructs were measured on a five-point Likert scale which comprised 1 = strongly disagree (SD) to 5 = strongly agree (SA). The items used are appended as shown in Appendix.

To ensure that the questionnaire was free from any form of ambiguity and other mistakes, it was pretested and piloted to a section of the population of the study. This process ensured that we got useful responses and inputs that culminated in the modification and rewording of some of the question items for clarity and maximum comprehension. Pilot studies guide the design and implementation of larger-scale studies and thus can help in identifying modifications required in the design of a larger subsequent hypothesis testing study [101, 102]. The results of the pilot and pretesting were not added to the final data analysis conducted. This was done because the researcher is of the view that the outcomes of the initial pilot and pretesting will not have any significant effect on the final data procured, analyzed, and conclusions to be drawn from the study. This is buttressed by scholars that pilot studies are deemed not to be formally powered to determine effects (i.e., underpowered to achieve statistical significance) [103]. Pilot studies are considered to be for information purposes, and thus, it is to inform the researcher whether to conduct and design a wider confirmatory study [103]. Additionally, it has been indicated that the goal of a pilot study is to determine the feasibility of an approach that is intended to be applied in a larger-scale study, and therefore, pilot studies are not hypothesis testing studies [101, 104]. Importantly, it has been stressed that a pilot study does not provide meaningful effect size estimates because of the apparent imprecision inherent in data from small samples [101].

4.2. Data Collection. The data collection utilized the convenience sample approach to acquire the data from the respondents (University community: Jiangxi University of Science and Technology). The convenient sampling procedure becomes relevant when it is practically impossible to gather information and data from the whole population under study [105, 106]. The use of the convenience sampling approach was based on these advantages: collect data quicker, inexpensive to collect data, easy to research with, low-cost dimension, and readily accessible sample [107, 108]. The questionnaire was subdivided into two components. The first part had basic information about the

respondents, while the other part was about variables considered in this paper. The questionnaire instrument was hosted online (three months) (March to May 2021) for respondents to fill out who are made up of teachers (teaching and nonteaching staff), students, and general workers within the university community. The online question system was adopted since it empowers respondents to have a higher processing time to finish it up on their smartphones as compared to desktop computers [109]. The online link and QR code created were then shared on social media platforms, groups, and personal chats on WeChat. Through the individual and group chats, people were asked to share the links and QR-code with their other colleagues and friends within the university community. WeChat is the utmost widespread social media APP in China, and thus it enabled the researchers to reach the respondents faster with less limitation. A total of 458 valid responses were generated through the online hosting of the questionnaire. The 458 valid responses were deemed to be enough and suitable for the data analysis to be conducted. This sample (458) was used since using the sample size calculator [110], and a minimum of 380 sample size is required with an estimated population size of 35,000 within the University community. A confidence level of 95%, a margin of error of 5%, and the estimated 35000 population size were used to determine the acceptable minimum sample size (380) needed for this study.

4.3. Data Analysis. The structural equation model (SEM) using PLS (Smart PLS 3.0) was adapted to analyze the research data generated. The SEM approach is considered suitable since it is useful in validating models that are complex and have not been tested before [111, 112]. It also ensures the accuracy of measurement errors and gives adequate results that can be more trusting than other methods of analysis such as regression [113, 114]. Additionally, the SEM method is regarded as robust and efficient to examine the interaction between different variables, and it also computes measurement errors in tested constructs [115]. Furthermore, the PLS-SEM can work with any sample size so far as it meets the required minimum sample size [116]. SEM statistical approach empowers the testing of multivariate models by providing a parsimonious summary of the interrelationships among constructs [117]. Fundamentally, SEM has two key aspects such as the measurement model and the structural model. The measurement model examines the relationships between the observed constructs/items, while the structural model describes the inter-relationships among variables, i.e., the hypothesized interaction among the latent constructs [117].

4.4. Common Method Bias. Common method variance or bias seems to be a common issue in survey research settings. It can potentially affect the nature of item validities, reliabilities, and the covariation between latent variables if not addressed [118–120]. Harman's single factor test was used to determine the existence of CMB in our study if any through the use of confirmatory factor analysis in SPSS. Harman's single-factor test is considered the most popular in information system research to examine the nature of common method bias [121, 122]. In this procedure, all items from every construct are loaded into the factor analysis to check where one single factor emerges or whether a single general factor accounts for the majority of the covariance among the measures [123]. If no single factor emerges and accounts for the majority of the covariance, then it means that CMB/CMV is not prevalent in the paper [123]. Per this single factor test that uses confirmatory factor analysis, if one single factor explains more than 50% of the variance in the study, then there is a problem of common method bias [124]. The analysis undertaken shows that no single construct accounted for more than 50% of the variance, i.e., a single construct explained 31.9% of the variance in the study. This demonstrates that challenge of CMB/CMV does not exist in our study. The result of the Harman's single factor test is shown in Table 2.

5. Results and Data Analysis

5.1. Statistics (Demographic). The respondents' information statistics are presented in Table 3. There are more female (69%) respondents as compared to males (31%). Many of the participants were between the ages of 26 and 30 (40.8%). Most of them had undergraduate degrees (50.9%).

5.2. Goodness of Fit Index. A confirmatory factor analysis was used to test the goodness of fit of the measurement model. The results shown in Table 4 are an indication that the standard criteria for the goodness of fit to exit have been met. The values for ratio of chi-square to degrees of freedom (X^2/df) = 1.33, root mean square error of approximation (RMSEA) = 0.046, comparative fit index (CFI) = 0.923, adjusted goodness of fit index (AGFI) = 0.942, incremental fit index (IFI) = 0.953, and the Tucker–Lewis index (TLI) = 0.921 are good representation of a good model fit [125].

5.3. Measurement Model. The results measurement models are shown in Table 5. It was completed by using the confirmatory factor analysis. The AVE (average variance extracted), loadings, composite reliability, and Cronbach's alphas were used to determine the construct reliability of the measurement model. Cronbach's alpha and composite reliability are suggested to have values not less than 0.70 and 0.80, respectively [126, 127]. The AVE is recommended to have a measure of not less than 0.50 [125]. As indicated in Table 5, all the measurement standards have been met since the values obtained for each of the reliability indicators such as AVE, composite reliability, Cronbach's alpha, and factor loading were all above the recommended cut-off points.

Additionally, the discriminant validity was used to determine the construct validity. The results are shown in Table 6. The discriminant validity was based on the Fornell–Larcker principle [128]. It states that the extent of correlations between the items of any two variables should be less than the square root of the AVE shared by constructs within the construct. As illustrated in Table 6, all the square roots of AVE values exceed the cross-diagonal values and

Table 2: Harman's single-factor test (extraction method: Principal component analysis).

Component	Initial eigenvalues			Extraction of sums of squared loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	16.019	31.902	31.902	16.019	31.902	31.902
2	1.707	13.930	41.924			
3	1.350	10.945	44.869			
4	0.986	8.035	51.904			
5	0.857	7.870	55.775			
6	0.821	7.671	57.446			
7	0.801	7.561	60.007			
8	0.781	7.450	65.456			
9	0.764	6.354	68.811			
10	0.645	6.247	70.058			
11	0.634	5.188	75.246			
12	0.633	5.183	79.429			
13	0.525	5.140	80.569			
14	0.524	4.136	83.705			
15	0.517	4.096	87.501			
16	0.414	4.079	90.180			
17	0.411	3.063	94.043			
18	0.310	3.057	100.000			

Table 3: Demographic statistics.

Item	Description	Frequency	Percentage
Gender	Male	142	31.0
	Female	316	69.0
Age	18–25	119	26.0
	26–30	187	40.8
	30–40	102	22.3
	41+	50	10.9
Education	Undergraduate	233	50.9
	Masters	132	28.8
	PhD	48	10.5
	Others	45	9.8

Table 4: Goodness of fit index.

Item	Standard criteria	Output	
CMIN	—	112.713	—
DF	—	85	—
CMIN/DF	<3	1.33	YES
GFI	>0.8	0.052	YES
AGFI	>0.8	0.942	YES
NFI	>0.9	0.953	YES
TLI	>0.9	0.921	YES
CFI	>0.9	0.923	YES
RMSEA	<0.08	0.046	YES

thus indicate that there is discriminate validity in the measurement model.

5.4. Structural Model. The results of the structural model (hypothesis tested) are shown in Table 7. The results show that performance expectancy ($\beta = 0.330$, $p < 0.05$) and effort expectancy ($\beta = 34$, $p < 0.05$) are directly related to the behavioral adoption of bitcoin. Hence, H1 and H2 were supported. Also, infrastructure support ($\beta = 0.25$, $p < 0.05$) and Internet security ($\beta = 0.29$, $p < 0.05$) both had significant impact on the intention adopt bitcoin. H3 and H4 were consequently supported. In terms of the moderating analysis, the results show that while government regulations were found to be significant in moderating the influence of performance expectancy on the adoption intention of bitcoin ($\beta = 0.49$, $p < 0.05$), it was, however, not significant in moderating the impact of effort expectancy on the adoption of bitcoin ($\beta = 0.20$, $p > 0.05$). Consequently, H5 was supported, while H6 was rejected. Additionally, it was revealed that government regulations show a significant moderating effect on the impact of infrastructure support on the adoption intention of bitcoin ($\beta = 0.47$, $p < 0.05$). H7, therefore, was supported. Finally, government regulations did not show a significant moderating effect on the impact of Internet security on the adoption of bitcoin ($\beta = 0.78$, $p > 0.05$). H8 was not supported. These results are graphically illustrated in Figure 4.

6. Discussion

The innovations that have heralded the development of the digital payment industry have led to the introduction of the digital currency called bitcoin. Bitcoin as a new system of payment empowers the completion of transactions (money) in a digital format which enables users to send money anywhere promptly. While bitcoin currency has been innovative in the market around the world, its usage and adoption are somehow not widespread. This paper thus examines the adoption behavioral intention of Chinese citizens to use bitcoin digital payment with a particular focus on how government regulations can drive the wider acceptance of this new form of payment. The results have shown that factors such as PE, EE, infrastructure support, and Internet security have a direct significant influence in driving the adoption of bitcoin digital payment. The moderating effect of government regulations shows that government regulations were significant in contributing to the

Table 5: Measurement model.

Construct	Item	AVE	Composite	Cronbach's alpha	Loading
Performance expectancy	PE1	0.895	0.946	0.925	0.961
	PE2				0.864
	PE3				0.943
Effort expectancy	EE1	0.768	0.957	0.963	0.876
	EE2				0.972
	EE3				0.967
Infrastructure support	INFRS1	0.763	0.955	0.951	0.980
	INFRS2				0.967
	INFRS3				0.856
Internet security	IS1	0.887	0.940	0.959	0.856
	IS2				0.978
	IS3				0.910
Government regulations	GR1	0.873	0.932	0.866	0.897
	GR2				0.973
	GR3				0.842
Behavioral adoption intention of bitcoin	BAI1	0.753	0.936	0.946	0.913
	BAI2				0.903
	BAI3				0.916

Table 6: Discriminant validity.

Variables	PE	EE	INFRS	IS	GR	BAI
PE	**0.861**					
EE	0.661	**0.921**				
INFRS	0.647	0.820	**0.844**			
IS	0.766	0.770	0.748	**0.901**		
GR	0.769	0.760	0.668	0.867	**0.911**	
BAI	0.855	0.751	0.814	0.766	0.868	**0.900**

Performance expectancy (PE), effort expectancy (EE), infrastructure support (INFRS), Internet security (IS), government regulations (GR), behavioral adoption intention (BAI). Square root of AVE is shown diagonally in bold.

Table 7: Structural model (hypothesis validated).

Hypotheses	Path	β	T value	Sign	Supported
H1	PE ⟶ BAI	0.33	68.64	***	YES
H2	EE ⟶ BAI	0.34	65.72	***	YES
H3	INFRS ⟶ BAI	0.25	6.19	***	YES
H4	IS ⟶ BAI	0.29	8.66	***	YES
H5	PE ⟶ GR ⟶ BAI	0.49	7.22	***	YES
H6	EE ⟶ GR ⟶ BAI	0.20	1.64	0.102	NO
H7	INFRS ⟶ GR ⟶ BAI	0.47	9.37	***	YES
H8	IS ⟶ GR ⟶ BAI	0.78	9.16	0.365	NO

Performance expectancy (PE), effort expectancy (EE), infrastructure support (INFRS), Internet security (IS), government regulations (GR), behavioral adoption intention (BAI). Notes. *** $p < 0.05$.

impact of both PE and infrastructure support on the acceptance of bitcoin digital payment. However, the result showed a nonsignificant effect of government regulations in moderating the impact of both EE and Internet security on the behavioral adoption of bitcoin digital payment.

6.1. The Link between Performance Expectancy and Bitcoin Adoption. The significant impact of PE on the adoption of bitcoin digital payment means that the design of bitcoin digital systems to remain constantly useful to users always is vital if it is to be accepted. Maintaining features of the time-saving, lower transaction fees, non-physical presence of traders to complete transactions, and ensuring flexibility in payment (anywhere) in bitcoin digital payment are major performance expectancy elements that attract users to adopt this payment system. This finding is in line with other research works that have shown that this element is instrumental in driving the acceptance of bitcoin payment [129–131]. However, the result does not support research findings that showed that PE does not drive the adoption of bitcoin payment [132].

6.2. The Link between Effort Expectancy and Bitcoin Adoption. Also, the positive significant effect of expectancy effect on the acceptance of bitcoin payment does indicate that, in the design of bitcoin digital currency, the ease of use and user-friendly features such as easy to navigate download and upload, speed of connection, and quicker response can drive influence the behavior of user towards bitcoin adoption. The effort expectancy of as to do with the efficacy of technology and the easier the technology is the more acceptance rate will generate. This result supports previous research that has demonstrated that the level of ease of use associated with digital payment can drive its adoption [28, 133].

6.3. The Link between Infrastructure Support and Bitcoin Adoption. Furthermore, the direct impact of infrastructure support on the adoption of bitcoin payment does illustrate that the provision of the right infrastructure both technical and managerial support can drive the adoption of bitcoin adoption. Particularly, the technology infrastructure such as ICT infrastructure in terms of the hardware and software and network systems to facilitate communication and interoperation between bitcoin systems is vital for the success of bitcoin. As indicated by [86], infrastructure (information) is the collective/shared open, and unbounded, heterogeneous, developing socio-technical systems that

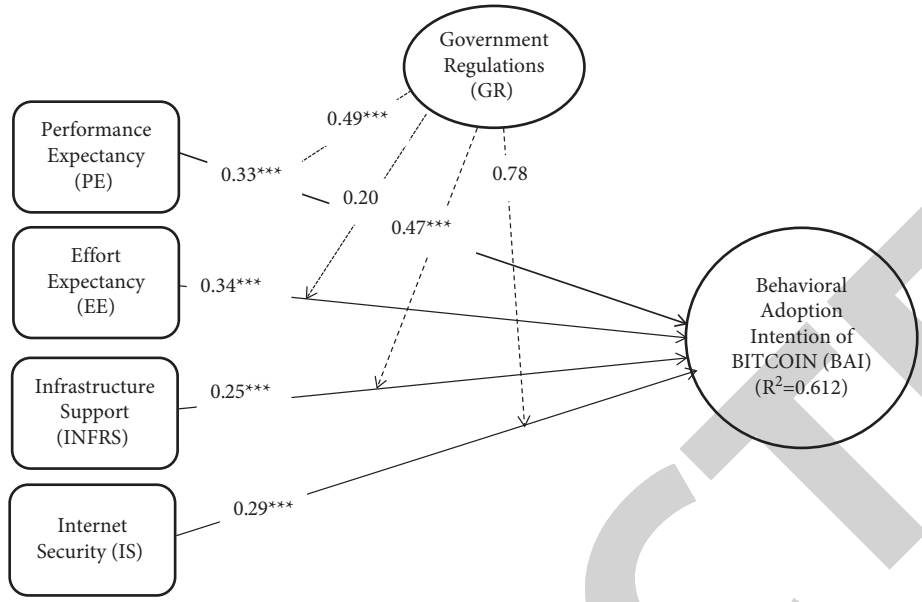

Figure 4: Validated research model. Notes. *** $p < 0.05$.

comprise IT capabilities and consumer procedures and designed societies. Additionally, technological issues such as compatibility, data security, smart contract coding, design, and permissions can be public or/vs. private, and maturity are vital in strengthening the bitcoin infrastructure. This paper argues that the nature of infrastructure support provided can drive the diffusion and acceptance of any technology which includes bitcoin payment.

6.4. The Link between Internet Security and Privacy and Bitcoin Adoption. Additionally, the significant impact of Internet security and privacy on the acceptance of bitcoin digital currency shows that addressing the security and privacy concerns of users can potentially attract them to use bitcoin. Security is an important component of technology that required gaining wider acceptance of any technology like bitcoin [134, 135]. The development and design of decentralized operation systems in peer-to-peer hacking and tempering are paramount. To encourage the acceptance of bitcoin, advanced technological systems should be deployed to protect user systems (financial) to prevent breaches leading to loss of money and to develop higher consumer trust [134, 136]. This is confirmed by studies that elaborated that maintaining strong Internet security and privacy environment can influence the wider user acceptance of any technology such as bitcoin payment [137].

6.5. Moderating Impact of Government Regulations. Furthermore, the significant moderating impact of government regulations on the effect of both PE and infrastructure support on the diffusion and acceptance of bitcoin digital payment is a strong testament to the strategic role the government policy can contribute to the adoption of bitcoin payment. This shows that, with the right government intervention and support, the performance and effort expectancy that users expect from bitcoin digital payment can be achieved. Government regulations ultimately strengthen the predictive power of both performance and effort infrastructure support on the Chinese citizen adoption of bitcoin.

6.6. Theoretical Implications. This study extended the UTAUT with constructs such as infrastructure support and security and government regulations along with its key variables (PE and EE). Especially, with the integration of government regulation as a moderator, moderating the impact of PE, EE, infrastructure support, and security on the adoption of bitcoin digital payment. Jointly, these four elements account for about 61.2% of the variance in the acceptance of bitcoin payments. The introduction of government regulation as a moderator in the UTAUT is the major contribution of this which seeks to broaden the understanding of the government's role through policy and regulations in driving the acceptance of bitcoin through performance and effort expectancy, infrastructure support, and security. While acknowledging that other studies have applied UTAUT to study bitcoin adoption they, however, did not experiment on the key element of government regulations as a moderator. Gender and age were used as moderators in the UTAUT [100] as compared to government regulations in our study. This provides a theoretical basis for other researchers to expand on as far as the UTAUT model is concerned.

6.7. Practical Implications. The research results of this study also have some managerial implications for government, policymakers, practitioners, and consumers as well users and vendors and software developers of bitcoin payment systems. For bitcoin payment developers, the design and implementation of bitcoin technology should be retooled, to

make it continuously useful in the daily life of users. Bitcoin must demonstrate higher benefits/values as compared to other currency systems if it is to be adopted. The sustaining of bitcoin benefits and advantages such as no third party seizure, no taxes, no tracking (user anonymity and transparency), no transaction costs, no risks of "charge-backs" and importantly reduced tendency for bitcoin to be stolen is crucial to encourage wider acceptance. All these advantages and benefits must be situated within a bitcoin environment that is highly user-friendly (less cumbersome process/interaction), thereby enhancing the users' understanding of the performance and EE of bitcoin payment which will in turn motivate people to use it.

Furthermore, for government and policy-makers, the provision of adequate infrastructure support to drive the diffusion and acceptance of bitcoin payment technology should be a top priority. The creation of both adequate technological and financial infrastructure is fundamental to driving the acceptance of bitcoin payment. The infrastructure support can make bitcoin attractive to small businesses who may be interested in findings ways to reduce transactional costs. It can also propel bitcoin as an affordable and convenient alternative to credit card payments which comes with huge authorization fees, transaction fees, interchange fees, etc. Additionally, to increase user acceptance of bitcoin payment, bitcoin developers should ensure that the security and privacy of bitcoin technology are designed with watertight features. Bitcoin payment technology must be incorporated with security features that will reduce its susceptibility to attacks and hacking from unauthorized persons. The bitcoin software should eliminate security breaches and data theft that could be injurious and damaging to users. Users will appreciate bitcoin technology that is protective of their information and security and thus will drive the acceptance of it. The security and privacy features of bitcoin payment should help reduce the levels of technological and financial risks for users.

Additionally, central governments, policymakers, and relevant state agencies like parliament and central banks should make sure that there are the right government policies and regulations to regulate the operation of bitcoin technology. This is paramount since the study has proven that when government regulations are properly instituted in the deployment of bitcoin payment technology, it can generate greater user adoption patterns. Developers, policymakers, regulators, and government agencies should design systems and strategies to promote government oversight when it comes to the development and diffusion of bitcoin payment systems. Government regulations are required to ensure that bitcoin as a virtual currency does not disrupt current payment mechanisms and, to a large extent, the entire monetary system both domestically and internationally. Regulations through government oversight may be seen as defeating one of the cardinal principles (non-government intervention) of the bitcoin payment innovations but could be rather a positive thing to drive greater confidence and trust of users in the adoption of bitcoin as a substitute payment system. For the success of bitcoin technology, government intervention through regulatory works can help reduce investor and consumer protection concerns over the current nature of bitcoin transactions. Also, adequate government oversight (policy and regulations) in the bitcoin industry can guide and influence pricing dynamics, trading attitudes, liquidity, and stronger market efficiency in bitcoin markets. Government and its agencies can use its regulations and policy power to bring discipline to the bitcoin market by preventing market speculations, illegal, and unwarranted trading practices in bitcoin trading/transactions.

A regulated bitcoin industry can transform financial services and empower financial inclusion, especially for the unbanked poor who may find it hard to get access to the domestic and international markets. Government and relevant agencies through appropriate policies and regulations concerning bitcoin can reduce the number of people who are unable to have access to bank accounts and are cut off from international financial markets and involvement in the world economy. Also, government regulations of bitcoin can empower the creation of news services that ensures liquidity and confidence in economies that have weak currencies. Government regulators should seek to build a system where bitcoin is considered a currency permitting consumers and merchants to feel more confident and comfortable depending on bitcoin as a proper medium of exchange. Government agencies can devise adequate regulations to deanonymize bitcoin to eliminate negative connotations about bitcoin as a currency to bolster public confidence and acceptance. Government can give tax incentives for people to register their public key addresses and also increase the punishments for people who use bitcoin to commit crimes. Governments through their central banks should pass bitcoin policy and regulations that will create a framework establishing the rights, liabilities, and responsibilities of participants in electronic fund transfer systems like bitcoin as an electronic payment method.

7. Conclusion

The bitcoin payment technology since its inception has generated a lot of interest around the world, but the issue of its wider acceptance has been a concern. This can partly be attributed to the nonintervention of government (as regulators) as fundamental to the design and deployment of bitcoin architecture/technology. This study, therefore, examined the role government regulations can have in driving the acceptance and adoption of bitcoin payment systems. Particularly, the study explored the moderating impact of government regulations in influencing the PE, EE, infrastructure support, and security and privacy on the adoption of bitcoin payment technology. Per the findings, government regulation was found to be insignificant in enhancing the predictive powers of performance expectancy and infrastructure support on the adoption of bitcoin payment. However, government regulation contrary to expectations was not significant in driving the impact of EE and security on the use of bitcoin payment.

Additionally, PE, EE, infrastructure support, and security and privacy were all determined to be predictors of the

adoption intention of the behavior of bitcoin payment. This study has shown the need for government regulations to be instituted to regulate the deployment of bitcoin payment systems which has a corresponding impact on driving a higher degree of acceptance among users. Government regulations can bring some element of sanctity to the bitcoin industry for both consumers and inventors. Especially for the consumer, it will drive consumer trust and protection from any illicit acts that may endanger their bitcoin transactions. It is thus imperative that central and local governments, regional and state agencies, and officials develop a greater familiarity (knowledge) with the technology fundamental to bitcoin and the nature of its operations/transactions to have adequate information to scrutinize and counter any form of illegal activity.

Overall, adequate government intervention and regulations should help mainstream bitcoin payment technology, and as such, government policy and regulations can contribute to reducing the potential of bitcoin to disrupt monetary policy, decrease the volatility in the bitcoin market industry, diminish speculation and artificial pricing, enhance the scalability issues of bitcoin, enforce regulated anonymity and reversal of transactions if frauds are detected such as money laundering, make cryptocurrency market safer environment for investors, and facilitate interaction between banks and bitcoin companies, describe/explain the risks associate with bitcoin technology, creation of a safer crypto ecosystem, and acceptance of bitcoin as legal tender. Government regulations should further preserve benefits inherent in bitcoin and mitigate-associated risk by ensuring compliance of bitcoin stakeholders with the relevant laws. It is also important to stress that the rules/policies (legal mechanisms) that regulate bitcoin should remain flexible and be implemented as and when required to meet the fluidity character of bitcoin as an innovative technology that is changing constantly.

8. Limitation and Future Research

The study is limited in terms of the sample size, methods, and processes used, and thus, findings as well as the conclusions should not be overly generalized. In addition, the methods and model adopted may be applied by other researchers, but the findings may not necessarily support the findings in this paper. Also, the drivers of bitcoin adoption might not have been fully exhausted in this study, and thus, future study is warranted to explore other underlying elements (such as trust, transaction fees, and switching cost) that encourages bitcoin acceptance, especially government support and regulations.

Appendix

Items Used

Performance expectancy:

PE1: I think using bitcoin payment can increase my chances of reaching my goals
PE2: using bitcoin payment will enable me to achieve my goals quicker
PE3: using bitcoin will have a positive effect on my way of life

Effort expectancy:

EE1: I think it will be easy for me to learn to use bitcoin payment
EE2: using bitcoin will be clear and understandable
EE3: it will be easier for me to become knowledgeable in the use of bitcoin payment

Infrastructure support:

INFRS1: there are available the resources required for me to use bitcoin payment
INFRS2: bitcoin payment is compatible with other technologies I know
INFRS3: there is technical support if I have challenges in using bitcoin payment

Internet security:

IS1: I think the Internet is safe and secure for bitcoin payment transactions
IS2: bitcoin can enable money transfer securely
IS3: I think bitcoin wallet is safe and secured from hacking and unauthorized users

Government regulations:

GR1: government policy to regulate bitcoin will encourage me to use bitcoin
GR2: regulations to punish any illegal use of bitcoin for unauthorized transactions are good
GR3: regulations to guide and protect consumers' money from fraudsters are needed

Behavioral adoption intention:

BAI1: I intend to use bitcoin payment
BAI2: I plan to recommend bitcoin payment to others
BAI3: I will always opt for bitcoin payment

Data Availability

The data used to support the findings of this study are included in the article.

Conflicts of Interest

The authors declare no conflicts of interest.

References

[1] U. Rahardja and Q. E. R. Aini, "GOOD, bad and dark bitcoin: a systematic literature review," *Aptisi Transactions on Technopreneurship (ATT)*, vol. 3, no. 2, pp. 1–5, 2021.

[2] S. F. Wamba and J. K. Bitcoin, "Blockchain and fintech: a systematic review and case studies in the supply chain," *Production Planning & Control*, vol. 31, no. 2-3, pp. 115–142, 2020.

[3] M. Crosby, P. Pattanayak, S. Verma, and V. Kalyanaraman, "Blockchain technology: beyond bitcoin," *Applied Innovation*, vol. 2, no. 6, p. 71, 2016.

[4] J. Mattke and C. L. T. Maier, "Bitcoin investment: a mixed methods study of investment motivations," *European Journal of Information Systems*, vol. 30, no. 3, 285 pages, 2021.

[5] A. Bushager, Z. Mirza, and E. Alsalem, "Bitcoin security and privacy: a study of users experiences," *KnE Engineering*, vol. 3, no. 7, pp. 11–28, 2018.

[6] A. T. Kouanou, "Securing data in an internet of things network using blockchain technology: smart home case," *SN Computer Science*, vol. 3, no. 2, pp. 1–10, 2022.

[7] T. Panagiotidis, T. Stengos, and O. Vravosinos, "The effects of markets, uncertainty and search intensity on bitcoin returns," *International Review of Financial Analysis*, vol. 63, pp. 220–242, 2019.

[8] T. Mandjee, "Bitcoin, its legal classification and its regulatory framework," *J. Bus. & Sec. L.*vol. 15, p. 1, 2014.

[9] A. S. Rajasekaran, M. Azees, and F. Al-Turjman, "A comprehensive survey on blockchain technology," *Sustainable Energy Technologies and Assessments*, vol. 52, Article ID 102039, 2022.

[10] G. Schmid, "Beyond Bitcoin: A Critical Look at Blockchain-Based Systems," *Cryptography*, vol. 1, 2017.

[11] B. Kakkar, P. Johri, and A. Kumar, "Blockchain applications in various sectors beyond: bitcoin," in *Proceedings of the 2021 International Conference on Advance Computing and Innovative Technologies in Engineering (ICACITE)*, March 2021.

[12] D. Romano and G. Schmid, "Beyond bitcoin: a critical look at blockchain-based systems," *Cryptography*, vol. 1, no. 2, p. 15, 2017.

[13] M. Verma, "Implementation of blockchain-based technique to a hostel room booking system: practical aspects," *International Journal for Research in Applied Science and Engineering Technology*, vol. 9, no. 5, pp. 1–4, 2021.

[14] A. Maghyereh and H. Abdoh, "Time-frequency quantile dependence between Bitcoin and global equity markets," *The North American Journal of Economics and Finance*, vol. 56, Article ID 101355, 2021.

[15] R. Böhme and N. B. T. Christin, "Bitcoin: economics, technology, and governance," *The Journal of Economic Perspectives*, vol. 29, no. 2, pp. 213–238, 2015.

[16] C. Y. Park, G. Tian, and B. Zhao, *Global Bitcoin Markets and Local Regulations*, Asian Development Bank Economics Working Paper Series, no. 605, South Asia, 2020.

[17] M. Tsukerman, "The block is hot: a survey of the state of Bitcoin regulation and suggestions for the future," *Berkeley Technology Law Journal*, vol. 30, no. 4, pp. 1127–1170, 2015.

[18] B. Kaiser, M. Jurado, and A. Ledger, "The Looming Threat of china: An Analysis of Chinese Influence on Bitcoin," 2018, https://arxiv.org/abs/1810.02466.

[19] J. Riley, "The current status of cryptocurrency regulation in China and its effect around the world," *China and WTO Review*, vol. 7, no. 1, pp. 135–152, 2021.

[20] S. Chow and M. E. Peck, "The bitcoin mines of China," *IEEE Spectrum*, vol. 54, no. 10, pp. 46–53, 2017.

[21] G. Wang and Y. C. S. Tang, "Is bitcoin a safe haven or a hedging asset? Evidence from China," *Journal of Management Science and Engineering*, vol. 4, no. 3, pp. 173–188, 2019.

[22] A. Klimczuk, "*Public policy: ethics.* A. Klimczuk, public policy: ethics," in *International Encyclopedia of the Social and Behavioral Sciences*, J. D. Wright, Ed., pp. 580–585, Elsevier, Oxford, 2015.

[23] N. J. Smelser and P. B. Baltes, *International encyclopedia of the social & behavioral sciences*, Vol. 11, Elsevier, Amsterdam, 2001.

[24] M. D. C. Reyes, A. A. López-Caloca, F. López-Caloca, and R. Sánchez-Sandoval, "Geocybernetics as a tool for the development of transdisciplinary frameworks," *Modern Cartography Series*, vol. 5, pp. 33–42, 2014.

[25] M. P. Ponsford, "A comparative analysis of bitcoin and other decentralised virtual currencies: legal regulation in the People's Republic of China, Canada, and the United States," *HKJ Legal Stud*, vol. 9, p. 29, 2015.

[26] M. A. Nadeem, Z. Liu, A. H. Pitafi, A. Younis, and Y. Xu, "Investigating the Repurchase Intention of Bitcoin: Empirical Evidence from China," *Data Technologies and Applications*, vol. 54, 2020.

[27] F. Shahzad and G. J. M. Xiu, "An empirical investigation on the adoption of cryptocurrencies among the people of mainland China," *Technology in Society*, vol. 55, pp. 33–40, 2018.

[28] I. Almarashdeh, K. Eldaw, and R. M. Mohammad, "The adoption of bitcoins technology: the difference between perceived future expectation and intention to use bitcoins: does social influence matter?" *International Journal of Electrical and Computer Engineering*, vol. 11, no. 6, p. 5351, 2021.

[29] K. M. Gholami, M. R. Ramazanian, and M. F. Masooleh, "Investigating the status of bitcoin adoption in Iran by integrated acceptance and use of technology meta model," *Science and Technology Policy Letters*, vol. 11, no. 2, pp. 81–96, 2021.

[30] M. A. Nadeem and Z. Liu, "Investigating the adoption factors of cryptocurrencies-A case of bitcoin: empirical evidence from China," *Sage Open*, vol. 11, no. 1, Article ID 215824402199870, 2021.

[31] M. Conti and E. C. S. K. Kumar, "A survey on security and privacy issues of bitcoin," *IEEE Communications Surveys & Tutorials*, vol. 20, no. 4, pp. 3416–3452, 2018.

[32] A. C. Issac and R. Baral, "A trustworthy network or a technologically disguised scam: a biblio-morphological analysis of bitcoin and blockchain literature," *Global Knowledge, Memory and Communication*, vol. 69, 2020.

[33] P. K. Kaushal, A. Bagga, and R. Sobti, "Evolution of bitcoin and security risk in bitcoin wallets," in *Proceedings of the 2017 International Conference on Computer, Communications and Electronics (Comptelix)*, July 2017.

[34] D. Vidal-Tomás, "All the frequencies matter in the Bitcoin market: an efficiency analysis," *Applied Economics Letters*, vol. 29, pp. 1–7, 2020.

[35] S. Corbet and B. M. S. Lucey, "Bitcoin Futures-What use are they?" *Economics Letters*, vol. 172, pp. 23–27, 2018.

[36] P. Kayal and P. Rohilla, "Bitcoin in the economics and finance literature: a survey," *SN Business & Economics*, vol. 1, no. 7, pp. 88–21, 2021.

[37] T. Chen and C. Lau, "Economic policy uncertainty in China and bitcoin returns: evidence from the COVID-19 period," *Frontiers in Public Health*, vol. 9, p. 140, 2021.

[38] R. Kher, S. Terjesen, and C. Liu, "Blockchain, Bitcoin, and ICOs: a review and research agenda," *Small Business Economics*, vol. 56, no. 4, pp. 1699–1720, 2021.

[39] A. K. Biswas, M. Dasgupta, and M. Dasgupta, "Bitcoin cryptocurrency its cryptographic weaknesses and remedies,"

Asia Pacific Journal of Information Systems, vol. 30, no. 1, pp. 21–30, 2020.

[40] M. Umar and C. W. Su, "Bitcoin: a safe haven asset and a winner amid political and economic uncertainties in the US?" *Technological Forecasting and Social Change*, vol. 167, Article ID 120680, 2021.

[41] N. Jonker, "What Drives Bitcoin Adoption by Retailers," *Electronic Commerce Research and Applications*, vol. 35, Article ID 100848, 2018.

[42] P. Palos-Sanchez, J. R. Saura, and R. Ayestaran, "An exploratory approach to the adoption process of bitcoin by business executives," *Mathematics*, vol. 9, no. 4, p. 355, 2021.

[43] Y.-C. Yeong and K. Kalid, "Sustainable cryptocurrency adoption assessment among IT enthusiasts and cryptocurrency social communities," *Sustainable Energy Technologies and Assessments*, vol. 52, Article ID 102085, 2022.

[44] J. Walton and K. A. Johnston, "Exploring perceptions of bitcoin adoption: the South African virtual community perspective," *Interdisciplinary Journal of Information, Knowledge, and Management*, vol. 13, pp. 165–182, 2018.

[45] N. Kimani, *Bitcoin Adoption in South Africa, an End User Perspective*, Faculty of Commerce, South Africa, 2021.

[46] T. Clohessy and T. Acton, "Investigating the Influence of Organizational Factors on Blockchain Adoption: An Innovation Theory Perspective," *Industrial Management & Data Systems*, vol. 119, no. 7, 2019.

[47] S. Alaklabi and K. Kang, "Perceptions towards cryptocurrency adoption: a case of Saudi arabian citizens," *Journal of Electronic Banking Systems*, vol. 2021, pp. 1–17, Article ID 110411, 2021.

[48] J. J. Pieters, A. Kokkinou, and T. V. Kollenburg, "Understanding blockchain technology adoption by non-experts: an application of the unified theory of acceptance and use of technology (UTAUT)," *Operations Research Forum*, vol. 3, 2022.

[49] R. Wu and K. Ishfaq, "Investigating e-retailers' intentions to adopt cryptocurrency considering the mediation of technostress and technology involvement," *Sustainability*, vol. 14, no. 2, p. 641, 2022.

[50] V. Venkatesh, M. G. Morris, G. B. Davis, and F. D. Davis, "User acceptance of information technology: toward a unified view," *MIS Quarterly*, vol. 27, no. 3, pp. 425–478, 2003.

[51] M. D. Williams, N. P. Rana, and Y. K. Dwivedi, "The unified theory of acceptance and use of technology (UTAUT): a literature review," *Journal of Enterprise Information Management*, vol. 28, no. 3, pp. 443–488, 2015.

[52] M. Malik, "A Review of empirical research on Internet & Mobile banking in developing countries using UTAUT Model during the period 2015 to April 2020," *Journal of Internet Banking and Commerce*, vol. 25, no. 2, pp. 1–22, 2020.

[53] J. Han and D. Conti, "The use of UTAUT and post acceptance models to investigate the attitude towards a telepresence robot in an educational setting," *Robotics*, vol. 9, no. 2, p. 34, 2020.

[54] Y. Jadil, N. P. Rana, and Y. K. Dwivedi, "A meta-analysis of the UTAUT model in the mobile banking literature: the moderating role of sample size and culture," *Journal of Business Research*, vol. 132, pp. 354–372, 2021.

[55] K. Al-Saedi and M. Al-Emran, "A systematic review of mobile payment studies from the lens of the UTAUT model," *Recent Advances in Technology Acceptance Models and Theories, Studies in Systems, Decision and Control*, Springer, Cham, pp. 79–106, 2021.

[56] W. Li, "The role of trust and risk in citizens' E-government services adoption: a perspective of the extended UTAUT model," *Sustainability*, vol. 13, no. 14, p. 7671, 2021.

[57] A. Maznorbalia, S. Safiah, M. A. Awalluddin, and A. Aiman, "Users acceptance of E-government system in sintok, Malaysia: applying the UTAUT model," *Policy & Governance Review*, vol. 5, no. 1, pp. 66–81, 2021.

[58] H. Rakhmawati, T. Rusydi, and M. R. Rusydi, "Influence of TAM and UTAUT models of the use of e-filing on tax compliance," *International Journal of Research in Business and Social Science*, vol. 9, no. 1, pp. 106–111, 2020.

[59] L. Yu and Z. P. H. Chen, "A study on the factors influencing users' online knowledge paying-behavior based on the UTAUT model," *Journal of Theoretical and Applied Electronic Commerce Research*, vol. 16, no. 5, pp. 1768–1790, 2021.

[60] F. Bu and N. B. Q. Wang, "Motivating information system engineers' acceptance of Privacy by Design in China: an extended UTAUT model," *International Journal of Information Management*, vol. 60, Article ID 102358, 2021.

[61] M. Etemadijouriani, S. Khadyar, and K. Azadihiar, "The Study of Institutional Pressures Effects on Accountants' Intentions of Accounting Information System Adoption," *Empirical Evidence of Unified Theory of Acceptance and Use of Technology*, vol. 12, 2020.

[62] M. A. Alajmi and J. H. Alotaibi, "Reconceptualization of system use in the context of the digital library: what are the roles of UTAUT and IS success models?" *Journal of Electronic Resources Librarianship*, vol. 32, no. 3, pp. 151–181, 2020.

[63] D. Gu and S. Khan, "Assessing the adoption of e-health technology in a developing country: an extension of the UTAUT model," *Sage Open*, vol. 11, no. 3, Article ID 215824402110275, 2021.

[64] H. Wang and D. Tao, "Understanding consumer acceptance of healthcare wearable devices: an integrated model of UTAUT and TTF," *International Journal of Medical Informatics*, vol. 139, Article ID 104156, 2020.

[65] F. B. Ismail, L. S. Ling, A. A. Kadir, and A. A. H. Al Hosaini, "Employee satisfaction and performance of E-HRM system in Malaysia banking sector," *Annals of the Romanian Society for Cell Biology*, vol. 25, pp. 6721–6729, 2021.

[66] F. J. Masunga, L. Kiria, and M. James, "The influence of behavioural intention to use the ICT tax system on tax compliance behaviour: the efficacy of mediating effect," *Journal of Business Management and Economic Research*, vol. 4, no. 4, pp. 351–370, 2020.

[67] S. Chatterjee, N. P. Rana, and S. Khorana, "Assessing Organizational Users' Intentions and Behavior to AI Integrated CRM Systems," *A Meta-UTAUT Approach. Information Systems Frontiers*, pp. 1–15, 2021.

[68] J. Chen and R. M. Z. F. Li, "Public acceptance of driverless buses in China: an empirical analysis based on an extended UTAUT model," *Discrete Dynamics in Nature and Society*, vol. 2020, Article ID 4318182, 13 pages, 2020.

[69] Y. K. Dwivedi and N. Rana, "A meta-analysis based modified unified theory of acceptance and use of technology (meta-UTAUT): a review of emerging literature," *Current opinion in psychology*, vol. 36, pp. 13–18, 2020.

[70] M. L. S. Yee and M. S. Abdullah, "A review of UTAUT and extended model as a conceptual framework in education research," *Jurnal Pendidikan Sains Dan Matematik Malaysia*, vol. 11, pp. 1–20, 2021.

[71] K. H. Al-Yahyaee and W. Mensi, "Volatility forecasting, downside risk, and diversification benefits of Bitcoin and oil and international commodity markets: a comparative analysis with yellow metal," *The North American Journal of Economics and Finance*, vol. 49, pp. 104–120, 2019.

[72] J. Mišić, V. B. Mišić, and X. Chang, "On the benefits of compact blocks in bitcoin," in *Proceedings of the ICC 2020-2020 IEEE International Conference on Communications (ICC)*, June 2020.

[73] D. S. Damianov and A. H. Elsayed, "Does Bitcoin add value to global industry portfolios?" *Economics Letters*, vol. 191, Article ID 108935, 2020.

[74] S. Vassiliadis, P. Papadopoulos, M. Rangoussi, T. Konieczny, and J. Gralewski, "Bitcoin value analysis based on cross-correlations," *Journal of Internet Banking and Commerce*, vol. 22, no. S7, p. 1, 2017.

[75] F. Parino, M. G. Beiró, and L. Gauvin, "Analysis of the Bitcoin blockchain: socio-economic factors behind the adoption," *EPJ Data Science*, vol. 7, no. 1, p. 38, 2018.

[76] M. Arias-Oliva, J. Pelegrín-Borondo, and G. Matías-Clavero, "Variables influencing cryptocurrency use: a technology acceptance model in Spain," *Frontiers in Psychology*, vol. 10, p. 475, 2019.

[77] J. Tamphakdiphanit and M. Laokulrach, "Regulations and behavioral intention for use cryptocurrency in Thailand," *Journal of Applied Economic Sciences*, vol. 15, no. 3, 2020.

[78] K. Yoo and K. E. T. Bae, "Understanding the diffusion and adoption of Bitcoin transaction services: the integrated approach," *Telematics and Informatics*, vol. 53, Article ID 101302, 2020.

[79] F. Caviggioli, L. Lamberti, P. Landoni, and P. Meola, "Technology Adoption News and Corporate Reputation: Sentiment Analysis about the Introduction of Bitcoin," *Journal of Product & Brand Management*, vol. 27, 2020.

[80] H. Khazaei, "Integrating cognitive antecedents to UTAUT model to explain adoption of blockchain technology among Malaysian SMEs," *JOIV International Journal on Informatics Visualization*, vol. 4, no. 2, pp. 85–90, 2020.

[81] K. Francisco and D. Swanson, "The supply chain has no clothes: technology adoption of blockchain for supply chain transparency," *Logistics*, vol. 2, no. 1, p. 2, 2018.

[82] A. J. Purbandini and A. M. Hau, "Unified theory of acceptance and use of technology model for user acceptance analysis of Bitcoin," in *Proceedings of the AIP Conference Proceedings*, AIP Publishing LLC, Melville, New York, February 2021.

[83] S. K. Dutta, "The infrastructure supporting bitcoin: blockchain," in *The Definitive Guide to Blockchain for Accounting and Business: Understanding the Revolutionary Technology*Emerald Publishing Limited, Bingley, West Yorkshire, England, 2020.

[84] E. Saiedi, A. Broström, and F. Ruiz, "Global drivers of cryptocurrency infrastructure adoption," *Small Business Economics*, vol. 57, no. 1, pp. 353–406, 2021.

[85] S. N. Khan, M. Shael, and M. Majdalawieh, "Blockchain technology as a support infrastructure in E-Government evolution at Dubai economic department," in *Proceedings of the 2019 International Electronics Communication Conference*, Okinawa, Japan, July 2019.

[86] S. Ølnes and A. Jansen, "Blockchain technology as s support infrastructure in e-government," in *Proceedings of the International Conference on Electronic Government*, Springer, Petersburg, Russia, September 2017.

[87] O. Hanseth and K. Lyytinen, "Design theory for dynamic complexity in information infrastructures: the case of building internet," in *Enacting Research Methods in Information Systems*, pp. 104–142, Springer, Cham, 2016.

[88] E. Zaghloul and T. Li, "Bitcoin and blockchain: security and privacy," *IEEE Internet of Things Journal*, vol. 7, no. 10, Article ID 10313, 2020.

[89] P. Ciaian, D. A. Kancs, and M. Rajcaniova, "The economic dependency of bitcoin security," *Applied Economics*, vol. 53, no. 49, pp. 5738–5755, 2021.

[90] J. Khalilzadeh, A. B. Ozturk, and A. Bilgihan, "Security-related factors in extended UTAUT model for NFC based mobile payment in the restaurant industry," *Computers in Human Behavior*, vol. 70, pp. 460–474, 2017.

[91] A. Taghdiri, "The cost of innovation: why bitcoin mining requires international regulation," *Tex. Envtl. LJ*, vol. 50, p. 181, 2020.

[92] P. Kirby, "Virtually possible: how to strengthen Bitcoin regulation within the current regulatory framework," *NCL Rev*, vol. 93, p. 189, 2014.

[93] T. C. Lee, "Decrypting crypto: issues plaguing today's hottest regulatory nightmare," *NYUJL & Bus.*vol. 16, p. 551, 2019.

[94] J. M. Warren, "A too convenient transaction: bitcoin and its further regulation," *Wake Forest J. Bus. & Intell. Prop. L.*vol. 20, p. 77, 2019.

[95] S. McLeod, "Bitcoin: the utopia or nightmare of regulation," *Elon L. Rev.*vol. 9, p. 553, 2017.

[96] H. Ranjbar, "Bitcoin revolution and regulation perplexity IN practice OF some countries," *Law and Justice Review*, no. 18, pp. 141–183, 2019.

[97] A. Minor, "Cryptocurrency regulations wanted: iterative, flexible, and pro-competitive preferred," *BCL Rev*, vol. 61, p. 1149, 2020.

[98] V. Venkatesh and M. G. Morris, "Why don't men ever stop to ask for directions? Gender, social influence, and their role in technology acceptance and usage behavior," *MIS Quarterly*, vol. 24, no. 1, pp. 115–139, 2000.

[99] I. Putra and G. S. Darma, "Is bitcoin accepted in Indonesia," *International Journal of Innovative Science and Research Technology*, vol. 4, no. 2, pp. 424–430, 2019.

[100] R. Novendra and F. E. Gunawan, "Analysis of Technology Acceptance and Customer Trust in Bitcoin in Indonesia Using UTAUT Framework," *KSII Trans. Internet Inf. Syst*, 2017.

[101] A. C. Leon, L. L. Davis, and H. C. Kraemer, "The role and interpretation of pilot studies in clinical research," *Journal of Psychiatric Research*, vol. 45, no. 5, pp. 626–629, 2011.

[102] N. Pearson, "Guidance for conducting feasibility and pilot studies for implementation trials," *Pilot and feasibility studies*, vol. 6, no. 1, pp. 1–12, 2020.

[103] E. C. Lee and A. Whitehead, "The statistical interpretation of pilot trials: should significance thresholds be reconsidered?" *BMC Medical Research Methodology*, vol. 14, no. 1, pp. 41–48, 2014.

[104] D. A. Story, K. Leslie, and C. French, "Feasibility and pilot studies: small steps before giant leaps," *Anaesthesia & Intensive Care*, vol. 46, no. 1, pp. 11-12, 2018.

[105] L.-J. W. Suen, H.-M. Huang, and H.-H. Lee, "A comparison of convenience sampling and purposive sampling," *Hu Li Za Zhi*, vol. 61, no. 3, pp. 105–111, 2014.

[106] S. J. Stratton, "Population research: convenience sampling strategies," *Prehospital and Disaster Medicine*, vol. 36, no. 4, pp. 373-374, 2021.

[107] A. Speak and F. Escobedo, "Comparing convenience and probability sampling for urban ecology applications," *Journal of Applied Ecology*, vol. 55, no. 5, pp. 2332–2342, 2018.
[108] M. Shaheen and S. Pradhan, "Sampling in qualitative research," *Advances in Business Information Systems and Analytics*, vol. 13, pp. 25–51, 2019.
[109] H. Nissen and M. Janneck, "Layout optimization for online questionnaires on mobile devices," *International Journal of Mobile Human Computer Interaction*, vol. 12, no. 2, pp. 1–21, 2020.
[110] calculator.net, "Sample Size Calculator," 2022, https://www.calculator.net/sample-size-calculator.html?type=1&cl=95&ci=5&pp=50&ps=35000&x=64&y=13.
[111] J. F. H. Jr and L. Matthews, "PLS-SEM or CB-SEM: updated guidelines on which method to use," *International Journal of Multivariate Data Analysis*, vol. 1, no. 2, pp. 107–123, 2017.
[112] M. Alshurideh and B. Al Kurdi, "Predicting the actual use of m-learning systems: a comparative approach using PLS-SEM and machine learning algorithms," *Interactive Learning Environments*, pp. 1–15, 2020.
[113] N. Kock, "Full latent growth and its use in PLS-SEM: testing moderating relationships," *Data Anal. Perspect. J*, vol. 1, no. 1, pp. 1–5, 2020.
[114] J. Hair, C. L. Hollingsworth, A. B. Randolph, and A .Y. L. Chong, "An Updated and Expanded Assessment of PLS-SEM in Information Systems Research," *Industrial Management & Data Systems*, vol. 117, 2017.
[115] M. Irfan and Z.-Y. Zhao, "Consumers' intention-based influence factors of renewable energy adoption in Pakistan: a structural equation modeling approach," *Environmental Science and Pollution Research*, vol. 28, no. 1, pp. 432–445, 2021.
[116] X. Li, J. Du, and H. Long, "Mechanism for green development behavior and performance of industrial enterprises (GDBP-IE) using partial least squares structural equation modeling (PLS-SEM)," *International Journal of Environmental Research and Public Health*, vol. 17, no. 22, p. 8450, 2020.
[117] R. Weston and P. A. Gore, "A brief guide to structural equation modeling," *The Counseling Psychologist*, vol. 34, no. 5, pp. 719–751, 2006.
[118] S. B. MacKenzie and P. M. Podsakoff, "Common method bias in marketing: causes, mechanisms, and procedural remedies," *Journal of Retailing*, vol. 88, no. 4, pp. 542–555, 2012.
[119] M. Jakobsen and R. Jensen, "Common method bias in public management studies," *International Public Management Journal*, vol. 18, no. 1, pp. 3–30, 2015.
[120] C. M. Fuller and M. J. Simmering, "Common methods variance detection in business research," *Journal of Business Research*, vol. 69, no. 8, pp. 3192–3198, 2016.
[121] M. I. Aguirre-Urreta and J. Hu, "Detecting common method bias," *ACM SIGMIS - Data Base: The DATABASE for Advances in Information Systems*, vol. 50, no. 2, pp. 45–70, 2019.
[122] F. Kock, A. Berbekova, and A. G. Assaf, "Understanding and managing the threat of common method bias: detection, prevention and control," *Tourism Management*, vol. 86, Article ID 104330, 2021.
[123] S. Tehseen, T. Ramayah, and S. Sajilan, "Testing and controlling for common method variance: a review of available methods," *Journal of management sciences*, vol. 4, no. 2, pp. 142–168, 2017.
[124] P. M. Podsakoff and S. MacKenzie, "Common method biases in behavioral research: a critical review of the literature and recommended remedies," *Journal of Applied Psychology*, vol. 88, no. 5, pp. 879–903, 2003.
[125] J. F. Hair, C. B. William, and J. B. Barry, *Multivariate Data Analysis–A Global Perspective*, Pearson Education, London, United Kingdom, 2010.
[126] M. Sarstedt and C. M. D. R. J. F. Ringle, "Partial least squares structural equation modeling (PLS-SEM): a useful tool for family business researchers," *Journal of Family Business Strategy*, vol. 5, no. 1, pp. 105–115, 2014.
[127] J. F. Hair and M. Sarstedt, "An assessment of the use of partial least squares structural equation modeling in marketing research," *Journal of the Academy of Marketing Science*, vol. 40, no. 3, pp. 414–433, 2012.
[128] C. Fornell and D. F. Larcker, "Evaluating structural equation models with unobservable variables and measurement error," *Journal of Marketing Research*, vol. 18, no. 1, pp. 39–50, 1981.
[129] F. E. Gunawan and R. Novendra, "An analysis of bitcoin acceptance in Indonesia," *ComTech: Computer, Mathematics and Engineering Applications*, vol. 8, no. 4, pp. 241–247, 2017.
[130] R. Al-Amri, S. Al-Shami, H. M. E. Abualrejal, M. A. Al-Sharafi, and T. K. Y. Alormuza, "Role of shariah compliance on cryptocurrency acceptance among Malaysians: an empirical study," in *Proceedings of the 2021 International Conference on Intelligent Technology, System and Service for Internet of Everything (ITSS-IoE)*, IEEE, Sanaa, Yemen, November 2021.
[131] J. Ter Ji-Xi, Y. Salamzadeh, and A. P. Teoh, "Behavioral Intention to Use Cryptocurrency in Malaysia," *An Empirical Study. The Bottom Line*, vol. 34, 2021.
[132] M. H. Miraz, M. S. J. Rekabder, and M. T. Hasan, "Trust, transaction transparency, volatility, facilitating condition, performance expectancy towards cryptocurrency adoption through intention to use," *Journal of Management Information and Decision Sciences*, vol. 25, pp. 1–20, 2022.
[133] G. A. Abbasi and L. Y. Tiew, "The adoption of cryptocurrency as a disruptive force: deep learning-based dual stage structural equation modelling and artificial neural network analysis," *PLoS One*, vol. 16, no. 3, Article ID e0247582, 2021.
[134] S. Alzahrani and T. U. Daim, "Analysis of the cryptocurrency adoption decision: literature review," in *Proceedings of the 2019 Portland International Conference on Management of Engineering and Technology (PICMET)*, August 2019.
[135] G. Karame and S. Capkun, "Blockchain security and privacy," *IEEE Security & Privacy*, vol. 16, no. 4, pp. 11-12, 2018.
[136] K.-H. Yeh, C. Su, R. H. Deng, M. Yung, and M. Kutylowski, "Special issue on security and privacy of blockchain technologies," *International Journal of Information Security*, vol. 19, no. 3, pp. 243-244, 2020.
[137] S. K. Ooi and C. A. Ooi, "Embracing Bitcoin: users' perceived security and trust," *Quality and Quantity*, vol. 55, no. 4, pp. 1219–1237, 2021.