

Using blockchain for global governance: past, present and future

Blockchain and
governance: a
scientometric
view

Chandan Kumar Tiwari

*Department of Business Studies, University of Technology and Applied Sciences,
Muscat, Oman, and*

Abhinav Pal

*Symbiosis Centre for Management Studies, Noida,
Symbiosis International (Deemed University), Pune, India*

Received 30 July 2022

Revised 30 July 2022

Accepted 30 July 2022

Abstract

Purpose – This paper examines the current state of blockchain governance research. The study's findings also propose a conceptual framework for the use of blockchain in governance and global governance and provide a global look at how public and private sectors alike are implementing new technologies.

Design/methodology/approach – The study is qualitative as well as quantitative in nature. The authors used Preferred Reporting Items for Systematic and Meta-Analysis (PRISMA) to gather data for the study. Furthermore, a bibliometric analysis using VOSviewer visualization tool and R Studio was carried out to attain the research objectives.

Findings – Many scholars and practitioners from around the world are interested in the topic, according to the analysis. This is a multidisciplinary study, so researchers have looked at how the blockchain can be used to govern countries, public utilities and global facilities, including corporations. There are numerous examples of how technology has been used in global governance, and the authors found that governments, as well as corporations around the world, have implemented technology in a variety of areas that affect the public and other stakeholders.

Practical implications – This study makes numerous contributions. In the first place, it presents the complex concept of blockchain in an easier to understand way. The numerous governmental and commercial initiatives that have made use of blockchain are also highlighted. As a result, the use of technology in corporate and social governance will continue to grow. Finally, the research will inform the academic community on the current state of the topic and potential future directions.

Originality/value – As a result of this research, academics and scholars can better understand the potential of blockchain in various governance models, ranging from developed to developing economies. The general public, as well as organizations, will benefit from the decentralized nature of the blockchain in a variety of ways related to their day-to-day governance. To the best of authors' knowledge, this is a first kind of research on blockchain in governance using PRISMA and bibliometrics tools.

Keywords Blockchain, Blockchain technology, Governance, Public governance, Global governance

Paper type Conceptual paper

1. Introduction

The pace of technological change is accelerating at an unprecedented rate. An effort to automate manufacturing practices, communication and exchange has been made as part of the Fourth Industrial Revolution, or Industry 4.0, which was coined in 2011 (Fatorachian and Kazemi, 2021; Sony and Naik, 2019; Ghobakhloo, 2018). Front-end technologies include smart manufacturing, smart product, smart supply chain and base technologies, such as the Internet of Things (IoT), cloud computing, cognitive computing and artificial intelligence (Ghadge *et al.*, 2020; Frank *et al.*, 2019; Dalenogare *et al.*, 2018). Smart manufacturing also requires the integration of blockchain technology and the IoT (De Villiers *et al.*, 2021; Zuo, 2020). As a result of the widespread adoption of these technologies, individuals, businesses, corporations, organizations as well as societies are able to have a greater impact on the growth of economies, societies and the environment in general (Behl *et al.*, 2021; Behl and



South Asian Journal of Business
Studies

© Emerald Publishing Limited
2398-628X

DOI 10.1108/SAJBS-07-2022-0252

Dutta, 2020). Corporations are making extensive use of new technologies to better serve their clients and shareholders alike. The Internet is making it easier for firms to get their message out to a global audience. While simultaneously delivering public and social welfare, governments are incorporating a variety of new technology to control their own areas. This study aims to show the potential applications of blockchain technology in global governance. This article begins with an introduction of blockchain, detailing its essential properties, advantages and disadvantages. Later, we discussed governance, its origins and its impact on business and society. Thus, we will be able to articulate and express our findings at the completion of this research with greater clarity.

1.1 Blockchain

Industry 4.0 relies heavily on the blockchain, which is a key component. When Haber and Stornetta first coined the term “blockchain” in 1991, they used it to record a time stamp document (Haber and Stornetta, 1991). Further, the technology was described as a peer-to-peer electronic cash system using cryptographic proof instead of trust without the involvement of a trusted third party by an anonymous peer called Satoshi Nakamoto (2008). Using digital tokens based on a distributed ledger enables peer-to-peer exchange of value (Momtaz, 2021; Makarov and Schoar, 2020). Many different industries and sectors are now using the blockchain to keep track of everything from trade to government regulations.

Blockchain 1.0, 2.0, 3.0 and 4.0 represent four major stages in the evolution of the technology. The original Blockchain 1.0 has evolved into virtual payment systems like Bitcoin. In addition to cryptocurrencies and payments, Blockchain 2.0 saw the technology applied to the design and implementation of smart contracts and other financial applications (Cong and He, 2019; Suliman et al., 2018). Blockchain 3.0 increases its capabilities beyond financial applications to encompass a broader spectrum of industries (Kim et al., 2020; Swan, 2015). As part of Industry 4.0, uses of blockchain technology in the real world are becoming more prevalent. Blockchain, the decentralized digital database of a peer-to-peer network, records all transactions. On a blockchain, transactions will not be recorded centrally; rather, they will be validated by anonymous participants on the network and broadcast openly across all distributed networks (Chen et al., 2021). Each and every transaction entered is kept and chronologically linked together permanently. According to Basu and Gabbay (2021) and Hooper and Holtbrügge (2020), a network’s recorded transactions comprise the blockchain, a chain of blocks formed by recorded transactions. A blockchain has no central authority, making it tamper-proof and tamper-resistant (Yaga et al., 2019). A blockchain is a series of blocks that use digital signatures to store information in a decentralized and distributed network (see Figure 1). According to recent research by Monrat et al. (2019), another description of blockchains is decentralized digital network protocols with a complex interplay between stakeholders. These stakeholders include founders, token holders, network validators, core and application developers (Allen and Berg, 2020). Blockchains are immutable data records that are structured by a decentralized network of computers (Augustine and Raj, 2020). This type of decentralized database is trustworthy and difficult to exploit fraudulently (Tasatanattakool and Techapanupreeda, 2018). Blockchain, or distributed ledger technology (DLT), is commonly referred to as the decentralized Internet or web (Zalan, 2018). The Internet of value is replacing the Internet of information as a result of technological advancements (Tapscott and Tapscott, 2017).



Source(s): Authors’ own representation

Figure 1.
Chain of Blocks

Blockchains can typically be characterized as public, private or hybrid. The broader public is permitted to participate and execute transactions on a public blockchain that is accessible to the public (for example, bitcoin). When using a private or permissioned blockchain, the user's identity must be known (at the corporate level). In the hybrid instance, a consortium (such as Ripple) grants platform authority (Roh and Lee 2020; Rane and Narvel, 2019).

Consequently, the blockchain is characterized by a collection of encrypted data known as blocks. Using electronic key systems, data are digitally captured, signed, accessed and managed (Buchmann *et al.*, 2006). Decentralization, transparency and immutability, privacy and security, and trust are some of the primary advantages of utilizing blockchain technologies (Centobelli *et al.*, 2021; Jain *et al.*, 2021). However, there exists some regulatory, reliability, scalability, literacy and environmental concerns for the effective implementation of the technology.

1.2 Governance

The Greek verb (kuberman), which means to guide a ship, is the origin of the English word (governance). After French governors began employing the Latin verb gubernare, which means "to govern," the English terms governance and governance emerged (Plattner, 2013). There are three main contexts for governance. Public administration and the management of non-hierarchical social behaviour via networks and non-sovereign organizations are instances of transnational governance. Various processes that fall under the umbrella word "governance" can direct or regulate the behaviour of individuals (Fukuyama, 2016). Networks of interconnected organizations, characterized by interdependence, exchange of resources, rules of the game and significant autonomy from state institutions are referred to as governance (Rhodes, 2000). Society and organization management is referred to as the art of guiding them. Structures, processes and traditions all play a role in determining how power is exercised, how decisions are made and how citizens or other stakeholder interests are served. Individuals and institutions, public and private, manage their common affairs in a variety of ways according to the Commission on Global Governance (CGG). Conflicting or divergent interests can be reconciled and cooperative action taken as a result of this on-going process. People and organizations both agree to or perceive it to be in their best interest to participate in formal and informal compliance mechanisms (Baxi, 1996). In addition, governance focuses on the ways in which a country's authority is exercised through its traditions and institutions (World Bank, 2007). Governance necessitates accountability and openness (Bannister and Connolly, 2012).

As a result, the terms "governance" and "responsibility" are often used interchangeably. Globally, nationally and in institutions and societies, it is pervasive.

Because of its inherent advantages, blockchain, an emerging technology from the past decade, has a role to play in fuelling the economies and organizations of the world (Manski, 2017). As a result, the overall purpose of this research is to get an understanding of the most recent advancements and studies on blockchain in governance, as well as to draw attention to the potential of blockchain technology in global governance. In order to achieve these objectives, the sub-objectives listed below have been developed:

a) Initial research into the relationship between blockchain technology and governance; b) development of a conceptual framework for blockchain applications in governance and global governance and finally c) to describe how technology is being used in both public and private governance around the world today.

A lot of academic research has been done on the themes of blockchain technology. Finance, business and science and technology were the most prevalent themes. There has not been enough research done on how technology can help with administration and governance (De Filippi, 2020; Hooper and Holtbrügge, 2020). The academic community's contribution will

assist practitioners in creating a governance system based on the blockchain. As a result, we come up with the following research question in order to meet our initial goal.

R1. What are the current trends and development in literature available on blockchain in governance?

An organization's or country's governance entails directing it. For the benefit of the public and society as a whole, a variety of public utilities are planned, created and executed on the public side. We have come up with the following research question in order to examine blockchain's potential for managing public utilities.

R2. What role does blockchain technology play in global public governance?

Any economy's growth and development depends heavily on the private sector. We offer the following research question in order to examine the function of the private sector in global business and economic development.

R3. How are private companies around the world utilizing the blockchain technology for governance?

In this study, blockchain and governance are studied. The paper has the following outline. Defining blockchain and governance is the primary topic of the first section. In the second section, a conceptual framework on blockchain and governance as well as global governance has been presented with the help of a review of literature. The third section describes the methodology of the study. Further, bibliometric analysis was completed in [section 4](#), and the outcomes of numerous global use cases of blockchain in public and private affairs have been discussed in the [section 5](#). Subsequently, [section 6](#) covers the practical implications and contribution of this study, and finally, [section 7](#) provides the conclusion and future research directions.

2. Literature review and development of conceptual framework

In this section, we review the literature and present the conceptual framework of blockchain in governance and global governance. This will enable us to carry out further analysis and answer research questions.

Blockchain has been studied by academics and practitioners all over the world for a variety of purposes. Potential and challenges in business ([Nikbakht and Smith, 2021](#); [George et al., 2019](#); [Lacity, 2018](#)), trade ([Sinha and Chowdhury, 2021](#); [Busari and Aminu, 2021](#)), society ([Shin and Ibrahine, 2020](#); [Caradonna, 2020](#)), governance ([Aste et al., 2017](#); [George et al., 2019](#); [Grover et al., 2021](#); [Beck et al., 2018](#); [Atzori, 2015](#); [Cosares et al., 2021](#); [Pal et al., 2021a, b](#); [Osmani et al., 2020](#); [Treleaven et al., 2017](#); [Engin and Treleaven, 2019](#); [Chakravarty and Sarkar, 2020](#); [Joo et al., 2019](#)) and cryptocurrencies ([Chakravarty and Sarkar, 2020](#); [Joo et al., 2019](#)) followed by various areas of business management ([Pal et al., 2021a, b](#); [Viriyasitavat et al., 2020](#); [White, 2017](#)), including supply chain ([Dubey et al., 2020](#); [Queiroz et al., 2019](#)) and operations ([Cole et al., 2019](#); [Panarello et al., 2018](#)).

One of the most widely cited studies on the topic of corporate governance and blockchain examines the implications and applications of the technology. Investors, corporate executives, institutional investors and auditors all have a stake in this emerging financial technology, which is why this research looks at how it will affect all of these parties. The advantages of using blockchain technology include the transparency of stock ownership, the low cost of trading and investment and the effective record keeping of parties involved ([Al Kemyani et al., 2022](#); [Yermack, 2017](#)). On the topic, there is a significant body of literature that describes blockchain technology as a ground-breaking innovation in the new area and proposes an IT governance framework for the blockchain economy ([Beck et al., 2018](#)).

Another significant contribution emphasized the advantages that the blockchain infrastructure can harvest in projects to improve the current centralized system (Grover *et al.*, 2021). In addition, blockchain can be utilized to foster cooperation among businesses (Lumineau *et al.*, 2021). Examining blockchains' potential as efficient governance systems, the study looked into how blockchains affect a number of crucial organizational outcomes. Although blockchain technology has sparked a lot of interest from stakeholders in governance, the use of blockchain in various forms of governance has yet to be explored (Rozas *et al.*, 2021; Allen and Berg, 2020; Atzori, 2015).

2.1 Blockchain based governance

Given the paucity of research, the use of blockchain technology in governance has been debated at both the national and global levels. Public and private governance can benefit from the use of this technology at the national level. Providing public services, such as keeping track of citizens' identities and assets, will be made easier with the inclusion of blockchain in public governance. In a nutshell, all services and organizations in a state that promotes public and social well-being are included. When it comes to private governance, however, it can be applied to a wide range of businesses and organizations that provide goods and services in the country. In the long run, this will lead to blockchain-based corporate governance.

In the same way that blockchain-based platforms can be used to implement global governance on matters pertaining to the common public and global issues at the national level, global governance can also be implemented. While this is going on, private organizations and individuals can establish rules and regulations for a variety of facets of global commerce and corporate governance (Rani and Prakash, 2021).

Blockchain-based governance can have adoption implications from various governance theories. The agency cost theory stresses on the fact that the most important goal of good governance is to safeguard and protect the various stakeholders of a firm from the indiscretion and personal motives of the managers, the blockchain-enabled technology will ensure better transparency and uphold the idea of this theory (Sun *et al.*, 2020; Grosse *et al.*, 2021). The transaction cost theory states that the organizational structure of the firm can determine the various aspects of price, cost and production of the firm while the implementation of blockchain technology can improve speed of execution and lead to reduction in costs, which can further increase investments and lead to new and improved governance strategies (Chen *et al.*, 2022; Herold *et al.*, 2021). The stewardship theory of governance states that company executives play a vital role in the advancement of the firm and profitability and financial benefit of the firm's stakeholders, and the adoption of blockchain-based governance would significantly reduce information asymmetry and modify the incentive structures leading to improved efficiency of the firm (Sama *et al.*, 2021). While the resource-dependent theory highlights the role of the board of management in steering the firm forward by providing better access to the required resources needed by the firms, the blockchain technology could ensure better transparency and expand the role of various stakeholders of the firms in its governance (Jayasuriya Daluwathumullagamage and Sims, 2020).

Using blockchain in governance, we present a conceptual framework for guiding public and private sector actions at the national and global levels. Figure 2) describes the



Figure 2.
Conceptual framework
for blockchain in
governance

framework for blockchain in governance and categorizes blockchain applications on a national and worldwide level. Globalization has linked businesses and societies all over the world. As a result, it is critical to examine governance structures not only at the national level but also at the global level (Hooper and Holtbrügge, 2020). Furthermore, any entity's governance structure may be made up of public or private holdings (Tan *et al.*, 2021). As a result, we recommend that blockchain technology be governed in both public and private contexts.

It is imperative that global governance be established in order to ensure the free flow of people, business and commerce, as well as to protect the interests of the global community as a whole. All issues affecting the general public and all functions performed by private corporations operating on a global scale can be addressed by this system of global governance. Since the year 2000, countries all over the world have made the transition from traditional government to e-government and, more recently, blockchain-based government (Tan *et al.*, 2021). Records of citizens' assets and other important information were kept in a long book registry in the past. Not only were these manual registers prone to breakage and theft but they also took up a significant amount of floor space in government offices and other establishments. The use of electronic governance, also known as e-governance, has reduced the amount of time and resources spent on keeping and monitoring these records, as well as the accompanying costs (Gupta *et al.*, 2018). The electronic data, on the other hand, is vulnerable to hacking and manipulation. International, state or local authorities can use blockchain-based platforms to keep official records of citizens and businesses operating in or outside their borders, providing accountability, safety and automation in the management of public records (Garcia, 2021; Veeramani and Jaganathan, 2020).

In terms of global governance, we highlight the role of enterprises, governments and non-governmental organizations around the world in leveraging blockchain technology to strengthen governance structures (De Filippi, 2020). The organizations operating world need governance structure considering their motives of either social welfare or profits. This necessitates the implementation of sound governance process, structure and layout for ensuring efficiency in governance and administration.

As a result, the study distinguishes between global governance and country specific governance and provides the framework in both public and private settings through Figure 3.

This section focused on a detailed review of literature on the topic, and the next section would dwell into the research methodology employed in the current study.

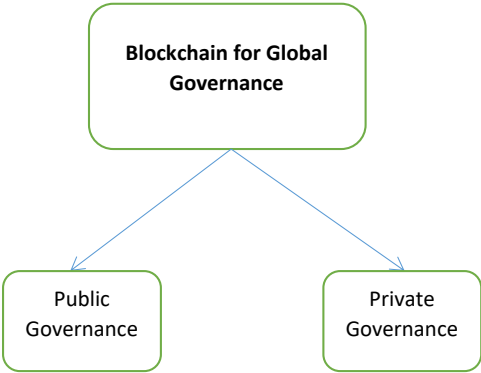


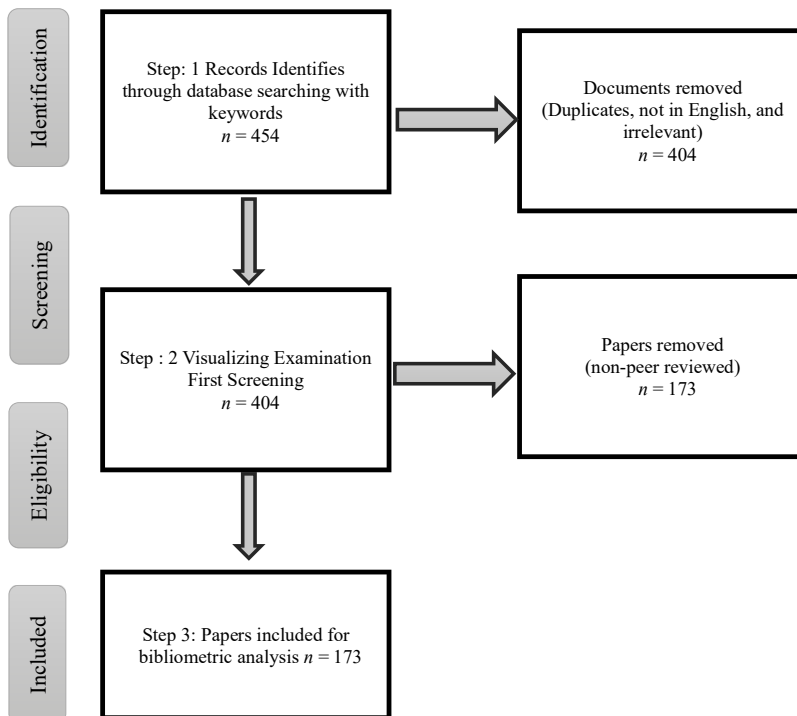
Figure 3.
Conceptual framework
for blockchain in global
governance

3. Methodology

This research focuses mostly on the qualitative and descriptive components of the subject matter. At the same time, it uses quantitative tools like bibliometric analysis to present the latest trends in the field. The current study has employed secondary data from major databases like Scopus and Google Scholar using Preferred Reporting Items for Systematic and Meta-Analysis (PRISMA) and further performed bibliometric analysis. Figure 4 provides a full description of how we systematically searched for relevant literature and conducted our investigation (Donthu *et al.*, 2021; Pal *et al.*, 2021a, b; Bhaskar *et al.*, 2020; Frizzo-Barker *et al.*, 2020).

Stage 1: Searching the academic database

The authors' university library system was used to search the Scopus and Google Scholar databases for published studies that met the study's objectives. For the extraction of related documents, Scopus was chosen because it is the largest database with research available in different disciplines making it inter-disciplinary in nature. For blockchain in global governance, the initial search was done using the keywords "Blockchain" in "Governance" and "Blockchain in "Global Governance". Furthermore, there were no restrictions on the document's publication year or language. More than 400 documents, including articles, book chapters, editorials and conference papers, were retrieved. The authors of this study have counted the documents that contained the aforementioned keywords. There were no more reprints of any kind even those that were not available in English.



Source(s): Compiled by authors

Figure 4.
Research stages in
the study

Stage 2: Visualizing examination

A list of related articles was compiled, and then any articles that were not relevant were removed. There were three criteria for consideration: the article had to be in English, it had to be part of a press or review paper (under document type), which means it could not fall under the categories of conference review, conference paper, book chapter or editorial and it had to discuss or examine blockchain and its application in governance for the general public, business and society.

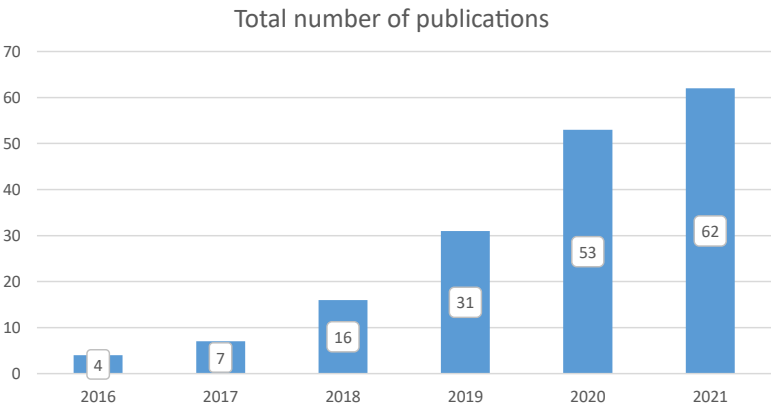
Articles were deemed unsuitable if they failed to address any one of these criteria. In order to meet the above-mentioned inclusion criteria, all articles were thoroughly reviewed. Finally, a total of 173 articles from peer-reviewed journals ($n = 122$) covering the years 2016–2021 met the inclusion criteria.

Stage 3: Analysing the content

The bibliometric analysis of the related studies was also carried out in the final stage. Performance analysis metrics, including the number of publications (Figure 5) and science mapping metrics including citation analysis, geographic distribution analysis (Figure 6), journal performance metrics analysis (Table 3), co-authorship analysis (Figure 7) and keyword analysis (Table 4 and Figure 8) have been performed to explore the current trends and developments in the field of study. The results are presented using widely used bibliometric analysis and visualization tools, such as VOSviewer (Van Eck and Waltman, 2013) and R bibliometrix package (Aria and Cuccurullo, 2017).

4. Analysis

Bibliometric analysis is used to detect developing trends in article and journal performance, collaboration patterns and research elements, as well as to investigate the intellectual structure of a certain area in the existing literature. Performance analysis and scientific mapping are two subcategories of bibliometric analysis methodologies that can be applied. Research constituents are accounted for in performance analysis, whereas the relationships between research constituents are mapped in scientific mapping. Our study requires this because there is a scarcity of literature on the subject and further to emphasize the scientific mapping pattern of existing investigations. This will enable us to suggest future directions of research to scholars worldwide (Mukherjee *et al.*, 2022; Donthu *et al.*, 2021; Baker *et al.*, 2020; Cobo *et al.*, 2011).



Source(s): Authors’ own representation

Figure 5.
Year-wise trends in publications

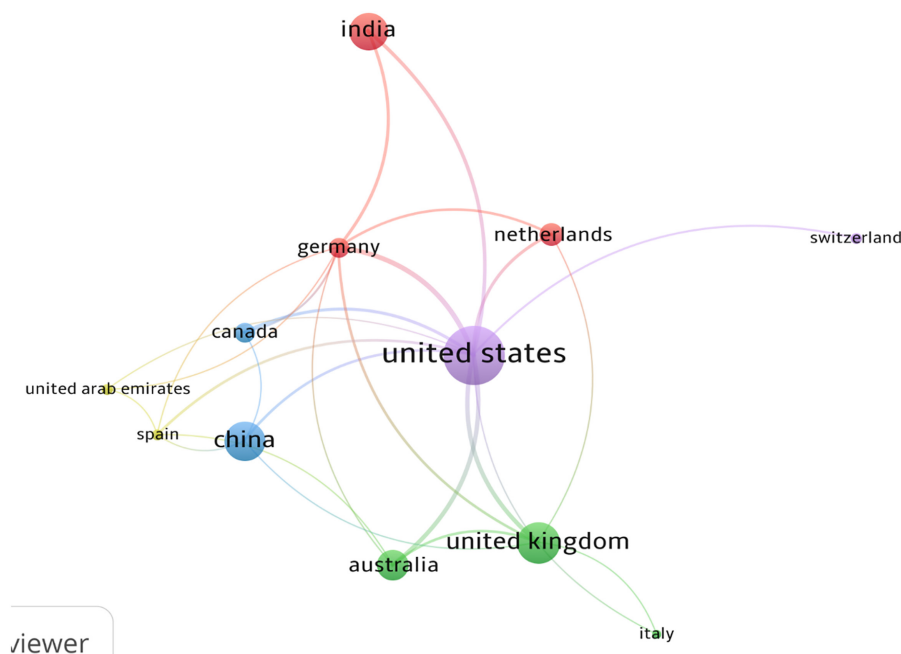


Figure 6.
Geographic
distribution analysis

Source(s): Authors' own representation

The peer-reviewed articles connected to our study are examined in the following part based on performance analysis through number of publications year-wise and science mapping analysis for examining geographic distribution of publications, source title or journal metrics, co-authors, citation and keywords.

4.1 Performance analysis

As demonstrated in [Figure 5](#), blockchain and its application in governance are relatively recent phenomena, and the field of study is still in its infancy. Beginning in 2016, academics have begun to pay attention to blockchain and have expanded their investigation beyond cryptocurrencies and finance to include other aspects of business governance and administration as well as societies. There has been a significant increase in the number of publications on blockchain and its implications for governance over the past few years, and this trend appears to be set to continue in the future, given the enormous potential of the underlying technology in various fields and the widespread adoption of blockchain by countries in a variety of administrative domains.

4.2 Citation analysis

Citation analysis is a fundamental technique for scientific mapping based on the premise that citations indicate intellectual connections between publications that are formed when one publication references the other ([Appio et al., 2014](#)). In this approach, the significance of a publication is measured by the number of citations it receives. Using citations, one can study the most prominent articles in a research topic in order to comprehend the intellectual dynamics of that field ([Donthu et al., 2021](#)).

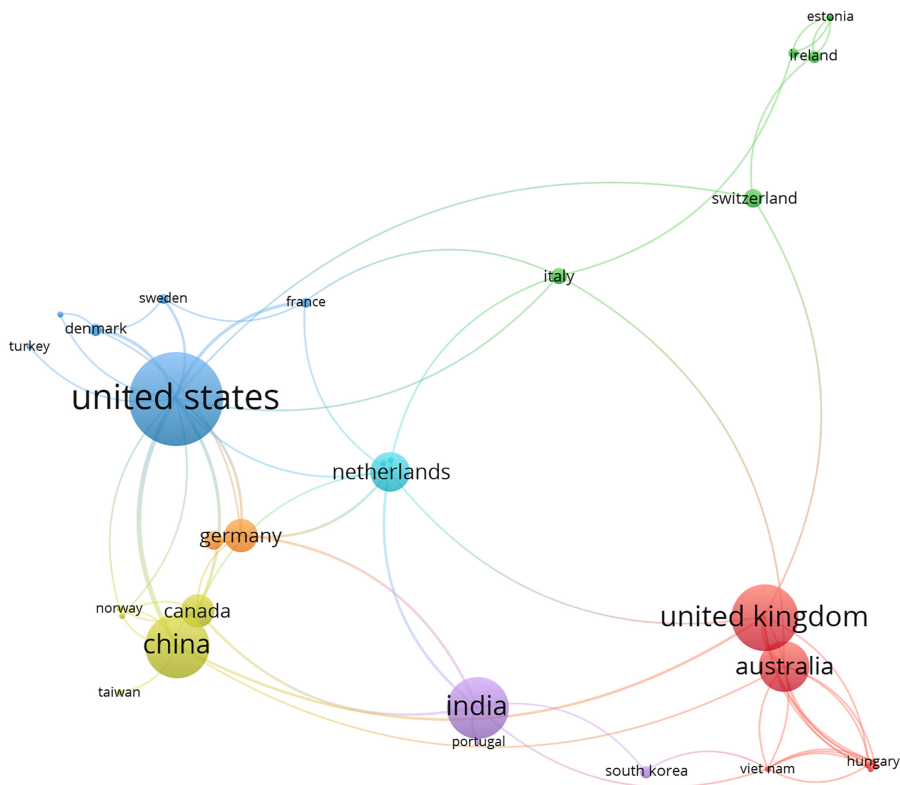


Figure 7.
Co-authorship analysis

Source(s): Authors' own representation

Table 1 includes citations for each author as well as the number of citations equal to or more than 40. Top ten researchers in terms of citations have been identified. Yermack (2017) and Risius and Spohrer (2017) have been the most frequently cited articles, respectively. One of the most prominent studies in the field assesses the possibilities of technology for managers, institutional investors, auditors, shareholders and other parties involved in corporate governance. The study examines the role of corporate governance for maximizing value for important stakeholders by guaranteeing improved liquidity, economy, correctness and transparency in company transactions (Yermack, 2017).

Further analysis (Table 2) shows citations broken down by country, where USA receives the most (631) citations, followed by Germany (205). Scholars from the developed world have contributed the most studying the implications of technology for governance infrastructure and received the most citations for their work in this new field of study.

4.3 Geographic distribution analysis

Geographic distribution analysis explores the contacts between researchers from different corners of the world. Due to the fact that it is a formal method of intellectual collaboration among researchers from different regions, it is essential to emphasize the countries that are fostering research in the field (Cisneros et al., 2018). Figure 6 depicts the number of papers published in each country in this newly emerging area of study. Scholars from the USA (33),

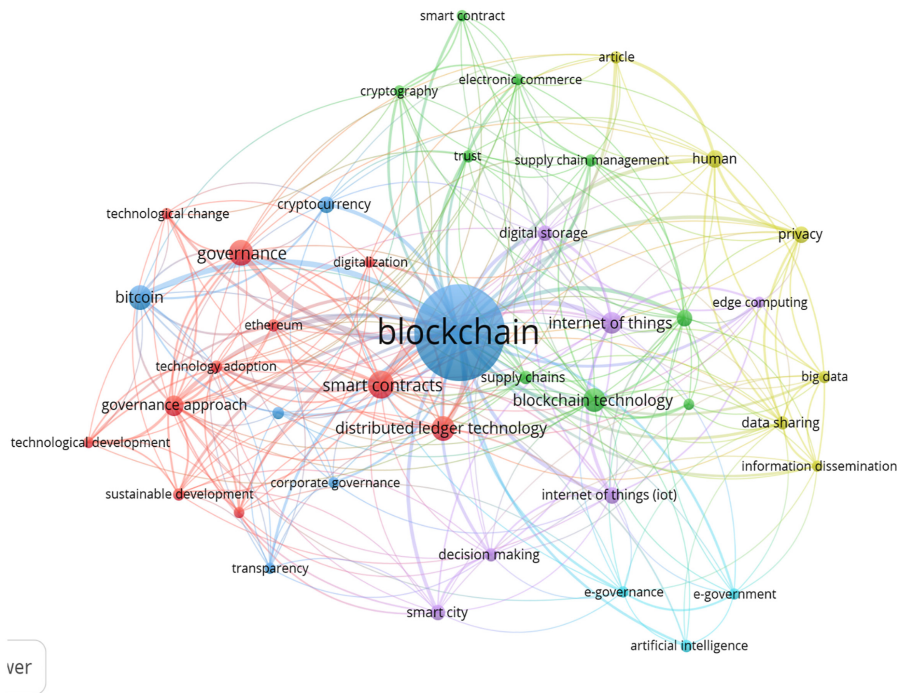


Figure 8.
Keyword analysis

Source(s): Authors' own representation

the United Kingdom (UK) (23) and China have made enormous contributions, as shown in citation analysis from the number of documents and citations received (22). However, apart from India and China, the field of study seeks attention from other emerging economies around the globe. There may be a lack of publications because the technology and its adoption are still in their infancy.

This encapsulates and suggests that DLT and its application in various areas of governance are certain to attract more contributions from scholars around the world in the future.

Document	Citations
Yermack (2017)	139
Risius and Spohrer (2017)	135
Gordon and Catalini (2018)	85
Beck <i>et al.</i> (2018)	63
Shermin (2017)	58
De Filippi and Loveluck (2016)	58
Mosavi <i>et al.</i> (2019)	45
Tseng <i>et al.</i> (2018)	42
Gai <i>et al.</i> (2019)	40
Zhu and Zhou (2016)	40

Source(s): Compiled by authors

Table 1.
Document/author wise citations

Country-wise citations	Country	Documents	Citations
	USA	33	631
	Germany	11	205
	China	22	151
	United Kingdom	23	144
	Australia	17	112
	The Netherlands	13	43
	Switzerland	6	41
	United Arab Emirates	6	41
	Canada	11	39
	India	21	23
	Italy	5	23
	Spain	6	1
Table 2. Country-wise citations			
Source(s): Compiled by authors			

Journals	Number of publications
<i>IEEE Access</i>	10
<i>Sustainability (Switzerland)</i>	8
<i>IEEE Internet of Things Journal</i>	5
<i>International Journal of Information Management</i>	4
<i>International Journal of Advanced Computer Science and Applications</i>	4
<i>MIS Quarterly Executive</i>	3
<i>Computer Communications</i>	3
<i>Records Management Journal</i>	3
<i>Global Networks</i>	3
<i>Future Internet</i>	3
<i>Journal of Entrepreneurship and Public Policy</i>	3
<i>OMICS A Journal of Integrative Biology</i>	2
<i>International Journal of Recent Technology and Engineering</i>	2
<i>Research Policy</i>	2
<i>Journal of ICT Standardization</i>	2
<i>Technology in Society</i>	2
<i>Journal of Parallel and Distributed Computing</i>	2
<i>International Journal of Innovative Technology and Exploring Engineering</i>	2
<i>Journal of the Association for Information Systems</i>	2
<i>Strategic Change</i>	2
<i>Knowledge Engineering Review</i>	2
<i>Technological Forecasting and Social Change</i>	2
<i>European Journal of Risk Regulation</i>	2
<i>Modern Law Review</i>	2
<i>International Journal of Scientific and Technology Research</i>	2
Table 3. Journals with minimum of two publications	
Source(s): Compiled by authors	

4.4 Journal performance metrics analysis

Table 3 lists the journals that have published at least two articles on blockchain governance. Information technology, computer science, entrepreneurship, public policy, regulation, law and social change are the most frequently published fields in the journals. According to this, blockchain in governance is an interdisciplinary area of study that has key stakeholders from the private sector, the government, regulatory bodies and society. Additionally, the “IEEE

1	Blockchain	Blockchain and governance: a scientometric view
2	Smart contracts	
3	Governance	
4	Bitcoin	
5	Distributed ledger technology	
6	Blockchain technology	
7	Internet of Things	
8	Governance approach	
9	Human	
10	Cryptocurrency	
Source(s): Compiled by authors		Table 4. Top 10 keywords

Access” can only contain a total of ten publications. So there is a need for further investigation in all areas of business, regulation and governance.

4.5 Co-authorship analysis

Research collaborations have grown prevalent due to increased methodological and theoretical complexity. Collaborations among scholars can improve research, for example, by adding clarity and depth (Tahamtan *et al.*, 2016; Acedo *et al.*, 2006). The insights gained by co-authorship analysis, for example, can be utilized to justify and encourage new research among scholars from underrepresented locations. In accordance with Figure 7, studies on the blockchain system in governance have been conducted in collaboration by researchers from the USA, Denmark, Sweden, France and Turkey. Researchers from the UK, Australia, Hong Kong and Vietnam have also collaborated on articles about blockchain governance and regulation in these countries. It indicates tremendous scope for collaborations among various developed, emerging and under-developed countries as the contribution is limited.

4.6 Keyword analysis

Table 4 summarizes the top ten search terms related to the subject of the study. A lot of jargon has been thrown around when talking about blockchain governance studies, including blockchain, smart contracts, governance, bitcoin and DLT. The development of smart contract becomes imperative to executive transactions in public and private governance. The smart contracts are widely applied for completing finance transactions in all aspects of institutional administration. The emerging technologies are present in the above top ten keywords in on blockchain in governance including distributed ledger technology, IoT and cryptocurrency. When it comes to DLT in governance settings, over 20 major keywords have been identified through keyword analysis (see Figure 8).

Using keywords analysis, it is possible to get a better understanding of how blockchain can be used to improve governance processes. Each node in the preceding visualization represents a keyword, with the size of the node indicating the frequency with which the term occurs. The greater the size of the node, the greater the frequency of the keyword. In addition, the link between the nodes displays the frequency with which these terms occur together. In addition, the thickness of the relationship indicates co-occurrences between keywords. Finally, each colour represents a distinct cluster of words (Donthu *et al.*, 2021).

Blockchain and smart contracts have undoubtedly been used in the context of digitalizing governance as they are both distributed ledger technologies. While blockchain is well-understood at first, it is most commonly associated with the term “bitcoin” or “cryptocurrency.” This is due to the fact that the first used case of blockchain technology comes from the fintech space covering payments and cryptocurrency transactions in a peer-

to-peer network. Blockchain experts, information technology professionals, governments and regulatory bodies are the most important stakeholders in any project involving blockchain and its application in governance, according to our keyword analysis.

4.7 Three-field plot analysis

Another critical factor to evaluate the existing literature on blockchain in global governance is to analyse the various authors’ areas of specialization in the field of blockchain in global governance; hence, a three-field plot analysis was conducted to study and establish the link between the authors and the keywords they have employed in the studies pertaining to blockchain in global governance. In Figure 9, the authors’ names are listed on the left, the keywords used in the blockchain in global governance paper are listed in the right and the authors’ countries are shown in the middle. We may easily deduce the author’s field of study from the direction of the links. For example, we may figure out that author Allen Dwe from Australia majorly has “BlockChain” as keywords in majority of the studies pertaining to “Blockchain in Global Governance”.

4.8 Authors’ collaboration network

One more way to analyse the existing body of work on blockchain in global governance is to study the collaboration of different authors on this field of study. A co-authorship analysis highlights the interconnectedness of various authors from various countries on the topic of consideration. Figure 10 depicts the collaboration of various authors on the same.

5. Results and discussion

In this section, the study discusses the results and answers the research questions of the study.

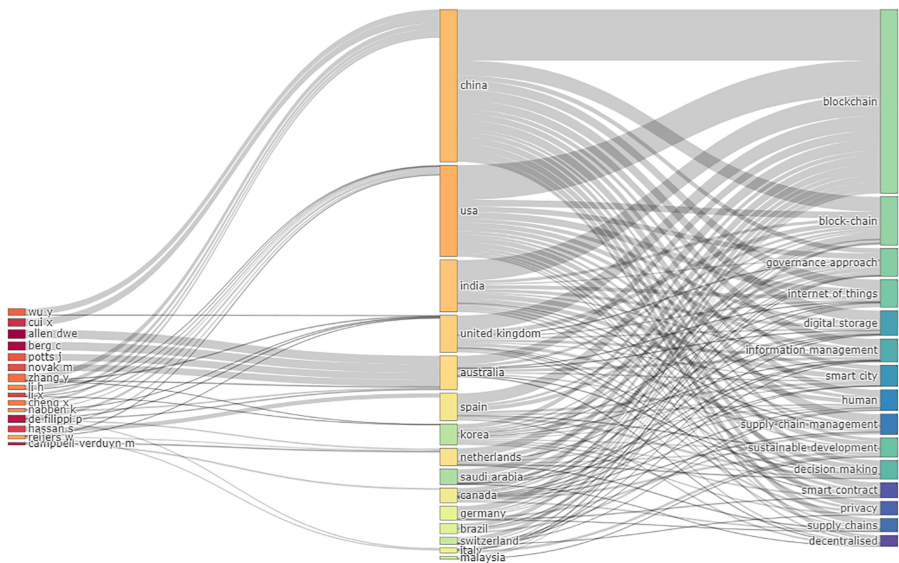


Figure 9.
Three-field plot on
blockchain in
governance

Source(s): Authors Compilation

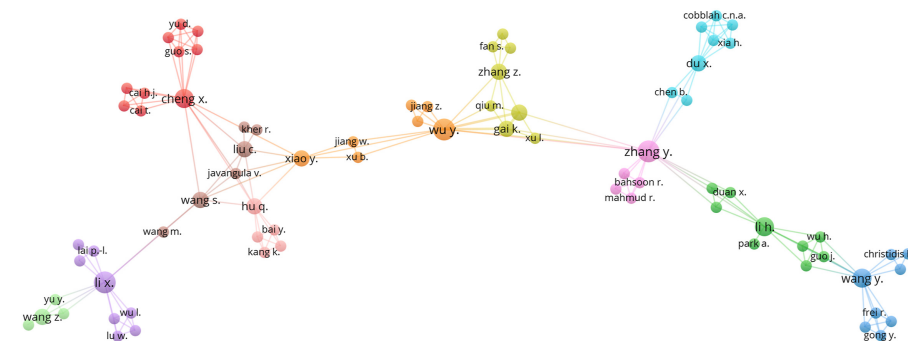


Figure 10.
Authors' collaboration
network

5.1 R1. What are the current trends and development in literature available on blockchain in governance?

The study examined the available literature on blockchain governance and related topics in peer-reviewed articles. Researchers and practitioners from all over the world are focusing their attention on this issue according to an analysis. Research in this area has witnessed a rise in publications since it began, and given the great potential of the underlying technology in numerous disciplines of research, it appears likely to continue this trend going forward (Pal *et al.*, 2021a, b). Scholars from the industrialized world have contributed the most and received the most citations in this new field of study. In this cross-disciplinary study, experts looked at how blockchain can be used to regulate governments, public utilities, global facilities and corporations alike. In the framework of digitalizing governance, distributed ledger technologies, such as blockchain and smart contracts, are unquestionably deployed (Chen *et al.*, 2021; Cong and He, 2019). The term “blockchain” is often used interchangeably with the terms “bitcoin” or “cryptocurrency” although this is a misunderstanding (Antonopoulos, 2017). Over the period of time, blockchain and its underlying technology has found its way in many aspects of business, trade, society and governance. Blockchain experts, IT professionals, governments and regulatory agencies are the most significant stakeholders in any project involving the use of blockchain in governance.

5.2 R2. What role does blockchain technology play in global public governance?

DLT is being used to improve public utilities and government services around the world. The “Comprehensive Experimental Area of Big Data” project in China, for example, makes use of blockchain technology to improve government services in all of these areas (quality, quantity, transparency and accessibility). Blockchain technology is being used in the public healthcare system in Estonia, a small European country. An increasingly important part of the country’s medical infrastructure is being built by integrating electronic health records, e-ambulances and electronic prescriptions (Saxena and Verma, 2020; Hartleb, 2020). In addition, the Estonian government provides its citizens with block-based digital identity services. E-residents can participate in both public and private commercial activities without having to be physically present in the country.

Switzerland and Canada have launched a project in the area of blockchain-based identity in the public and private sectors in order to increase the use of this technology. The government, banks, telecommunications companies, healthcare providers and businesses of all sizes now have a helping hand in effectively managing their identities. It has improved the public’s access to services and cut costs for the government and other organizations, all of which have benefited (Wolfond, 2017). More and more countries are switching to a land registry system based on the

blockchain to make it easier to keep accurate records and register title deeds. The Thai Post and State Railways use the IoT and blockchain technology to provide the public with accurate information about trains and logistics (Shuaib *et al.*, 2021). The use of bogus ration cards, poor record-keeping and inefficient distribution systems can all be addressed by the use of blockchain technology in India, which can be used to improve the efficiency of public distribution systems (Mishra and Maheshwari, 2021). The DLT facilitates transparency and information security between the customer and the service provider, resulting in improved public utilities in the nation (Lukmanova *et al.*, 2019). It is anticipated that the use of smart contracts in the trading of water and energy will eliminate the problems associated with false accounting and the waste of limited supply (Abdo and Zeadally, 2020). Technology is being promoted in the field of education for the storage and exchange of academic credentials with the academic community's stakeholders (Bhaskar *et al.*, 2020).

5.3 R3. How are private companies around the world utilizing the blockchain technology for governance?

The global economy has become more intertwined as a result of the rise of the Internet and global trade (Chang *et al.*, 2019). Many different bodies are involved in regulating the movement of people, goods and services. The interests of the general public, sovereigns and corporations are all taken into consideration when formulating global policy.

International businesses are being regulated by national, international and non-governmental organizations using blockchain technology (Hooper and Holtbrügge, 2020; Rani and Prakash, 2021). Customers, businesses and governments all use it to make international payments and money transfers (MacDonald *et al.*, 2016). DLT is being used by companies like PayPal to facilitate electronic commerce and global money transfers (Antonopoulos, 2017). The use of smart contracts in trade finance and marketing by large corporations, like Deloitte, Samsung and IBM, is also becoming more commonplace. Financial services giants, such as Barclays and AXA, are embracing technology, while giant corporations such as IBM and Maersk are using it to source and manage their supply chains (Behnke and Janssen, 2020; Hooper and Holtbrugge, 2020; Schmidt and Wagner, 2019; Oh and Shong, 2017). Treiblmaier (2018) laid emphasis on transaction cost economics model to study the positive impact of blockchain technology on supply chain and logistics sector.

Blockchain is used to govern everything from sourcing to customer relationships. In the accounting and auditing of all companies' financial records, the technology is making its way in. Permissioned networks are used to store and distribute data about investments, financing and dividends. Using blockchain-based smart contracts, all contracts and agreements between different parties involved in various business operations are recorded and executed globally.

6. Practical implications of the study

The current state of blockchain in governance is demonstrated in this study. Corporations, governments and the general public all stand to gain significantly from the use of public and private blockchains, as discussed in this study. Everyone who has an interest in blockchain, from governments to developers to businesses to academics and society at large will find this research to be extremely useful.

Blockchain 3.0 and 4.0 can be integrated with other disruptive technologies, such as IoT, cloud computing, mixed reality and artificial intelligence, through the latest developments in the area of blockchain. As a result, various business functions, such as sourcing and marketing, may benefit from incorporating blockchain technology (Zeadally and Abdo, 2019). To help scholars and academics better understand how blockchain technology can be used to improve governance in a variety of settings, the study summarizes the most recent research in the field.

The study demonstrates an unusual scientific integration of blockchain and governance at the global level. Using a platform to better efficiently govern various business activities, companies and countries has become critical in our increasingly interconnected world. Since the latest pandemic, global coordination has become even more critical. Blockchain will be useful to society and the general public in a variety of ways and from public utilities to physical and social infrastructure built on the blockchain. The findings of this study will be of great benefit to governments around the world who want to learn from countries that are already using value-based technology in various areas of public and private governance. The effective design and implementation of the technology in governance structures can even reduce the losses arising out of pandemics and natural disasters.

This study makes numerous contributions. In the first place, it presents the complex concept of blockchain in an easier to understand way. The numerous governmental and commercial initiatives that have made use of blockchain are also highlighted. As a result, the use of technology in corporate and social governance will continue to grow. Finally, the research will inform the academic community on the current state of the topic and potential future directions.

7. Conclusion and future direction of research

The authors have made an attempt to research the most important future technology known as the “blockchain”. The reader is first introduced to the concepts of blockchain and governance in this paper. Then, it focuses on the conceptual framework of blockchain governance, which emphasizes public and corporate governance at both the national and international levels. Blockchain in governance research has been examined using a bibliometric analysis approach, and the study shows the contributions of different publications from different countries over a period of five years. As a result of these efforts, the authors attempted to explain how blockchain technology can be used in a variety of areas of global and national governance from public to private sectors. Based on the methodology used, this study has a number of limitations and biases. Bias in sample selection and bias in the publication are two examples of this. Further, a study could be done to quantify the costs and benefits of developing and implementing blockchain in various governance areas. Also, the challenges of using the technology in a developing country could be examined in the future. Using blockchain technology, some experts believe that pandemics like the recent COVID-19 outbreak could be mitigated. Developing and maintaining this infrastructure can be done by health organizations and governments around the globe. Immunity passports and certificates can be issued through this platform. Such documents can be verified and validated by the blockchain consortium of health and travel authorities. This could allow people to move around freely for any productive purpose (De Filippi, 2020). As a result, further research can focus on governing blockchain-based infrastructure that is resilient to major global issues such as pandemics and climate change. The advancements and research in blockchain governance also highlight the fact there can be a better way through the blockchain-based infrastructure, which can lead to an improved collaborations and cooperation in public private partnerships. In the corporate world, the blockchain powered governance can be utilitarian in monitoring various corporate governance issues and principal-agent problems specifically with regard to frauds and scams. However, the blockchain-based governance can also lead to issues and problems as the blockchain infrastructure is creating new ecosystems and technology environment, the existing and traditional governance systems are becoming and obsolete and the same will have to be redesigned which can lead to newer issues and problems (Rikken *et al.*, 2019; Memon *et al.*, 2018; Zachariadis *et al.*, 2019).

Nevertheless, blockchain technology is attracting the attention of governments, corporations and academics around the world because of its disruptive potential. Therefore, a number of governments around the world are currently working to integrate

blockchain into their decision-making processes and economic management strategies. It will be worth a while wait to watch when the technology become an integral part of our lives.

References

- Abdo, J.B. and Zeadally, S. (2020), "Multi-utility framework: blockchain exchange platform for sustainable development", *International Journal of Pervasive Computing and Communications*, Vol. 18 No. 4, pp. 388-406.
- Acedo, F.J., Barroso, C., Casanueva, C. and Galán, J.L. (2006), "Co-authorship in management and organizational studies: an empirical and network analysis", *Journal of Management Studies*, Vol. 43 No. 5, pp. 957-983.
- Al Kemyani, M.K., Al Raisi, J., Al Kindi, A.R.T., Al Mughairi, I.Y. and Tiwari, C.K. (2022), "Blockchain applications in accounting and finance: qualitative Evidence from the banking sector", *Journal of Research in Business and Management*, Vol. 10 No. 4, pp. 28-39.
- Allen, D.W. and Berg, C. (2020), "Blockchain governance: what we can learn from the economics of corporate governance", *The Journal of The British Blockchain Association*, Vol. 3 No. 1, pp. 1-10.
- Antonopoulos, A.M. (2017), *Mastering Bitcoin: Programming the Open Blockchain*, O'Reilly Media, Navi Mumbai.
- Appio, F.P., Cesaroni, F. and Di Minin, A. (2014), "Visualizing the structure and bridges of the intellectual property management and strategy literature: a document co-citation analysis", *Scientometrics*, Vol. 101 No. 1, pp. 623-661.
- Aria, M. and Cuccurullo, C. (2017), "Bibliometrix: an R-tool for comprehensive science mapping analysis", *Journal of Informetrics*, Vol. 11 No. 4, pp. 959-975.
- Aste, T., Tasca, P. and Di Matteo, T. (2017), "Blockchain technologies: the foreseeable impact on society and industry", *Computer*, Vol. 50 No. 9, pp. 18-28.
- Atzori, M. (2015), "Blockchain technology and decentralized governance: is the state still necessary?", available at: SSRN 2709713.
- Augustine, D.P. and Raj, P. (2020), "Blockchain and IoT security", *Blockchain Technology and Applications*, Auerbach Publications, pp. 51-64.
- Baker, H.K., Pandey, N., Kumar, S. and Haldar, A. (2020), "A bibliometric analysis of board diversity: current status, development, and future research directions", *Journal of Business Research*, Vol. 108, pp. 232-246.
- Bannister, F. and Connolly, R. (2012), "Defining e-governance", *E-Service Journal: A Journal of Electronic Services in the Public and Private Sectors*, Vol. 8 No. 2, pp. 3-25.
- Basu, D. and Gabbay, M. (2021), "Karl Marx and the blockchain", in *Media, Technology and Education in a Post-Truth Society*, Emerald Publishing.
- Baxi, U. (1996), "'Global neighborhood' and the 'universal otherhood': notes on the report of the commission on global governance", *Alternatives*, Vol. 21 No. 4, pp. 525-549.
- Beck, R., Müller-Bloch, C. and King, J.L. (2018), "Governance in the blockchain economy: a framework and research agenda", *Journal of the Association for Information Systems*, Vol. 19 No. 10, p. 1.
- Behl, A. and Dutta, P. (2020), "Engaging donors on crowdfunding platform in disaster relief operations (DRO) using gamification: a civic voluntary model (CVM) approach", *International Journal of Information Management*, Vol. 54, p. 102140.
- Behl, A., Chavan, M., Jain, K., Sharma, I., Pereira, V.E. and Zhang, J.Z. (2021), "The role of organizational culture and voluntariness in the adoption of artificial intelligence for disaster relief operations", *International Journal of Manpower*, Vol. 43 No. 2, pp. 569-586.
- Behnke, K. and Janssen, M.F.W.H.A. (2020), "Boundary conditions for traceability in food supply chains using blockchain technology", *International Journal of Information Management*, Vol. 52, p. 101969.

-
- Bhaskar, P., Tiwari, C.K. and Joshi, A. (2020), "Blockchain in education management: present and future applications", *Interactive Technology and Smart Education*, Vol. 18 No. 1, pp. 1-17.
- Buchmann, J., May, A. and Vollmer, U. (2006), "Perspectives for cryptographic long-term security", *Communications of the ACM*, Vol. 49 No. 9, pp. 50-55.
- Busari, S.A. and Aminu, S.O. (2021), "Application of blockchain information technology in Şukūk trade", *Journal of Islamic Accounting and Business Research*, Vol. 13 No. 1, pp. 1-15.
- Caradonna, T. (2020), "Blockchain and society", *Informatik Spektrum*, Vol. 43 No. 1, pp. 1-13.
- Centobelli, P., Cerchione, R., Esposito, E. and Oropallo, E. (2021), "Surfing blockchain wave, or drowning? Shaping the future of distributed ledgers and decentralized technologies", *Technological Forecasting and Social Change*, Vol. 165, p. 120463.
- Chakravarty, S.R. and Sarkar, P. (2020), "Applications of blockchain", *An Introduction to Algorithmic Finance, Algorithmic Trading and Blockchain*, Emerald Publishing.
- Chang, S.E., Chen, Y.C. and Wu, T.C. (2019), "Exploring blockchain technology in international trade: business process re-engineering for letter of credit", *Industrial Management and Data Systems*, Vol. 119 No. 8, pp. 1712-1733.
- Chen, Y., Pereira, I. and Patel, P.C. (2021), "Decentralized governance of digital platforms", *Journal of Management*, Vol. 47 No. 5, pp. 1305-1337.
- Chen, W., Botchie, D., Braganza, A. and Han, H. (2022), "A transaction cost perspective on blockchain governance in global value chains", *Strategic Change*, Vol. 31 No. 1, pp. 75-87.
- Cisneros, L., Ibanescu, M., Keen, C., Lobato-Calleros, O. and Niebla-Zatarain, J. (2018), "Bibliometric study of family business succession between 1939 and 2017: mapping and analyzing authors' networks", *Scientometrics*, Vol. 117 No. 2, pp. 919-951.
- Cobo, M.J., López-Herrera, A.G., Herrera-Viedma, E. and Herrera, F. (2011), "An approach for detecting, quantifying, and visualizing the evolution of a research field: a practical application to the fuzzy sets theory field", *Journal of Informetrics*, Vol. 5 No. 1, pp. 146-166.
- Cole, R., Stevenson, M. and Aitken, J. (2019), "Blockchain technology: implications for operations and supply chain management", *Supply Chain Management: An International Journal*, Vol. 24 No. 4, pp. 469-483, doi: [10.1108/SCM-09-2018-0309](https://doi.org/10.1108/SCM-09-2018-0309).
- Cong, L.W. and He, Z. (2019), "Blockchain disruption and smart contracts", *The Review of Financial Studies*, Vol. 32 No. 5, pp. 1754-1797.
- Cosares, S., Kalish, K., Maciura, T. and Spieler, A.C. (2021), "Blockchain applications in finance", *The Emerald Handbook of Blockchain for Business*, Emerald Publishing.
- Dalenogare, L.S., Benitez, G.B., Ayala, N.F. and Frank, A.G. (2018), "The expected contribution of Industry 4.0 technologies for industrial performance", *International Journal of Production Economics*, Vol. 204, pp. 383-394.
- De Filippi, P. (2020), "Blockchain technology as an instrument for global governance", *SciencesPo, Chaire Digital, Gouvernance Souveraineté*, pp. 1-16, available at: <https://www.sciencespo.fr/public/chaire-numerique/en/2020/09/11/primavera-de-filippi-blockchain-technology-as-an-instrument-for-global-governance/>.
- De Filippi, P. and Loveluck, B. (2016), "The invisible politics of bitcoin: governance crisis of a decentralized infrastructure", *Internet Policy Review*, Vol. 5 No. 3, pp. 1-28, doi: [10.14763/2016.3.427](https://doi.org/10.14763/2016.3.427).
- De Villiers, C., Kuruppu, S. and Dissanayake, D. (2021), "A (new) role for business—promoting the United Nations' sustainable development goals through the internet-of-things and blockchain technology", *Journal of Business Research*, Vol. 131, pp. 598-609.
- Donthu, N., Kumar, S., Mukherjee, D., Pandey, N. and Lim, W.M. (2021), "How to conduct a bibliometric analysis: an overview and guidelines", *Journal of Business Research*, Vol. 133, pp. 285-296.
- Dubey, R., Gunasekaran, A., Bryde, D., Dwivedi, Y. and Papadopoulos, T. (2020), "Blockchain technology for enhancing swift-trust, collaboration and resilience within a humanitarian supply chain setting", *International Journal of Production Research*, Vol. 58 No. 11, pp. 3381-3398.

-
- Engin, Z. and Treleven, P. (2019), "Algorithmic government: automating public services and supporting civil servants in using data science technologies", *The Computer Journal*, Vol. 62 No. 3, pp. 448-460.
- Fatorachian, H. and Kazemi, H. (2021), "Impact of Industry 4.0 on supply chain performance", *Production Planning and Control*, Vol. 32 No. 1, pp. 63-81.
- Frank, A.G., Dalenogare, L.S. and Ayala, N.F. (2019), "Industry 4.0 technologies: implementation patterns in manufacturing companies", *International Journal of Production Economics*, Vol. 210, pp. 15-26.
- Frizzo-Barker, J., Chow, -M., P.A., Adams, P.R., Mentanko, J., Ha, D. and Green, S. (2020), "Blockchain as a disruptive technology for business: a systematic review", *International Journal of Information Management*, Vol. 51, p. 102029.
- Fukuyama, F. (2016), "Governance: what do we know, and how do we know it?", *Annual Review of Political Science*, Vol. 19, pp. 89-105.
- Gai, K., Wu, Y., Zhu, L., Xu, L. and Zhang, Y. (2019), "Permissioned blockchain and edge computing empowered privacy-preserving smart grid networks", *IEEE Internet of Things Journal*, Vol. 6 No. 5, pp. 7992-8004.
- Garcia, H.C.E. (2021), "Blockchain innovation technology for corruption decrease in Mexico", *Asian Journal of Innovation and Policy*, Vol. 10 No. 2, pp. 177-194.
- George, R.P., Peterson, B.L., Yaros, O., Beam, D.L., Dibbell, J.M. and Moore, R.C. (2019), "Blockchain for business", *Journal of Investment Compliance*, Vol. 20 No. 1, pp. 17-21.
- Ghadge, A., Kara, M.E., Moradlou, H. and Goswami, M. (2020), "The impact of Industry 4.0 implementation on supply chains", *Journal of Manufacturing Technology Management*, Vol. 31 No. 4, pp. 669-686.
- Ghobakhloo, M. (2018), "The future of manufacturing industry: a strategic roadmap toward Industry 4.0", *Journal of Manufacturing Technology Management*, Vol. 29 No. 6, pp. 910-936.
- Gordon, W.J. and Catalini, C. (2018), "Blockchain technology for healthcare: facilitating the transition to patient-driven interoperability", *Computational and Structural Biotechnology Journal*, Vol. 16, pp. 224-230.
- Grosse, N., Guerpinar, T. and Henke, M. (2021), "Blockchain-enabled trust in intercompany networks applying the agency theory", *2021 3rd Blockchain and Internet of Things Conference*, pp. 8-14.
- Grover, B.A., Chaudhary, B., Rajput, N.K. and Dukiya, O. (2021), "Blockchain and governance: theory, applications and challenges", *Blockchain for Business: How It Works and Creates Value*, pp. 113-139, available at: <https://onlinelibrary.wiley.com/doi/epdf/10.1002/9781119711063.ch6>.
- Gupta, K.P., Singh, S. and Bhaskar, P. (2018), "Citizens' perceptions on benefits of e-governance services", *International Journal of Electronic Governance*, Vol. 10 No. 1, pp. 24-55.
- Haber, S. and Stornetta, W. (1991), "How to time-stamp a digital document", *Journal of Cryptology*, pp. 99-111.
- Hartleb, F. (2020), "E-Estonia—'Europe's silicon valley' or a new '1984'", in *Redesigning Organizations*, Springer, Cham, pp. 215-228.
- Herold, D.M., Saberi, S., Kouhizadeh, M. and Wilde, S. (2021), "Categorizing transaction costs outcomes under uncertainty: a blockchain perspective for government organizations", *Journal of Global Operations and Strategic Sourcing*, Vol. 15 No. 3, pp. 431-448.
- Hooper, A. and Holtbrügge, D. (2020), "Blockchain technology in international business: changing the agenda for global governance", *Review of International Business and Strategy*, Vol. 30 No. 2, pp. 183-200.
- Jain, D., Dash, M.K., Kumar, A. and Luthra, S. (2021), "How is blockchain used in marketing: a review and research agenda", *International Journal of Information Management Data Insights*, Vol. 1 No. 2, p. 100044.
- Jayasuriya Daluwathumullagamage, D. and Sims, A. (2020), "Blockchain-enabled corporate governance and regulation", *International Journal of Financial Studies*, Vol. 8 No. 2, p. 36.

-
- Joo, M.H., Nishikawa, Y. and Dandapani, K. (2019), "Cryptocurrency, a successful application of blockchain technology", *Managerial Finance*, Vol. 46 No. 6, pp. 715-733.
- Kim, S., Park, H. and Lee, J. (2020), "Word2vec-based latent semantic analysis (W2V-LSA) for topic modeling: a study on blockchain technology trend analysis", *Expert Systems with Applications*, Vol. 152, p. 113401.
- Lacity, M.C. (2018), "Addressing key challenges to making enterprise blockchain applications a reality", *MIS Quarterly Executive*, Vol. 17 No. 3, pp. 201-222.
- Lukmanova, O., Volkova, E., Zabolotnyi, A. and Gorelik, A. (2019), "Blockchain technology for public utilities", *2019 IEEE Conference of Russian Young Researchers in Electrical and Electronic Engineering (EIConRus)*, IEEE, pp. 1790-1793.
- Lumineau, F., Wang, W. and Schilke, O. (2021), "Blockchain governance—a new way of organizing collaborations?", *Organization Science*, Vol. 32 No. 2, pp. 500-521.
- MacDonald, T.J., Allen, D.W. and Potts, J. (2016), "Blockchains and the boundaries of self-organized economies: predictions for the future of banking", *Banking Beyond Banks and Money*, Springer, Cham, pp. 279-296.
- Makarov, I. and Schoar, A. (2020), "Trading and arbitrage in cryptocurrency markets", *Journal of Financial Economics*, Vol. 135 No. 2, pp. 293-319.
- Manski, S. (2017), "Building the blockchain world: technological commonwealth or just more of the same?", *Strategic Change*, Vol. 26 No. 5, pp. 511-522.
- Memon, M., Hussain, S.S., Bajwa, U.A. and Ikhlas, A. (2018), "Blockchain beyond bitcoin: blockchain technology challenges and real-world applications", *2018 International Conference on Computing, Electronics and Communications Engineering (iCCECE)*, IEEE, pp. 29-34.
- Mishra, H. and Maheshwari, P. (2021), "Blockchain in Indian public distribution system: a conceptual framework to prevent leakage of the supplies and its enablers and disablers", *Journal of Global Operations and Strategic Sourcing*, Vol. 14 No. 2, pp. 312-335.
- Momtaz, P.P. (2021), "The pricing and performance of cryptocurrency", *The European Journal of Finance*, Vol. 27 Nos 4-5, pp. 367-380.
- Monrat, A.A., Schelén, O. and Andersson, K. (2019), "A survey of blockchain from the perspectives of applications, challenges, and opportunities", *IEEE Access*, Vol. 7, pp. 117134-117151.
- Mosavi, A., Salimi, M., Faizollahzadeh Ardabili, S., Rabczuk, T., Shamshirband, S. and Varkonyi-Koczy, A.R. (2019), "State of the art of machine learning models in energy systems, a systematic review", *Energies*, Vol. 12 No. 7, p. 1301.
- Mukherjee, D., Kumar, S., Mukherjee, D. and Goyal, K. (2022), "Mapping five decades of international business and management research on India: a bibliometric analysis and future directions", *Journal of Business Research*, Vol. 145, pp. 864-891.
- Nakamoto, S. (2008), "Bitcoin: a peer-to-peer electronic cash system", *Decentralized Business Review*, pp. 1-9, available at: <https://bitcoin.org/bitcoin.pdf>.
- Nikbakht, E. and Smith, S.S. (Eds) (2021), *The Emerald Handbook of Blockchain for Business*, Emerald Publishing.
- Oh, J. and Shong, I. (2017), "A case study on business model innovations using Blockchain: focusing on financial institutions", *Asia Pacific Journal of Innovation and Entrepreneurship*, Vol. 11 No. 3, pp. 335-344.
- Osmani, M., El-Haddadeh, R., Hindi, N., Janssen, M. and Weerakkody, V. (2020), "Blockchain for next generation services in banking and finance: cost, benefit, risk and opportunity analysis", *Journal of Enterprise Information Management*, Vol. 34 No. 3, pp. 884-899.
- Pal, A., Tiwari, C.K. and Behl, A. (2021a), "Blockchain technology in financial services: a comprehensive review of the literature", *Journal of Global Operations and Strategic Sourcing*.

- Pal, A., Tiwari, C.K. and Haldar, N. (2021b), "Blockchain for business management: applications, challenges and potentials", *The Journal of High Technology Management Research*, Vol. 32 No. 2, p. 100414.
- Panarello, A., Tapas, N., Merlino, G., Longo, F. and Puliafito, A. (2018), "Blockchain and IoT integration: a systematic survey", *Sensors*, Vol. 18 No. 8, p. 2575.
- Plattner, M.F. (2013), "Reflections on" governance", *Journal of Democracy*, Vol. 24 No. 4, pp. 17-28.
- Queiroz, M.M., Telles, R. and Bonilla, S.H. (2019), "Blockchain and supply chain management integration: a systematic review of the literature", *Supply Chain Management: An International Journal*, Vol. 25 No. 2, pp. 241-254.
- Rani, N. and Prakash, P.R. (2021), "Blockchain in capital markets: applications, possibilities and challenges", *South Asian Journal of Management*, Vol. 28 No. 1, pp. 150-170.
- Rane, S.B. and Narvel, Y.A.M. (2019), "Re-designing the business organization using disruptive innovations based on blockchain-IoT integrated architecture for improving agility in future Industry 4.0", *Benchmarking: An International Journal*, Vol. 28 No. 5, pp. 1883-1908.
- Rhodes, R.A. (2000), "Governance and public administration", *Debating Governance*, Vol. 54, p. 90, available at: https://www.researchgate.net/profile/R-A-W-Rhodes/publication/246335680_Governance_and_Public_Administration/links/5a11be7d458515cc5aa9c6a9/Governance-and-Public-Administration.pdf.
- Rikken, O., Janssen, M. and Kwee, Z. (2019), "Governance challenges of blockchain and decentralized autonomous organizations", *Information Polity*, Vol. 24 No. 4, pp. 397-417.
- Risius, M. and Spohrer, K. (2017), "A blockchain research framework", *Business and Information Systems Engineering*, Vol. 59 No. 6, pp. 385-409.
- Roh, C.-H. and Lee, I.-Y. (2020), "A study on electronic voting system using private blockchain", *Journal of Information Processing Systems*, Vol. 16 No. 2, pp. 421-434.
- Rozas, D., Tenorio-Fornés, A., RaniDíaz-Molina, S. and Hassan, S. (2021), "When ostrom meets blockchain: exploring the potentials of blockchain for commons governance", *SAGE Open*, Vol. 11 No. 1, 21582440211002526.
- Sama, L.M., Stefanidis, A. and Casselman, R.M. (2021), "Rethinking governance for the digital era: the role of stewardship", *Business Horizons*, Vol. 65 No. 5, pp. 535-546.
- Saxena, D. and Verma, J.K. (2020), "Blockchain for public health: technology, applications, and a case study", in *Computational Intelligence and its Applications in Healthcare*, Academic Press, pp. 53-61.
- Schmidt, C.G. and Wagner, S.M. (2019), "Blockchain and supply chain relations: a transaction cost theory perspective", *Journal of Purchasing and Supply Management*, Vol. 25 No. 4, p. 100552.
- Shermin, V. (2017), "Disrupting governance with blockchains and smart contracts", *Strategic Change*, Vol. 26 No. 5, pp. 499-509.
- Shin, D. and Ibahrine, M. (2020), "The socio-technical assemblages of blockchain system: how blockchains are framed and how the framing reflects societal contexts", *Digital Policy, Regulation and Governance*, Vol. 22 No. 3, pp. 245-263.
- Shuaib, M., Alam, S., Daud, S.M. and Ahmad, S. (2021), "Blockchain-based initiatives in social security sector", *ICIDSSD EAI*, available at: <https://eudl.eu/doi/10.4108/eai.27-2-2020.2303256>.
- Sinha, D. and Chowdhury, S.R. (2021), "Blockchain-based smart contract for international business—a framework", *Journal of Global Operations and Strategic Sourcing*, Vol. 14 No. 1, pp. 224-260.
- Sony, M. and Naik, S. (2019), "Key ingredients for evaluating Industry 4.0 readiness for organizations: a literature review", *Benchmarking: An International Journal*, Vol. 27 No. 7, pp. 2213-2232.
- Suliman, A., Husain, Z., Abououf, M., Alblooshi, M. and Salah, K. (2018), "Monetization of IoT data using smart contracts", *IET Networks*, Vol. 8 No. 1, pp. 32-37.
- Sun, R.T., Garimella, A., Han, W., Chang, H.L. and Shaw, M.J. (2020), "Transformation of the transaction cost and the agency cost in an organization and the applicability of blockchain—a case study of peer-to-peer insurance", *Frontiers in Blockchain*, Vol. 3, p. 24.

-
- Swan, M. (2015), *Blockchain: Blueprint for a New Economy*, O'Reilly Media.
- Tahamtan, I., Safipour Afshar, A. and Ahmndzadeh, K. (2016), "Factors affecting number of citations: a comprehensive review of the literature", *Scientometrics*, Vol. 107 No. 3, pp. 1195-1225.
- Tan, E., Mahula, S. and Cromptvoets, J. (2021), "Blockchain governance in the public sector: a conceptual framework for public management", *Government Information Quarterly*, Vol. 39 No. 1, p. 101625.
- Tapscott, D. and Tapscott, A. (2017), "How blockchain will change organizations", *MIT Sloan Management Review*, Vol. 58 No. 2, p. 10.
- Tasatanattakool, P. and Techapanupreeda, C. (2018), "Blockchain: challenges and applications", *2018 International Conference on Information Networking (ICOIN)*, IEEE, pp. 473-475.
- Treiblmaier, H. (2018), "The impact of the blockchain on the supply chain: a theory-based research framework and a call for action", *Supply Chain Management: An International Journal*, Vol. 23 No. 6, pp. 545-559.
- Treleaven, P., Brown, R.G. and Yang, D. (2017), "Blockchain technology in finance", *Computer*, Vol. 50 No. 9, pp. 14-17.
- Tseng, J.H., Liao, Y.C., Chong, B. and Liao, S.W. (2018), "Governance on the drug supply chain via gcoin blockchain", *International Journal of Environmental Research and Public Health*, Vol. 15 No. 6, p. 1055.
- Van Eck, N.J. and Waltman, L. (2013), *VOSviewer Manual*, Univeriteit Leiden, Leiden, Vol. 1 No. 1, pp. 1-53.
- Veeramani, K. and Jaganathan, S. (2020), "Land registration: use-case of e-Governance using blockchain technology", *KSII Transactions on Internet and Information Systems (TIIS)*, Vol. 14 No. 9, pp. 3693-3711.
- Viriyasitvat, W., Da Xu, L., Bi, Z. and Sapsomboon, A. (2020), "Blockchain-based business process management (BPM) framework for service composition in industry 4.0", *Journal of Intelligent Manufacturing*, Vol. 31 No. 7, pp. 1737-1748.
- White, G.R. (2017), "Future applications of blockchain in business and management: a Delphi study", *Strategic Change*, Vol. 26 No. 5, pp. 439-451.
- Wolfond, G. (2017), "A blockchain ecosystem for digital identity: improving service delivery in Canada's public and private sectors", *Technology Innovation Management Review*, Vol. 7 No. 10, pp. 35-40.
- World Bank (2007), "A decade of measuring the quality of governance", available at: <http://siteresources.worldbank.org/NEWS/Resources/wbi2007—report.pdf>.
- Yaga, D., Mell, P., Roby, N. and Scarfone, K. (2019), "Blockchain technology overview", *arXiv*, preprint arXiv:1906.11078.
- Yermack, D. (2017), "Corporate governance and blockchains", *Review of Finance*, Vol. 21 No. 1, pp. 7-31.
- Zachariadis, M., Hileman, G. and Scott, S.V. (2019), "Governance and control in distributed ledgers: understanding the challenges facing blockchain technology in financial services", *Information and Organization*, Vol. 29 No. 2, pp. 105-117.
- Zalan, T. (2018), "Born global on blockchain", *Review of International Business and Strategy*, Vol. 28 No. 1, pp. 19-34.
- Zeadally, S. and Abdo, J.B. (2019), "Blockchain: trends and future opportunities", *Internet Technology Letters*, Vol. 2 No. 6, p. e130.
- Zhu, H. and Zhou, Z.Z. (2016), "Analysis and outlook of applications of blockchain technology to equity crowdfunding in China", *Financial Innovation*, Vol. 2 No. 1, pp. 1-11.
- Zuo, Y. (2020), "Making smart manufacturing smarter—a survey on blockchain technology in Industry 4.0", *Enterprise Information Systems*, Vol. 15 No. 10, pp. 1323-1353.

Further reading

Cole, Stevenson, Aitken (2019), "Blockchain technology: implications for operations and supply chain management", *Supply Chain Management: An International Journal*, Vol. 24 No. 4, pp. 469-483, doi: [10.1108/SCM-09-2018-0309](https://doi.org/10.1108/SCM-09-2018-0309), available at: <https://www.emerald.com/insight/content/doi/10.1108/SCM-09-2018-0309/full/html>.

Jun, M. (2018), "Blockchain government-a next form of infrastructure for the twenty-first century", *Journal of Open Innovation: Technology, Market, and Complexity*, Vol. 4 No. 1, p. 7.

Corresponding author

Chandan Kumar Tiwari can be contacted at: chandantiwari.810@rediffmail.com