Adoption of Blockchain Technology: Exploring the Factors Affecting Organizational Decision

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Received 7 May 2022; Accepted 26 July 2022; Published 22 August 2022

Academic Editor: Zheng Yan

Blockchain (BCT) is an emerging technology that promises many benefits for organizations, for instance, disintermediation, data security, data transparency, a single version of the truth, and trust among trading partners. Despite its multiple benefits, the adoption rate of BCT among organizations has not reached a significantly high level worldwide, thus requiring further research in this space. The present study addresses this issue in the Australian context. There is a knowledge gap in what specific factors, among the plethora of factors reported in the extant literature, affect the organizational adoption of BCT in Australia.

To fill this gap, the study uses the qualitative interpretative research approach along with the technology-organization-environment (TOE) framework as a theoretical lens. The data was mainly drawn from the literature review and semi-structured interviews of the decision-makers and senior IT people from the BCT adopter and potential adopter organizations in Australia. According to the findings, perceived information transparency, perceived risks, organization innovativeness, organization learning capability, standards uncertainty, and competition intensity influence organizational adoption of BCT in Australia. These factors are exclusively identified in this study. The study also validates the influence of perceived benefits and perceived compatibility on BCT adoption that are reported in the past studies. Practically, these findings are helpful for the Australian government and public and private organizations to develop better policies and make informed decisions for the organizational adoption of BCT. The findings would guide decision-makers to think about the adoption of BCT strategically.

The study also has theoretical implications explained in the discussion section.

1. Introduction

Blockchain (BCT) is a novel distributed and decentralized database technology organized as a list of ordered blocks, where each block is connected to its previous block. The technology has attracted a broad audience of practitioners, policymakers, researchers, and national authorities after a few years of its inception in 2008. Initially, it was developed to solve the double-spending problem through a proposal of a cryptocurrency known as Bitcoin [1]. Afterward, researchers proposed many different applications of BCT, e.g., e-voting, network security, healthcare, human resource management, governments, supply chain, and industry 4.0 [2–7]. Moreover, BCT has been reported as a significant contributor to the global economy. For example, in the reports published by Gartner and PwC, the BCT market is expected to reach more than US$176 billion by 2025 and US$3.1 trillion by 2030 [8, 9]. In another report by Wintergreen [10], the BCT market value is estimated to be reached US$60.7 billion by 2024. Similarly, Statista [11] and International Data Corporation [12] estimated that the BCT could drive the worldwide market size to US15.9-$39.7 billion by 2023-2025. It is expected that the BCT will revolutionize the world in the future through its operational and strategic advantages for organizations [13, 14]. BCT is expected to underpin the majority of the current digital services in the future [15]. Tapscott and Tapscott [16] and Mohammed et al. [17] stated that BCT has promising benefits such as data security, information transparency, a single version of the truth, and trust among organizations. However, despite the benefits and proposed applications, surprisingly, the worldwide adoption of BCT among organizations is slow
Consequently, this calls for research to investigate the factors causing this low uptake among organizations [17, 20]. In responding to this call, this study aims to identify the factors affecting the organizational adoption of BCT.

1.1. Research Context. The study has specifically been conducted in the Australian context. Australia has been chosen due to a number of reasons. The Australian government started working with BCT in 2016 when Standards Australia submitted a proposal to the International Organization for Standardization (ISO) to develop standards for BCT [21]. Since then, the Australian government has put significant efforts into promoting BCT adoption within the country. The most recent BCT initiatives of the Australian government include blockchain roadmap [22], national blockchain, water trading [23], Australian security exchange project [24], pilot grants [25, 26], and private partnership [27]. There is also significant support for BCT at the private level in Australia. Blockchain Australia has actively promoted BCT adoption among Australian organizations [28]. According to a report from Deloitte [29, 30], Australia has the potential to become a global BCT leader. The Economist Intelligence Unit (EIU), a world reliable organization, ranked Australia first in its technology readiness index [31], indicating that Australia has all the required infrastructures to embrace innovation like BCT. However, despite having support from the government and private sector, BCT has not been adopted by Australian organizations heavily [22, 29, 32]. Therefore, it seems important to know the specific factors influencing Australian organizations to decide the adoption of BCT.

1.2. Key Limitations of the past Research. Although some of the past studies reported factors that influence the organizational adoption of BCT, they were conducted in the context of non-oceanic countries like Ireland, Malaysia, Germany, Kosovo, UAE, and Brazil [15, 33–36]. Their findings vary from country to country. According to Troshani and Doolin [37], the factors influencing the adoption of a technological innovation differ as the context wherein the research is conducted differs. Since the properties of the countries wherein the prior research on BCT adoption has been conducted differ in terms of population, economy, literacy, uncertainty avoidance index, and technology readiness index from Australia [38, 39], therefore, the findings of similar studies on BCT adoption conducted in the context of other countries cannot be generalized to the Australian context.

Furthermore, the past studies report inconsistent results for the same factors influencing BCT adoption. For example, Clohessy and Acton [15] and Orji et al. [40] found top management support as a critical factor for the organizational BCT. In contrast, Wong et al. [34] reported an insignificant effect of upper management support on BCT adoption. Similarly, De Castro et al. [41] found a positive role of government regulations in the organizational adoption of BCT, whereas Albrecht, et al. [42] mentioned that government regulations hinder BCT adoption. This inconsistency in the findings of past studies makes it unclear what specific factors influence BCT adoption among Australian organizations. According to the best of our knowledge, there exists a knowledge gap in the literature in terms of an in-depth exploratory study to address this issue. Therefore, this study aims to fill this knowledge gap by identifying the factors influencing Australian organization when deciding BCT adoption.

1.3. Research Question. The study aims to find the answer of the following research question:

What specific factors influence the organizational decision to adopt blockchain technology in Australia?

The rest of the paper provides a literature review on the adoption of BCT, its theoretical foundation, research methodology, and empirical results, followed by a discussion of the findings and their theoretical and practical contributions. In the end, the paper concludes the key findings, presents the limitations of the research, and suggests directions for future research.

2. Literature Review

BCT adoption brings a significant change in the internal and external operations of an organization. Therefore, a careful evaluation is necessary before making any decision regarding the adoption of BCT [43]. Researchers have made tremendous efforts to understand the adoption of BCT among organizations in the context of different countries and industries. Most of the past research on BCT adoption is factorial in nature, where researchers examined the effect of different factors on BCT adoption. For example, De Castro et al. [41] explored BCT adoption in the asset and wealth management industry in South Africa. They found that the relative advantages, computability, complexity, supportive technological environment, characteristics of the industry, and regulations influence BCT adoption; Orji et al. [40], Dobrovnik et al. [44], Barnes III and Xiao [45], and Kühn et al. [46] evaluated the factors that influence BCT adoption in the logistics industry. They identified that the availability of specific BCT tools, infrastructural facilities, and government policy and support are the main significant factors on BCT adoption; Wong et al. [47], Wong et al. [34], Bai and Sarkis [48], Kouhizadeh et al. [49], Ghode et al. [50], Kalaizti et al. [51], Queiroz et al. [36], and Agi and Jha [52] investigated BCT adoption for the supply chain industry. They found relative advantages, complexity, upper management support, cost, market dynamics, competitive pressure, and regulatory support as the influencing factors; Clohessy and Acton [15] found that BCT awareness, top management support, and organization size influence BCT adoption in Ireland. Loklindt et al. [53], Mohammed et al. [17], Post et al. [54], Hoxha and Sadiku [35], Holotiuik and Moormann [33], and Sharma and Joshi [55] investigated BCT adoption in different industries including shipping, land record management, and fashion industry. They showed that easy verification of transactions, data accuracy and reliability, and cost reduction influence organizations to adopt BCT; Kulkarni and Patil [56] and Koster and Borgman [57] claimed that the firm scope, learning culture, top management, customer readiness, competitive pressure,
and government policies influence BCT adoption in banking
and public sector. Moreover, Albrecht et al. [42] studied the
post-decision stage of the BCT adoption. They found that
market power, regulation, transaction speed, transparency,
and costs, confidentiality, and interoperability were the
prominent factors that influence BCT implementation in
the energy sector.

The review of the literature reveals that there are a plent-
ity of factors that affect the adoption of BCT among organi-
izations. However, the factors that are highly relevant to
the organizational adoption of BCT in Australia are still unclear.
Further, the literature review shows that there is a lack of in-
depth qualitative research that demonstrates the effect of the
factors identified from the data directly drawn from the
opinion or experiences of people working in Australian
organizations. The following Table 1 presents the limitations
of past studies on BCT adoption.

Authors’ from the summary of the past research, it is
clear that the prior studies on BCT adoption are either con-
ceptual, technical, or at the individual level. Further, past
studies have been conducted in the context of non-oceanic
countries like Indonesia and Ireland. According to the best
of the authors’ knowledge, there is a lack of research that
investigates BCT adoption in the Australian context. Thus,
there exists a knowledge gap to investigate the organizational
adoption of BCT in Australia. The present study accom-
plished the identified knowledge gap by using a qualitative
interpreative research approach based on the technology-
organization-environment (TOE) framework [76] as a theo-
retical lens.

3. Theoretical Foundation

The present study finds the TOE framework as the most
appropriate theory to examine the adoption of BCT at the
organizational level in Australia. The framework provides
multiple perspectives that are not presented in other theories
to investigate technology adoption. The TOE framework
states that an organization’s decision to adopt technology
is affected by three different types of contextual factors,
namely, technology, organization, and environment. The
technology factors comprise the factors related to the tech-
nology under investigation; organizational factors are associ-
ated with the effect of organization’s characteristics such as
size, culture, top management on its decisions, and environ-
mental factors that describe the effect of the environment
wherein an organization operates its business.

Although there are other organizational level theories,
e.g., diffusion of innovation (DoI) [77] and institutional the-
ory of [78], they either have shortcomings or are partially
covered in the TOE framework as explained below:

(i) The TOE framework comprises the environmental
context, which is missing in the DoI theory

(ii) The institutional theory lacks the impact of techno-
logical factors, which are included in the TOE
framework

(iii) The DoI theory addresses the impact of technology
characteristics on an IT adoption process. This
aspect is covered in the technology context of the
TOE framework

(iv) The institutional theory explains the impact of envi-
ronmental factors on an IT adoption, which is
already covered in the TOE framework

Therefore, the TOE framework has more explanatory
power over the other technology adoption theories reported
in the literature. Due to its strong explanatory power, many
researchers have used the TOE framework to examine the
adoption of different technological innovations at the orga-
nization level, e.g., EDI and ERP systems, e-commerce, and
RFID [79–81]. Therefore, we found the TOE framework an
appropriate theoretical foundation for our study.

4. Research Methodology

The study aims to identify the factors influencing the organi-
zational adoption of BCT in Australia. A qualitative inter-
pretive research approach was opted for this study to
achieve the aim of the study. This approach is considered
appropriate when inadequate or little research is available
on an issue. In such a case, it becomes essential to under-
stand the phenomenon within the given social context and
the meanings people assign to it [82]. Since the existing liter-
ature on the organizational adoption of BCT in Australia is
limited, the qualitative interpretive approach was found
appropriate. This study followed the principles’ set by Klein
and Myers [83] for interpretative qualitative research. An
explanation of these principles and how they were incorpo-
rated into this study is given in Table 2.

4.1. Data Collection. The primary data was collected with in-
depth semi-structured interviews of the key persons from
the Australian organizations that had either adopted or were
in the process of adopting BCT (potential adopters). To col-
lect accurate and valid data, the respondents from every par-
cipating organization were chosen carefully. The selection
criteria are given below:

(i) They should be able to demonstrate extensive
knowledge/expertise in both IT and BCT

(ii) They should hold a decision-making position, such
as chief executive officer (CEO), chief technology
officer (CTO), project manager, and director in an
organization. These individuals were chosen because
of their presumed level of knowledge about the organ-
izational adoption of BCT in Australia

The target organizations and their relevant information,
such as contact details, which industry they are working in,
and their adoption status with BCT, were collected through
(i) search engines and social media websites, e.g., Google
and LinkedIn; (ii) use of our professional network, and
snowball sampling technique; (iii) examination of BCT
related workshops and conferences.

The study describes possible use cases of BCT in higher education such as the library, human resources, and securing student records, and presents a literature review in this regard. However, the research is narrative rather than providing empirical evidence for the adoption of BCT at the organizational level.

The study explains and evaluates the appropriateness of BCT in three different scenarios, namely, cryptocurrency-Bitcoin, identity management solution-upPort, and supply chain solution-IBM Hyperledger Fabric, by using an existing decision model. The study analyses the suitability of BCT in the context of different parameters.

The study provides a literature review on the factors affecting the adoption of BCT in the Indonesian banking payment system. The study is conceptual and does not provide any clarity on whether the reported factors are effective at the individual or organizational level.

The study describes the impact of different factors on the acceptance of different applications of BCT in the supply chain process of the Thai automotive industry. The study addresses BCT adoption at the individual level.

The study examines the acceptance of BCT as a traceability and transparency system by meat consumers. The unit of analysis of this study is individual.

This study explores the drivers for BCT acceptance by mining the collective intelligence users on Twitter. The study is conceptual and focuses the BCT adoption at the individual level.

This is one of the conceptual studies that provides guidelines for the adoption of BCT. The study does not provide any empirical evidence to support their suggestions.

This "work in progress" study proposed an integrated model, based on DoI and TAM, to explore the adoption of BCT from business managers’ perspective. The unit of analysis of this study is individual managers rather than any organizational level.

This is a technical study that proposes the use of BCT for monitoring and management of enterprise networks.

This is a conceptual study that provides research agenda to investigate the inclusion of BCT in financial matters of rural Indian households.

This is a conceptual study that proposes a framework to help managers to decide the appropriateness of BCT for their organizations. The study has identified some value drivers of BCT from the literature that managers might find helpful when deciding the adoption of BCT. The study lacks empirical evidence.

The study examines the factors affecting the acceptance of BCT-based electronic medical record systems by patients and medical personnel. The study uses the technology acceptance model, which is an individual-level theory to investigate technology acceptance.

The study provides a summary of BCT adoption among different Asian companies, e.g., Toyota, JD.Com, Alibaba, and Provenance, running their business in the supply chain. The study just describes the advantages of BCT in supply chains.

This conceptual study provides a survey on real-world use cases of BCT in the field of finance and banking services, education, e-commerce, healthcare, transportation, and supply chains, although the study reports few challenges for BCT adoption but lacks empirical evidence.

This technical study proposes a conceptual model for the use of BCT in trade finance. The study explains how BCT can be used in trade finance and reports its advantages in this regard.

The study provides empirical evidence of BCT adoption among supply chain professionals in India and the USA. The study examines BCT adoption at the individual level.

The study investigates the impact of different factors on the organizational adoption of BCT in Germany.

This study is an attempt to understand the adoption of BCT-based shared economy business models from a customer perspective. The study is conceptual and explains BCT adoption at the individual level.

The study provides a literature review on the factors that affect the adoption of BCT at the organizational level. The study has been conducted in the context of Ireland.

An invitation email along with the description of the research project and consent form was sent to the target organizations. They were requested to nominate a person...
that had either extensive knowledge/expertise in BCT or was involved with the actions/decisions related to BCT adoption. The organizations indicated their willingness by returning the signed consent form and by nominating a person chiefly responsible for their BCT project(s). Finally, a mutually agreed time was set for the interview, and a tentative questionnaire was provided to the nominated person. By following the recommendations of Hill et al. [84], the questionnaire was emailed one week before the interview date giving the respondent ample time to get familiar with the research and prepare the answers. Later, we provided them a complete transcribed copy of the interviews, which cannot be explained through the original TOE framework. In this study, multiple viewpoints from interviewees are used to form the analysis. The key findings are supported by more than one interview.

### Table 2: Principles for the interpretative qualitative research used in this study [83].

| Principle                      | Description                                                                 | How used in this study                                                                 |
|-------------------------------|-----------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Principle of the hermeneutic circle | This fundamental principle explains how human meanings are socially constructed. It describes the nature of the interdependent meaning of the parts and the whole that they form | This study investigates the interpretations of the experts (the parts) having experience/knowledge about the organizational adoption of BCT in the Australian context (the whole) |
| Principle of contextualization | This principle explains the social and historical context to understand the views of potential audiences about the emergence of the phenomenon under investigation | This study uses the Australian context to explain the factors affecting the adoption of BCT among organizations |
| Principle of interaction between the researchers and the subjects | This principle asserts that social facts are better understood when a researcher socially interacts with the participants involved in the phenomenon | The data for this research was collected through semi-structured interviews. The interviews were conducted both face-to-face and online |
| Principle of abstraction and generalization | This principle explains the importance of using a particular theoretical lens to derive insights from the interpretations of the participants | In this study, the TOE framework has been used as a starting point to understand the organizational adoption of BCT |
| Principle of dialogical reasoning | This principle requires sensitivity to possible contradictions between the theoretical preconceptions guiding the research design and actual findings (the story which the data tell) with subsequent cycles of revision | This study introduces country-related issues found in the interviews, which cannot be explained through the original TOE framework |
| Principle of multiple interpretations | This principle explains the possibility of variations among participants’ interpretations. Therefore, the researcher should use multiple interpretations to reach a final analysis | In this study, multiple viewpoints from interviewees are used to form the analysis. The key findings are supported by more than one interview |
| Principle of suspicion | This principle explains the bias in interpretations due to preconceptions, which leads to the misinterpretation of the viewpoints | To avoid this, the viewpoints from the respondents of the same industry were cross-examined |

4.2. Reliability and Validity. Qualitative methods such as in-depth interviews come with some biases like intrinsic and methodological that should be carefully assessed to maintain the reliability and validity of the research. We followed the guidelines outlined by Yin [82] to achieve the reliability and validity of our research.

4.2.1. Construct Validity. Triangulating the interview questions helps to maintain the construct validity. We asked a question with alternative wordings to understand the same issue from multiple perspectives. This method is considered effective that permits a refined approach for construct validity. In addition to this, the interviewee was requested to confirm the major findings when the interview had finished. Later, we provided them a complete transcribed copy of the interview and asked if they wanted to add or remove anything from the interview.

4.2.2. Internal Validity. Internal validity refers to the degree to which extraneous factors that could affect results are controlled or eliminated. We draw the internal validity by following several measures including substantiating the interview questions, piloting the interview schedule, removing extraneous data from the analysis, and keeping an ethical procedure for the study. Moreover, the interviewees were selected carefully. We conducted in-depth interviews of the people that were either decision-makers or senior IT people that were experts in the area of BCT. This helped us to capture the information that was purely relevant to the study.
We also examined the secondary data, e.g., existing literature on BCT, white papers, Australian government reports, and organizations’ websites, to corroborate the findings. Furthermore, the data analysis was done by the authors of this paper, who have extensive experience in analyzing and doing qualitative research.

4.2.3. External Validity. External validity refers to the degree to which findings of a study can be generalized and transferred into other settings, e.g., industry, country, and population. To attain the external validity for this study, participants were selected from a diverse range of industries and roles and had extensive BCT knowledge, expertise, and leadership, as reflected in Table 3. Because of their profile, the participants had a strong influence on many people and industries in Australia. Therefore, the findings derived from their in-depth interviews would be convincing for the organizations and people working in similar industries and roles. However, the study still has limited external validity.

4.2.4. Reliability. Reliability refers to consistency in the findings if the analysis of the interview data is repeated or reproduced. To obtain research reliability and avoid researcher bias, every activity of the data collection was properly documented. We selected interviewees from a diverse range of industries and roles. Although we used the TOE framework to formulate the initial questions, however, we encouraged interviewees to freely mention the factors that actually influence them, or they consider them important while deciding on BCT adoption. The interviewees were asked if they had any questions or concerns about the research. We answered every question that the interviewees asked to remove their doubts and enhance their confidence and trust in the research. We recorded every interview with the written or verbal consent of the interviewee. Every interview was conducted with a team of two persons, authors of this paper, having extensive knowledge of BCT. One team member asked the interview questions, while the other took notes and recorded the interview. These records can be accessed, and the data can be easily retrieved for rechecking or reanalysis. In addition to this, we discussed the research process with senior peers and colleagues in terms of the research design, methods, interpretation, themes, and findings of the research.

5. Data Analysis and Findings

The interview data were analyzed by using the thematic analysis technique offered by Braun and Clarke [86] and Strauss and Corbin [87]. We used QSR NVivo software for the qualitative data analysis. The steps performed for this analysis are enlisted in Table 4. How the steps were incorporated for this study is also explained in the table. Since we used the TOE framework as a theoretical lens, the analysis is a theoretical thematic analysis rather than an inductive one. Given this, we coded that segment of data that was relevant and interesting to our research question. To improve
the reliability of the findings, the data analysis was conducted by a team of two persons (authors of this paper).

To get further insights from the interview data, we performed a frequency analysis of every theme as shown in Table 5. The frequency shows how many times a theme was supported by the respondents and what the reason was.

The following subsections explain how the identified factors influence BCT adoption among Australian organizations.

5.1. Technological Context. The findings derived from the analysis of the responses of the participants show that the technological factors, namely, perceived benefits, perceived compatibility, and perceived information transparency, have a positive impact on the organization’s intention to adopt BCT. However, the factor “perceived risks” has a negative impact. Excerpts from the interview data related to every factor are given below.

5.1.1. Perceived Benefits. Most of the interviewees agreed that the perceived benefits play an important role in BCT adoption. They stated that the benefits such as a reduction in expenses, time savings, peer-peer transactions, security, and disintermediation motivated them to adopt BCT.

An interview with a technical analyst (A13) working at a traveling agency mentioned: “blockchain has certain benefits for our business. We have customers all over the world. It takes a couple of days to receive payment in our bank account in Australia. It was not only time-consuming but also expensive to our customers and us due to the several service charges imposed by the banks. Now we receive payments in cryptocurrency, which is fast and cost savings.”

5.1.2. Perceived Compatibility. For the adoption of BCT, its smooth integration with the organization’s existing businesses is very important [41]. One of the CEO (A8) providing enterprise BCT solutions supported this by saying, “if blockchain is compatible, for example, if an organization is providing IT solutions such as AI or database and it has all the technical staff, then it would surely adopt BCT because it aligns with its business aims and objectives.” He further added that “now suppose if an organization requires to install a completely new technological infrastructure, it will think twice to adopt blockchain because of its incompatibility.”

The CTO (A4) expressed similar thoughts about the compatibility of BCT for their business. He stated, “we already had a team of IT professionals. So, it is normal for us to start working with any new technology like blockchain.”

5.1.3. Perceived Information Transparency. Information transparency is one of the major features of BCT that attracts organizations toward its adoption [88, 89]. This increases the overall performance of an organization. A solution architect (A19) emphasized this by stating, “our clients wish to adopt blockchain because of the transparency of information it provides. The clients want a solution to facilitate their consumers to track the products they are buying is authentic”. He further stated, “we recommend blockchain solutions to our clients who demand openness and visibility within and outside of their organization.”

Some of the interviewees (A2, A18, and A22) mentioned information transparency as a barrier to BCT adoption. They stated that the availability of information to everyone breaches privacy laws.

5.1.4. Perceived Risks. New technologies like BCT come with certain risks that hinder organizations from their adoption. During the interviews, respondents mentioned different risks of BCT, for instance, scalability, privacy, slow transaction processing speed, and the need for miners to run the network. One of the interviewees (A20) stated, “usually, the big organizations control the industry, and they dictate how the processes should work, and how the vendors and suppliers and other small peer organizations should deal with them. These big players perceive fear of losing control after adopting blockchain.” Another risk highlighted by
A18 was "blockchain is a relatively new technology, and there is a lack of well-established blockchain systems in the market. Organizations cannot observe the real benefits of blockchain that cause worried about the value proposition, the return on their investment in blockchain."

5.2. Organizational Context. This research suggests that the organizational factors, such as organization innovativeness and organizational learning capability, have a positive impact on the organizational adoption of BCT. Further explanation of these factors is given below.

5.2.1. Organization Innovativeness. New technologies like BCT come with novel ideas that have very limited trials and successful evidence. Therefore, the risk-taking and openness of an organization have a substantial relationship with the adoption of an innovation [90]. This was also reflected during our interview with a project manager (A5) of a leading IT organization. He said, "we are the pioneer in Australia working with blockchain technology. When we started, there were no success stories about blockchain in Australia. However, we decided to take the risk and invested in developing blockchain solutions for our clients." A similar thought was shared by A17, "since the blockchain is totally a novel idea, it requires organizations to change their legacy systems that is a massive process for many organizations. Therefore, only those organizations will adopt blockchain that are creative and contemporary in doing business."

| TOE context | Factor | Impact | Frequency | Impact reason |
|-------------|--------|--------|-----------|---------------|
| Perceived benefits | Positive | 22 | Positive impact because of timesaving, reduction in cost and expense, fast transactions |
| | Negative | 0 | — |
| | Not sure | 1 | Not sure about the impact of perceived benefits on the organization’s intention to adopt BCT |
| | Positive | 20 | Positive impact of compatibility with business processes, technical infrastructure, and skills |
| | Negative | 0 | — |
| | Not sure | 3 | Not sure about the impact of compatibility on the organization’s intention to adopt BCT |
| | Positive | 19 | Positive impact due to easy access and visibility of the information |
| Technology | Negative | 3 | Negative impact due to lack of privacy |
| | Not sure | 1 | Not sure about the impact of information transparency on the organization’s intention to adopt BCT |
| | Positive | 0 | — |
| | Negative | 21 | Negative impact of due to security and privacy breaches, benefits uncertainty |
| | Not sure | 2 | Not sure about the impact of perceived risks on the organization’s intention to adopt BCT |
| | Positive | 20 | Positive impact if an organization is open to new ideas and accepts the risks associated with them |
| | Negative | 0 | — |
| | Not sure | 3 | Not sure about the impact of organization innovativeness on the organization’s intention to adopt BCT |
| | Positive | 21 | Positive impact if the organization keeps their employees up to date about contemporary technologies and it has a mechanism to store, share new knowledge |
| Organization | Negative | 0 | — |
| | Not sure | 2 | Not sure about the impact of organizational learning capability on the organization’s intention to adopt BCT |
| | Positive | 0 | — |
| | Negative | 18 | Negative impact of due to the immaturity of BCT and lack of industry standards |
| | Not sure | 5 | Not sure about the impact of standards uncertainty on the organization’s intention to adopt BCT |
| Standards uncertainty | Positive | 20 | Positive impact because organizations feel motivated and pressurized to adopt BCT before their competitors and gain competitive advantages over them |
| | Negative | 0 | — |
| | Not sure | 3 | Not sure about the impact of competition intensity on the organization’s intention to adopt BCT |
5.3.2. Competition Intensity. The adoption process of technology starts when an organization acquires knowledge about that technology via a learning system [77, 91]. A learning system could be a formal knowledge management system, an R&D department, organizing informational seminars and workshops within the organization, or sending employees to attend external conferences to gain new knowledge. Most of the interviewees endorsed the role of an organization’s capability to learn about new technology emerging in the industry. They mentioned that the first step to adopting BCT is organizations must get the knowledge to understand BCT (A14 & A17). “We have a dedicated R&D department that floated the idea of blockchain to work with. We shared this idea with our employees through a newsletter and asked them to provide their feedback. Then, we analyzed the opportunities and risks associated with blockchain for our business, and finally decided to develop blockchain solutions for our clients,” said A12.

5.3. Environmental Context. The analysis of the responses of the interviewed participants suggests that the environmental factors, namely, competition intensity, have a positive impact, whereas the standards uncertainty has a negative impact on the organizational adoption of BCT. The detail is presented below.

5.3.1. Standards Uncertainty. Uncertainty about the BCT standards is one of the main reasons that stymies its organizational adoption as stated by one of the legal experts (A21), “organizations aren’t likely to invest if they’re not sure what the standards are going to be set for blockchain. They have been waiting until the formal standards are developed.” Most of the respondents agreed that Australian organizations are reluctant to adopt BCT because of the unavailability of the standards. The uncertainties cause organizations to distrust BCT, which ultimately impedes its adoption. “Organisations are slow to adopt blockchain-based solutions because they have been waiting for the potential blockchain standards. They fear if the blockchain standards change over time, it might require them to make expensive investments in the future,” stated A20, a legal advisor.

5.3.2. Competition Intensity. Organizations feel the fear of losing their competitiveness if their competitors have adopted new technology. This was endorsed by A21, “we adopted blockchain solution because our competitors started to accept payments in digital currencies. We felt the pressure of losing our customers if we do not offer them that service.” According to Zhu et al. [92], if similar organizations do things in a certain way in the industry, others feel a competition intensity. According to A9, “whenever there is new technology coming out, everyone starts doing the same thing to become the first to develop a product and defeat others in the industry. For example, Facebook has started working with blockchain. I certainly think that the other IT giants like Google, Microsoft, and Amazon are not going to be far behind and will be doing something similar.”

6. Discussion and Contributions

The study applies the TOE framework as a theoretical lens to identify the factors that affect the organizational adoption of BCT in Australia. The findings reveal eight factors, of which five have exclusively been identified in this study. The newly identified factors include perceived information transparency, organization innovativeness, organizational learning capability, standards uncertainty, and competition intensity. The findings in the context of the TOE framework are further explained below.

6.1. Technology Factors. In terms of the technology factors, the findings reveal that the perceived benefits, perceived risks, perceived compatibility, and information transparency are enable factors, whereas the perceived risks work as inhibitors to BCT adoption. Australian organizations adopt BCT when they perceive it beneficial for their business. Cost reduction, time-saving, and disintermediation are the main benefits of BCT for Australian organizations. This finding is consistent with the earlier studies of Orji et al. [40] and Saheb and Mamaghani [38, 89]. The study found that the compatibility of BCT with an organization’s technological and financial needs significantly affects its adoption. This finding is similar to the work of Kim [93] but inconsistent with De Castro et al. [41]. Therefore, we recommend that organizations should carefully evaluate and understand the compatibility of BCT with their business goals before deciding its adoption. Perceived transparency of information obtained through BCT has been found positive, which is
consistent with Al-Jabri and Roztocki [94]. The information transparency enhances the trust among the organizations involved in the BCT network. Consequently, organizations coordinate and share information with full of confidence [95]. However, due to privacy concerns, information transparency also works as a barrier to BCT adoption. We suggest that organizations should evaluate privacy laws before moving to BCT. The impact of perceived risks on BCT adoption was found negative. This finding is aligned with the earlier study of Yoo et al. [96] that reported risks such as privacy disclosure, misuse of information, and un-scalability hinder organizations from adopting BCT. We suggest that organizations should carefully analyze the risks before deciding the adoption of BCT.

6.2. Organizational Factors. Organizational innovativeness and organizational learning capability were found to be positive to the adoption of BCT. These findings are similar to the suggestions of Kulkarni and Patil [56] and Newby et al. [97]. The findings are also consistent with Marikyan et al. [98] that found that organizations that are capable of acquiring new knowledge, storing, and applying that new knowledge and learn from it; open to new ideas, and are ready to take risks are more likely to adopt BCT. This led to the conclusion that organizations should have a formal learning system to remain updated about the contemporary technologies beneficial for their business as mentioned by Elhidaoui et al. [99].

6.3. Environmental Factors. We found that the competition intensity has a positive impact on BCT adoption, whereas the standards uncertainty has a negative influence. The positive impact of the competition intensity on BCT adoption implies that organizations want to remain competitive at the forefront of their rivals. Competition intensity encourages organizations to find ways to grow and sustain their competitive advantage. Prior studies have also established that the adoption of BCT is important for organizations to retain their competitiveness [34, 47, 48]. The impact of standards uncertainty was identified as unfavorable on the adoption of BCT, which implies that organizations are still seeking BCT-related industry standards. This finding is consistent with Guo and Liang [100] and Balasubramanian et al. [5], who reported that BCT adoption would be unsolved until the industry standards related to BCT are established. To accelerate the adoption of BCT, it is urgently needed to develop industry standards for BCT [46, 101, 102]. This finding may help the relevant government and private industrial agencies to pay attention to develop BCT standards.

6.4. Research Contributions. Theoretically, this study contributes to the existing IT adoption literature in several ways. Firstly, the study uses the TOE framework to provide empirical evidence about the factors influencing the organizational adoption of BCT in Australia. Thus, the study bridges the knowledge gap on the factors relevant to BCT adoption among Australian organizations. The identification of such factors is important, particularly for the Australian organizations interested in the value creation of BCT. Second, the study introduces new factors, namely, perceived information transparency, organization innovativeness, organization learning capability, standards uncertainty, and competition intensity on BCT adoption that are exclusively identified in this research. Third, this study confirms the findings of the earlier studies that the factors perceived benefits and perceived compatibility have an impact on the organizational adoption of BCT. Fourth, according to the best of our knowledge, this is the first study that has used the qualitative interpretive research approach offered by Klein and Myers [83]. Therefore, the study confirms the suitability of this approach for BCT. Lastly, most of the researchers have used the TOE framework in quantitative research. This study proves its validity in qualitative research as well.

Practically, the study contributes as follows: First, the decision-makers working with the Australian government and private organizations can use our findings to develop better national policies for the adoption of BCT in Australia. Second, the findings can help consulting and marketing companies while developing business strategies for their potential BCT customers. Third, standards uncertainty is found to be an inhibitor to the adoption of BCT. This requires the Australian government and other relevant organizations to develop BCT standards needed to remove the uncertainties of potential adopters. Last, the findings can be used by multinational organizations willing to expand their business in Australia.

7. Conclusion
This study identifies the factors influencing the organizational adoption of BCT in Australia. The TOE framework is used as a theoretical foundation. Following the qualitative interpretative research approach, interviews of the decision-makers and senior IT people from the BCT adopter and potential adopter organizations were conducted. After analyzing the interview data, certain technological, organizational, and environmental factors have been identified that influence the adoption of BCT among Australian organizations. These factors include perceived benefits, perceived compatibility, perceived information transparency, perceived risks, organization innovativeness, organizational learning capability, standards uncertainty, and competition intensity. The study constitutes important theoretical and practical implications for the Australian government and private organizations working with BCT.

The study has some limitations that provide a pathway for future research. The study has been conducted in the Australian context, which limits its external validity. Further, the study uses a small sample size that restricts the generalization of its findings. To overcome these limitations, we hope to conduct a future survey study with a larger sample size to enhance the generalizability of the findings.

Data Availability
The data used to support the findings of this study are included within the article.
Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

References

[1] S. Nakamoto, "Bitcoin: A Peer-to-Peer Electronic Cash System," Decentralized Business Review, 2008.

[2] L. Hughes, Y. K. Dwivedi, S. K. Misra, N. P. Rana, V. Raghavan, and V. Akella, "Blockchain research, practice and policy: applications, benefits, limitations, emerging research themes and research agenda," International Journal of Information Management, vol. 49, pp. 114–129, 2019.

[3] J. Frizzo-Barker, P. A. Chow-White, P. R. Adams, J. Mentanko, D. Ha, and S. Green, "Blockchain as a disruptive technology for business: a systematic review," International Journal of Information Management, vol. 51, article 102029, 2020.

[4] C. Callinan, A. Vega, T. Clohessy, and G. Heaslip, "Blockchain adoption factors, enablers, and barriers in fisheries supply chain: preliminary findings from a systematic literature review," The Journal of The British Blockchain Association, vol. 5, p. 32437, 2022.

[5] S. Balasubramanian, V. Shukla, J. S. Sethi, N. Islam, and R. Saloum, "A readiness assessment framework for blockchain adoption: a healthcare case study," Technological Forecasting and Social Change, vol. 165, article 120536, 2021.

[6] S. Z. Hasan, H. Ayub, A. Ellahi, and M. Saleem, "A moderated mediation model of factors influencing intention to adopt cryptocurrency among university students," Human Behavior and Emerging Technologies, vol. 2022, pp. 1–14, 2022.

[7] N. Kumar, K. Upreti, S. Upreti, M. Shabbir Alam, and M. Agrawal, "Blockchain integrated flexible vaccine supply chain architecture: excavate the determinants of adoption," Human Behavior and Emerging Technologies, vol. 3, no. 5, pp. 1106–1117, 2021.

[8] GARTNER, "Predicts 2019: Blockchain Business," 2018, https://www.gartner.com/document/3895043?ref=solrAll&refval=269408412.

[9] PWC, "Global Blockchain Survey," 2021, https://www.pwcn.com/en/research-and-insights/publications/global-blockchain-survey-2018/global-blockchain-survey-2018-report.pdf.

[10] W. G. Research, "Blockchain market shares, market strategies, and market forecasts, 2018 to 2024," 2018, https://www.ibm.com/downloads/cas/PPRR983X.

[11] Statista, "Size of the blockchain technology market worldwide from 2018," 2020, https://www.statista.com/statistics/647231/worldwide-blockchain-technology-market-size/.

[12] IDC, "New IDC spending guide sees strong growth in blockchain solutions leading to $15.9 billion market in 2023," 2019, 2020, https://www.idc.com/getdoc.jsp?containerId=prUS45429719.

[13] S. Underwood, "Blockchain beyond bitcoin," Communications of the ACM, vol. 59, no. 11, pp. 15–17, 2016.

[14] A. S. Mane and B. S. Ainapure, "Blockchain technology: revolution from a centralized to distributed systems," in Data Intelligence and Cognitive Informatics, pp. 577–591, Springer, Singapore, 2022.

[15] T. Clohessy and T. Acton, "Investigating the influence of organizational factors on blockchain adoption," Industrial Management & Data Systems, vol. 119, no. 7, pp. 1457–1491, 2019.

[16] D. Tapscott and A. Tapscott, "How blockchain will change organizations," MIT Sloan Management Review, vol. 58, no. 2, p. 10, 2017.

[17] A. Mohammed, V. Potdar, and L. Yang, "Key factors affecting blockchain adoption in organizations," in International Conference on Big Data and Security, pp. 455–467, Springer, Singapore, 2020.

[18] J. M. Woodside, F. K. Augustine Jr., and W. Giberson, "Blockchain technology adoption status and strategies," Journal of International Technology and Information Management, vol. 26, no. 2, pp. 65–93, 2017.

[19] D. Appelbaum, E. Cohen, E. Kinory, and S. S. Smith, "Impediments to Blockchain Adoption," Journal of Emerging Technologies in Accounting, 2022.

[20] E. Toufaily, T. Zalan, and S. B. Dhaou, "A framework of blockchain technology adoption: an investigation of challenges and expected value," Information & Management, vol. 58, no. 3, article 103444, 2021.

[21] S. Australia, "Roadmap for blockchain standards," 2021, https://www.standards.org.au/getmedia/ad5d74db-8da9-4685-b171-90142ee0a2e1/roadmap_for_blockchain_standards_report.pdf.aspx.

[22] DISER, "The National Blockchain Roadmap," 2021, https://www.industry.gov.au/sites/default/files/2020-02/national-blockchain-roadmap.pdf.

[23] CRCNA, "Australian government in Water Ledger blockchain for trading water rights," 2020, https://crcna.com.au/research/projects/improving-water-markets-and-trading-through-new-digital-technologies.

[24] NAB, "Embracing innovation puts the ASX at the forefront of new technology," https://business.nab.com.au/embracing-innovation-puts-the-asx-at-the-forefront-of-new-technology-38498/.

[25] "Blockchain Pilot Grants to support industry transformation," 2021, https://www.minister.industry.gov.au/ministers/porter/media-releases/blockchain-pilot-grants-support-industry-transformation.

[26] "Funding to demonstrate Blockchain technology’s potential to reduce compliance burden," 2022, https://business.gov.au/grants-and-programs/blockchain-pilot.

[27] IBM, "Australian Federal Government signs a $1B five-year agreement with IBM," 2018.

[28] BA, "Promoting blockchain innovation in Australia," 2022, https://blockchainaustralia.org/.

[29] DELOITTE, "Opportunities and implications of blockchain in Australia," 2020, https://www2.deloite.com/content/dam/Deoite/au/Documents/financial-services/deoite-aus-opportunities-implications-blocking-blockchain-australia-180516.pdf.

[30] Deoite, "Opportunities and implications of blockchain in Australia," 2022, https://www2.deloite.com/au/en/pages/financial-services/articles/opportunities-implications-blocking-blockchain-australia.html.

[31] "Economist. preparing for disruption technological readiness ranking," The Economist, 2020, http://pages.eiu.com/rs/753-RJQ-438/images/Technological_readiness_report.pdf.
[32] ACS, "Blockchain 2030, a look at the future of blockchain in Australia," Australian Computing Society, 2020, https://www.acs.org.au/content/dam/acs/acs-publications/ACS-Data61-Blockchain-2030-Report.pdf.

[33] F. Holotnik and J. Moormann, "Organizational adoption of digital innovation: the case of blockchain technology," in European Conference on Information Systems (ECIS)/Association for Information Systems (AIS), Portsmouth, United Kingdom, 2018.

[34] L.-W. Wong, L.-Y. Leong, J.-J. Hew, G. W.-H. Tan, and K.-B. Ooi, "Time to seize the digital evolution: adoption of blockchain in operations and supply chain management among Malaysian SMEs," International Journal of Information Management, no. 101997, 2019.

[35] V. Hoxha and S. Sadiku, "Study of factors influencing the decision to adopt the blockchain technology in real estate transactions in Kosovo," Property Management, vol. 37, no. 5, pp. 684–700, 2019.

[36] M. M. Queiroz, S. Fosso Wamba, M. De Bourmont, and R. Telles, "Blockchain adoption in operations and supply chain management: empirical evidence from an emerging economy," International Journal of Production Research, vol. 59, no. 20, pp. 6087–6103, 2021.

[37] I. Troshani and B. Doolin, "Drivers and Inhibitors Impacting Technology Adoption: A Qualitative Investigation into the Australian Experience with XBRL," in Proceedings of 18th Bled Conference Integration in Action Bled, Slovenia, 2005.

[38] S. Malik, M. Chadhar, S. Vatanasakdakul, and M. Chetty, "Factors affecting the organizational adoption of blockchain technology: extending the technology–organization–environment (TOE) framework in the Australian context," Sustainability, vol. 13, no. 16, p. 9404, 2021.

[39] W. Du, Z. T. Jia, and L. Zhu, "Cross-country variation in bitcoin adoption speed," 2021, Available at SSRN 3987969.

[40] I. J. Orij, S. Kusi-Sarpong, S. Huang, and D. Vazquez-Brust, "Evaluating the factors that influence blockchain adoption in the freight logistics industry," Transportation Research Part E: Logistics and Transportation Review, vol. 141, article 102025, 2020.

[41] P. De Castro, M. Tanner, and K. Johnston, "Perceived factors influencing blockchain adoption in the asset and wealth management industry in the Western Cape, South Africa," in International Development Informatics Association Conference, pp. 48–62, Springer, 2020.

[42] S. Albrecht, S. Reichert, J. Schmid, J. Strüker, D. Neumann, and G. Fridgen, "Dynamics of blockchain implementation—a case study from the energy sector," in Proceedings of the 51st Hawaii International Conference on System Sciences, Hawaii, 2018.

[43] D. Gunasekera and E. Valenzuela, "Adoption of Blockchain Technology in the Australian Grains Trade: An Assessment of Potential Economic Effects," Economic Papers: A Journal Of Applied Economics And Policy, vol. 39, no. 2, pp. 152–161, 2020.

[44] M. Dobrovnik, D. M. Herold, E. Fürst, and S. Kummer, "Blockchain for and in logistics: what to adopt and where to start," Logistics, vol. 2, no. 3, p. 18, 2018.

[45] B. W. Barnes III and B. Xiao, "Organizational adoption of blockchain technology: an ecosystem perspective," in Diffusion Interest Group In Information Technology, Association for Information Systems, 2019.

[46] O. Kühn, A. Jacob, and M. Schüller, "Blockchain adoption at German logistics service providers," in Artificial Intelligence and Digital Transformation in Supply Chain Management: Innovative Approaches for Supply Chains, Proceedings of the Hamburg International Conference of Logistics (HICL), Vol. 27, pp. 387–411, Berlin, 2019.

[47] L.-W. Wong, G. W.-H. Tan, V.-H. Lee, K.-B. Ooi, and A. Sohal, "Unearthing the determinants of blockchain adoption in supply chain management," International Journal of Production Research, vol. 58, no. 7, pp. 2100–2123, 2020.

[48] C. Bai and J. Sarkis, "A supply chain transparency and sustainability technology appraisal model for blockchain technology," International Journal of Production Research, vol. 58, no. 7, pp. 2142–2162, 2020.

[49] M. Kouhizadeh, S. Saberi, and J. Sarkis, "Blockchain technology and the sustainable supply chain: theoretically exploring adoption barriers," International Journal of Production Economics, vol. 231, article 107831, 2020.

[50] D. Ghode, V. Yadav, R. Jain, and G. Soni, "Adoption of blockchain in supply chain: an analysis of influencing factors," Journal of Enterprise Information Management, vol. 33, no. 3, pp. 437–456, 2020.

[51] D. Kalaitzi, V. Jesus, and I. Campelos, "Determinants of Blockchain Adoption and Perceived Benefits in Food Supply Chain," in Logistics Research Network (LRN), Northampton, UK, 2019.

[52] M. A. Agi and A. K. Jha, "Blockchain technology in the supply chain: an integrated theoretical perspective of organizational adoption," International Journal of Production Economics, vol. 247, article 108458, 2022.

[53] C. Loklindt, M.-P. Moeller, and A. Kinra, "How blockchain could be implemented for exchanging documentation in the shipping industry," in International Conference on Dynamics in Logistics, pp. 194–198, Springer, 2018.

[54] R. Post, K. Smit, and M. Zoet, "Identifying Factors Affecting Blockchain Technology Diffusion," in Americas Conference on Information Systems (AMCIS), New Orleans, 2018.

[55] M. Sharma and S. Joshi, "Barriers to Blockchain Adoption in Health-Care Industry: An Indian Perspective," Journal of Global Operations and Strategic Sourcing, vol. 14, no. 1, pp. 134–169, 2021.

[56] M. Kulkarni and K. Patil, Block Chain Technology Adoption for Banking Services-Model Based on Technology-Organization-Environment Theory, Social Science Research Network (SSRN), 2020.

[57] F. Koster and H. Borgman, "New kid on the block! Understanding blockchain adoption in the public sector," in Proceedings of the 53rd Hawaii International Conference on System Sciences, Hawaii, 2020.

[58] K. Al Harthy, F. Al Shuhaimi, and K. K. J. Al Ismaily, "Blockchain for and in logistics: what to adopt and where to start," Logistics Research Network (LRN), Northampton, UK, 2019.

[59] T. Koens and E. Poll, "The drivers behind blockchain adoption: the rationality of irrational choices," in European Conference on Parallel Processing, pp. 535–546, Springer, 2018.

[60] R. Taufix, A. N. Hidayanto, and H. Prabowo, "The affecting factors of blockchain technology adoption of payments systems in Indonesia banking industry," in in 2018
International Conference on Information Management and Technology (ICIMTech), pp. 1–9, Jakarta, Indonesia, 2018.

[61] S. Supranee and S. Rotchanakitumnuai, “The Acceptance of the Application of Blockchain Technology in the Supply Chain Process of the Thai Automotive Industry,” Ed: ICEB, in Iceb 2017 Proceedings, Dubai, UAE, 2017.

[62] F. Sander, J. Semeijn, and D. Mahr, “The acceptance of blockchain technology in meat traceability and transparency,” British Food Journal, vol. 120, no. 9, pp. 2066–2079, 2018.

[63] P. Grover, A. K. Kar, M. Janssen, and P. V. Ilavarasan, “Perceived usefulness, ease of use and user acceptance of blockchain technology for digital transactions—insights from user-generated content on twitter,” Enterprise Information Systems, vol. 13, no. 6, pp. 771–800, 2019.

[64] H. Wang, K. Chen, and D. Xu, “A maturity model for blockchain adoption,” Financial Innovation, vol. 2, no. 1, p. 12, 2016.

[65] E. Y. Li, “Integrating innovation diffusion theory and the technology acceptance model: the adoption of blockchain technology from business managers’ perspective,” in International Conference on Electronic Business, pp. 299–302, Dubai, UAE, 2017.

[66] P. Helebrandt, M. Bellus, M. Ries, I. Kotuliak, and V. Khilenko, “Blockchain adoption for monitoring and management of enterprise networks,” in 2018 IEEE 9th Annual Information Technology, Electronics and Mobile Communication Conference (IEMCON), pp. 1221–1225, Vancouver, BC, Canada, 2018.

[67] S. Schuetz and V. Venkatesh, “Blockchain, adoption, and financial inclusion in India: research opportunities,” International Journal of Information Management, vol. 52, p. 101936, 2020.

[68] J. Angelis and E. R. da Silva, “Blockchain adoption: a value driver perspective,” Business Horizons, vol. 62, no. 3, pp. 307–314, 2019.

[69] L. Wanitcharakkhakul and S. Rotchanakitumnuai, “Blockchain technology acceptance in electronic medical record,” in Iceb 2017 Proceedings, Dubai, UAE, 2017.

[70] N. Kshetri and E. Loukoianova, “Blockchain adoption in supply chain networks in Asia,” IT Professional, vol. 21, no. 1, pp. 11–15, 2019.

[71] D. T. T. Hien, D. H. Hien, and V.-H. Pham, “A survey on opportunities and challenges of blockchain technology adoption for revolutionary innovation,” in Proceedings of the Ninth International Symposium on Information and Communication Technology, pp. 200–207, New York, 2018.

[72] A. Bogucharskov, I. Pokamestov, K. Adamova, and Z. N. Tropina, “Adoption of blockchain technology in trade finance process,” Journal of Reviews on Global Economics, vol. 7, pp. 510–515, 2018.

[73] M. M. Queiroz and S. F. Wamba, “Blockchain adoption challenges in supply chain: an empirical investigation of the main drivers in India and the USA,” International Journal of Information Management, vol. 46, pp. 70–82, 2019.

[74] A. Tumasjan and T. Beutel, “Blockchain-based decentralized business models in the sharing economy: a technology adoption perspective,” in Business Transformation Through Blockchain, pp. 77–120, Springer, 2019.

[75] T. Clohessy, T. Acton, and N. Rogers, “Blockchain adoption: technological, organisational and environmental considerations,” in Business Transformation through Blockchain, pp. 47–76, Springer, 2019.

[76] L. Tornatsky and M. Fleischer, The Process of Technology Innovation, Lexington, MA, Lexington Books, 1990.

[77] E. M. Rogers, Diffusion of Innovations, Simon and Schuster, 2003.

[78] P. J. DiMaggio and W. W. Powell, “The iron cage revisited: institutional isomorphism and collective rationality in organizational fields,” American Sociological Review, vol. 48, no. 2, pp. 147–160, 1983.

[79] T. Oliveira and M. F. Martins, “Literature review of information technology adoption models at firm level,” Electronic Journal of Information Systems Evaluation, vol. 14, no. 1, p. 110, 2011.

[80] J. Baker, The technology–organization–environment framework, Springer, 2012.

[81] M. S. Satar and G. Alarifi, “Factors of E-business adoption in small and medium enterprises: evidence from Saudi Arabia,” Human Behavior and Emerging Technologies, vol. 2022, pp. 1–13, 2022.

[82] R. K. Yin, Case Study Research and Applications: Design and Methods, Sage Publications, 2017.

[83] H. K. Klein and M. D. Myers, “A set of principles for conducting and evaluating interpretive field studies in information systems,” MIS Quarterly, vol. 23, no. 1, pp. 67–93, 1999.

[84] C. E. Hill, B. J. Thompson, and E. N. Williams, “A guide to conducting consensual qualitative research,” The Counseling Psychologist, vol. 25, no. 4, pp. 517–572, 1997.

[85] B. G. Glaser and A. L. Strauss, Discovery of Grounded Theory: Strategies for Qualitative Research, Routledge, 2017.

[86] V. Braun and V. Clarke, “Using thematic analysis in psychology,” Qualitative Research in Psychology, vol. 3, no. 2, pp. 77–101, 2006.

[87] A. Strauss and J. Corbin, Basics of qualitative research, Sage Publications, 1990.

[88] J. Sunny, N. Undralla, and V. M. Pillai, “Supply chain transparency through blockchain-based traceability: an overview with demonstration,” Computers & Industrial Engineering, vol. 150, article 106895, 2020.

[89] T. Saheb and F. H. Mamaghani, “Exploring the barriers and organizational values of blockchain adoption in the banking industry,” The Journal of High Technology Management Research, vol. 32, no. 2, article 100417, 2021.

[90] A. Subramanian and S. Nilakanta, “Organizational innovativeness: exploring the relationship between organizational determinants of innovation, types of innovations, and measures of organizational performance,” Omega, vol. 24, no. 6, pp. 631–647, 1996.

[91] G. Gomes and R. M. Wojahn, “Capacidad de aprendizaje organizacional, innovacion y desempeño: estudio en pequeñas y medianas empresas (PYMES),” Revista de Administração (São Paulo), vol. 52, no. 2, pp. 163–175, 2017.

[92] K. Zhu, K. L. Kraemer, and S. Xu, “The process of innovation assimilation by firms in different countries: a technology diffusion perspective on e-business,” Management Science, vol. 52, no. 10, pp. 1557–1576, 2006.

[93] S. H. Kim, “A study on blockchain technology adoption and intention of logistics firms in Korea,” Journal of the Korea Society of Computer and Information, vol. 25, no. 2, pp. 231–239, 2020.
[94] I. M. Al-Jabri and N. Roztocki, “Adoption of ERP systems: does information transparency matter?,” *Telematics and Informatics*, vol. 32, no. 2, pp. 300–310, 2015.

[95] J. Aslam, A. Saleem, N. T. Khan, and Y. B. Kim, "Factors influencing blockchain adoption in supply chain management practices: a study based on the oil industry," *Journal of Innovation & Knowledge*, vol. 6, no. 2, pp. 124–134, 2021.

[96] K. Yoo, K. Bae, E. Park, and T. Yang, "Understanding the Diffusion and Adoption of Bitcoin Transaction Services: The Integrated Approach," *Telematics and Informatics*, vol. 53, p. 101302, 2019.

[97] M. Newby, T. H. Nguyen, and T. S. Waring, “Understanding customer relationship management technology adoption in small and medium-sized enterprises,” *Journal of Enterprise Information Management*, vol. 27, no. 5, pp. 541–560, 2014.

[98] D. Marikyan, S. Papagiannidis, O. F. Rana, and R. Ranjan, "Blockchain adoption: a study of cognitive factors underpinning decision making," *Computers in Human Behavior*, vol. 131, article 107207, 2022.

[99] S. Elhidaoui, K. Benhida, S. El Fezazi, S. Kota, and A. Lamalem, "Critical success factors of blockchain adoption in green supply chain management: contribution through an interpretive structural model," *Production & Manufacturing Research*, vol. 10, no. 1, pp. 1–23, 2022.

[100] Y. Guo and C. Liang, “Blockchain application and outlook in the banking industry,” *Financial Innovation*, vol. 2, no. 1, p. 24, 2016.

[101] V. Sadhya and H. Sadhya, "Barriers to adoption of blockchain technology," in *Americas Conference on Information Systems*, Association for Information Systems, 2018.

[102] V. Venkatesh and H. Bala, "Adoption and impacts of interorganizational business process standards: role of partnering synergy," *Information Systems Research*, vol. 23, no. 4, pp. 1131–1157, 2012.