

Blockchain in the public sector: a systematic literature review

Blockchain no setor público: uma revisão sistemática de literatura

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Abstract

Introduction: through government portals, it is possible to increase transparency and the participation of society in government. Blockchain technology has been touted as an alternative to increase government transparency and reduce costs in the public sector. In this context, the article aimed to answer the main question: what is the current panorama of blockchain technology applications in the public sector? **Method:** it carries out a systematic literature review using the Google Scholar index, with a frame of works published between 2008 and 2018. The following keywords were used: "government transparency", "open government", "e-government", "blockchain applications", "blockchain application", "government transparency", "open government", "public sector", "e-government", "blockchain applications" and "blockchain application". **Results:** it detects several areas of interest to the public sector for blockchain technology deployments, as well as areas where it is already in use. **Conclusion:** the theme has gained prominence in several areas, as can be seen through this research, which found reports of use in the following sectors: electricity, real estate, medicine, identity management, agriculture, commercial transactions, financial market, taxation, cities smartphones, smart contracts, government administration, and electronic voting, among others. This systematic literature review indicates that the technology on screen has the potential to help the public sector.

Keywords: Boolean operators; Logic; Search expressions; Boolean algebra; Aristotle.

Resumo

Introdução: pesquisar na web é uma atividade que não requer grande esforço se considerarmos a facilidade em digitar expressões de busca em caixas de pesquisa de buscadores e bases de dados científicas. Contudo, devido ao crescimento contínuo no volume de informações na web, é necessário desenvolver habilidades que auxiliem a assertividade da pesquisa. O uso de operadores booleanos são exemplos disso. O estudo aqui apresentado teve por objetivo descrever diferentes maneiras de funcionamento dos operadores booleanos em expressões de busca. **Método:** são apresentados exemplos com aplicações representadas na forma de Diagramas de Venn e os exemplos de pesquisa abrangem diferentes temáticas. **Resultados:** com base na visualização dos diagramas, as demonstrações de uso dos operadores booleanos foram descritas e associadas a elementos da lógica clássica. **Conclusão:** ao final, compreende-se que a lógica clássica fundamenta as estratégias de pesquisa que se refletem na forma de uso dos operadores booleanos e, por meio do raciocínio lógico, é preciso analisar caso a caso durante a formulação da estratégia de busca a ser seguida.

Palavras-chave: Operadores booleanos; Lógica; Expressões de busca; Álgebra booleana; Aristóteles.

INTRODUCTION

Information and communication technologies are being increasingly adopted in the public sector. Through government portals, it is possible to increase the transparency of public institutions and encourage the participation of society in government. One of the fundamental premises of democracy is to make the actions of the government visible (Pinho, 2008; Prado & Loureiro, 2006).

According to Barbosa (2017, p. 88-89), there is an evolution from an archival hierarchy to a network structure in the public sector. The technologies in use today create new ways for citizens to express their opinions and coordinate efforts. One of these technologies is blockchain, and its application in the government allows, for example, the registration of administrative transactions such as birth certificates and registration of property. In this sense, blockchain technology has the potential to be an important tool for government transparency. According to (Berryhill, Bourgerly, & Hanson, 2018, p. 10), blockchain technology can be defined as a "digital distributed ledger system that functions as an open, shared and trusted record that carries out transactions between the parties and is not stored by a central authority." Blockchain can become an important tool for the public sector if used to make public processes more transparent, reliable and safer (Welzel, 20017).

However, despite these advantages pointed out by the academic literature, Ferreira, Pinto, and Santos (2017) present several problems of blockchain: low level of technology maturation, few transactions per second, high

latency (time for information processing), waste of resources (high processing power and energy expenditure), low usability, the possibility of forging transactions by controlling more than 50% of the network¹.

Given this context, the article addresses the use of blockchain in applications for government transparency, starting from the question: What is the current panorama of applications of blockchain technology in the public sector? Considering this issue, the purpose of the article is to present the areas in which technology blockchain it is in use or has the potential to be used by the public sector. To achieve this goal, a Systematic Literature Review (SLR) was carried out, which took as corpus the articles indexed by GoogleScholar.

The article is structured in four sections. After the introduction, which addresses government transparency, bringing its main concepts, in the view of several authors and also presents the blockchain technology, with an overview of its functioning, structure and advantages. Section two shows the methodology adopted in the SLR. Next, the results of the SLR are presented, the research questions of this work are answered, and finally, the conclusion of the work is presented.

Government Transparency

The objective of government transparency should be to provide citizens with access to government information, making relations between the state and society more democratic and closer. Trying to raise the level of public transparency is one of the challenges of Public Administration (Madrigal, 2016). Effective disclosure of all non-confidential government actions is important to strengthen democracy.

The involvement of different social classes in management monitoring should be aided by increased transparency. When the dissemination of information is restricted to some groups, the promotion of democracy is inhibited, hurting the constitutional principles of legality, impersonality, morality and efficiency (Figueiredo & Santos, 2014).

For Jardim (1995), the notion of administrative transparency is one of the requirements of society's control over the state. The separation of political and administrative spheres becomes incompatible with modern public administration. Therefore, the strict control of citizens over the state and the state over itself becomes indispensable.

Blockchain technology

For Šurda (2012), blockchain is a distributed "book", and computers connected directly to the Internet can have a full copy of it. The blocks (set of transactions of the last 10 minutes with date and time of completion, plus a code that identifies the sequence of previous blocks) are ordered sequentially, forming the ledger. The correct sequence and integrity of the data are confirmed by encryption. According to Foroglou and Tsilidou (2015) this public book is constantly growing, as new "completed" blocks are added to it. The most recent block is the current part of a blockchain, which records the recent transactions and these, once completed, are recorded in the ledger. When this current Block is completed, a new block is generated with the record of the new transactions and both are linked in linear chronological order, with each containing a hash from the previous one. Each block has a variable size, depending on the type of blockchain in use, as well as its structure, there are usually some essential attributes, such as the block header, pointers to previous blocks, date and time, transaction counter and transactions (Bashir, 2017).

An important feature of blockchain is that the records added to it are practically immutable. Despite the possibility of reverting changes, performing a change is almost impossible because it requires an inaccessible amount of computing resources (Bashir, 2017). Another important feature of blockchain is that its structure allows different organisms to carry out transactions with each other on a computer network in which no one is validated by a central institution (Horiuchi, 2018).

After these brief theoretical considerations, the following section presents the procedures of the Systematic Literature Review (SLR) carried out.

METHODOLOGY

Searches were made in the indexer Google Scholar, with a filter in works published between 2008 and 2018. The initial year is justified because it is when blockchain technology began to appear in Nakamoto's article (2008). The following keywords were used: "government transparency", "open government", "e-government", "blockchain applications", "blockchain application", "government transparency", "Open Government", "Public Sector", "E-Government", " applications blockchain" and " application blockchain".

¹Because of space limitations, it is outside the scope of this article to discuss the limitations and problems of blockchain technology. Regarding these aspects, consult (Poon & Dryja, 2016)

As for the choice of the database indexer, we chose to use GoogleScholar, aiming at a greater range of articles and the option of employing an open base (open access) for better use of the results of the SLR by other researchers. For the search, the previously chosen keywords were used, occurring anywhere in the article, including patents and citations.

The keywords were combined into two groups due to a maximum character limitation of the indexer: Group 1: ("government transparency"OR "open government"OR "e-government") AND ("blockchain applications" OR "blockchain application") and Group 2: ("government transparency "OR" open government "OR"public sector "or" e-government") AND ("applications blockchain"OR" blockchain application").

The results of the searches were 162 results for Group 1, with terms in English and four for Group 2, with terms in Portuguese. A separation of the main publications on the topic was made according to the previously cited terms. After this process, a filtering of the relevance of the article was made, through a reading that sought the adoption of blockchain technology in public sector or the pretention of adopting it in this sector. First, the abstracts were read and, after, final selection via full reading. More information on the criteria adopted for selection in the subsection "article Selection Criteria".

SLR guiding issue)

Literature reviews are part of any research project. In these reviews, the researcher assesses the intellectual territory to specify a research gap. However, traditional reviews do not have an adequate protocol and can be influenced by the researcher from which a mass of contradictory evidence can escape. Therefore, systematic reviews appear as a solution, because they expose the studies to rigorous methodological scrutiny in order to reduce human error and prejudice (Tranfield, Denyer, & Smart, 2003).

The objective of the SLR was to make a bibliographic survey to map the use of blockchain technology in the public sector and identify which areas of use and types of applications aimed at government transparency. The main question [MQ] that guided the SLR was: what is the current panorama of the applications of blockchain technology in the public sector?

To assist in answering the main question, two specific questions were created [SQ]: [SQ1] for which areas and what types of applications of the blockchain technology are they being proposed, according to the academic literature? [SQ2] what kinds of blockchain technology applications are geared towards governmental transparency, according to the academic literature?

Article selection criteria

The exclusion criteria used followed five phases: Phase 1 - exclusion by way of access; Phase 2 – exclusion by citations; Phase 3 – exclusion by language; Phase 4 – exclusion by abstract and/or keywords; Phase 5 – exclusion by full reading.

In the first phase, only open articles (open access) were accepted and with the formats: pdf, doc or html. In the second phase, articles without at least one citation were cut. In the third phase, only articles in English or Portuguese were selected. In the fourth phase, the exclusion was made after reading the abstract and keywords. Articles whose abstract was outside the proposed objective were excluded. Finally, in the fifth stage, the remaining articles were read completely and specific criteria for exclusion were defined, according to the research objective. Scores were defined for each of the criteria and the evaluation. Articles with a final score (summation) of less than seven were excluded. As a summary to understand the selection it is possible to verify that case if the use or proposed use of the blockchain technology was not confirmed for the public sector, the article was excluded. The research questions used, as well as their respective grades, can be seen in Table 1.

Research questions	Score
Does it meet the object of the research?	1
Is there an answer to the objectives of the proposed research?	1
Are there mentions of the use of blockchain technology in the public sector?	4
It is possible to draw an overview of the use of blockchain in the public sector?	4
Total	10

Table 1. Exclusion criteria - Phase 5, full reading.

Source: Elaborated by the authors.

One hundred and sixty-six articles were initially found. Table 2 shows how many were selected after each exclusion phase:

Phase	Quantity of articles
1 – Access form	136
2 – Quotes	82
3 – Language	78
4 – Summary and / or keywords	55
5 – Full reading	39

Table 2. Number of articles selected after each exclusion phase.
Source: Elaborated by the authors (2021).

Filtering at each stage helped to narrow the scope for a more thorough reading, which aimed to verify whether the text actually met the criteria proposed in the article, with the next section trying to show this analysis.

Selected articles

Of the 166 articles from the initial research in Google Scholar, 39 that met the established criteria were selected. The titles, the names of the authors, the dates and areas of publication of the works found are in Table 3.

Article titles	Authors / Year	Areas of Application
Roadblocks to application of blockchain in indian agriculture - a study on madhya pradesh	Dubey (2018)	Agriculture
Does Technology Against Corruption Always Lead to Benefit? The Potential Risks and Challenges of the Blockchain Technology	Kim and Kang (2017)	Anti-corruption
Are emerging technologies helping win the fight against corruption in developing countries?	Adam and Fazekas (2017)	Anti-corruption
Don't be fooled by the blocks that it got	van Nes (2017)	Supply chain
A Blockchain Technology Evolution between Business Process Management (BPM) and Internet-of-Things (IoT)	Hussein, Hamed, and Eldeen (2017)	Smart cities
Semantic-enhanced blockchain technology for smart cities and communities	Ruta et al. (2016)	Smart cities
Upgrading blockchains: Smart contract use cases in industry	Ream, Chu, and Schatsky (2016)	Smart contracts
Blockchain 2.0 - From Bitcoin Transactions to Smart Contract applications	Kehrli (2016)	Smart contracts
Cryptolaw for Distributed Ledger Technologies: A Jurisprudential Framework	Reyes (2018)	Issuance of corporate shares
Blockchain-enabled self-sovereign identity	van Wingerde (2017)	Identity management
The Application of Digital Identity in the United States	Duffy, Goudovitch, and Fedorov (2016)	Identity management
Changing Governance Models by Applying Blockchain Computing	Young (2018)	Government / Citizen
Blockchain from Public Administration Perspective: Case of Estonia	Jalakas (2018)	Governo / Cidadão
Unlocking Blockchain: Embracing New Technologies to drive Efficiency and Empower the Citizen	Hughes, Graham, Rowley, and Lowe (2018)	Government / Citizen
Blockchain technology: A general purpose technology for the decentralization of governance?	Flament (2015)	Government / Citizen
Blockchain Technologies as A Stimulator of Institutional Transformations of the World Financial System	Kussy, Pobirchenko, Shutaieva, and Kakutich (2018)	Government / Citizen
Enforcing Constitutional Rights Through Computer Code	Young (2017)	Government / Citizen
Blockchain – Attack on and Chance for the Public Sector	Welzel (20017)	Government / Citizen
Blockchain: Perspectives on Research, Technology and Policy	Vishik, Karame, and Masucci (2017)	Government / Citizen

Título dos Artigos	Autores(as) / Ano	Áreas de Aplicação
Blockchain Technology for Recordkeeping Lemieux, Hofman, Batista, and Joo (2019)	Record keeping	
FHIRChain: Applying Blockchain to Securely and Scalably Share Clinical Data	Zhang, White, Schmidt, Lenz, and Rosenbloom (2018)	Medicina
Pattern Based Evaluation of Blockchain Technology as a Catalyst for Business Model Innovation: Exploratory Research with Focus on the Potential Implications for e-Health	Šalehar (2017)	Medicine
Blockchain and Financial Market Innovation	Lewis, McPartland, and Ranjan (2017)	Financial market
Risks And Opportunities For Systems Using Blockchain And Smart Contracts	Staples et al. (2017)	Remittance payments; Open Data Records; Agricultural supply chain
Digitalization of Land Records: From Paper to Blockchain	Benbunan-Fich and Castellanos (2018)	Registration of real estate
Blockchain – can this new technology really revolutionize the land registry system?	Barbieri and Gassen (2017)	Registration of real estate
Tendências para sistemas microgrids em cidades inteligentes: uma visão sobre a blockchain	Gabrich, Coelho, and Coelho (2017)	Electricity sector
Applying Blockchain Technology to Electric Power Systems	Livingston, Sivaram, Freeman, and Fiege (2018)	Electricity sector
Scaling blockchain for the energy sector	Dahlquist & Hagström (2017)	Electricity sector
Attention to Disruption and Blockchain Creates a Viable Real Estate Economy	Veuger (2017)	Real estate
Blockchain Based E-Stamp Procurement System with Efficient Consensus Mechanism and Fast Parallel Search	Singh and Vardhan (2018)	Real estate (electronic stamps)
A Survey of Blockchain Technologies for Open Innovation	De La Rosa et al. (2017)	Survey por diversas áreas
Closing in on the Holy Grail of World Trade: Using Blockchain to Expand Southeast Asia's Trade	Suominen (2018)	Commercial transactions
Exploring the Future of Taxation: A Blockchain Scenario Study	van Rijswijk, Hermsen, and Arendsen (2019)	Taxation
Blockchain: Foundational Technology To Change The World	Khudnev (2017)	Survey by various areas
Beyond bitcoin: Blockchain is coming to disrupt your industry	Schatsky and Muraskin (2015)	Survey by various areas
Blockchain 3.0: Towards a Secure Ballotcoin Democracy through a Digitized Public Ledger in Developing Countries	Dogo, Nwulu, Olaniyi, Aigbavboa, and Nkonyana (2018)	Electronic voting
Crypto-voting, a Blockchain based e-Voting System	Fusco, Lunesu, Pani, and Pinna (2018)	Electronic voting
Blockchains and Voting: Somewhere between hype and a panacea	Nasser, Okoye, Clark, and Ryan (2018)	Electronic voting

Table 3. Selected articles.

Source: elaborated by the authors (2021).

After the complete reading of the texts, all the articles that did not help to draw a panorama of the use of blockchain in the public sector were excluded, because the focus of this SLR is to conduct a survey of the current scenario of blockchain technology in the public sector.

DISCUSSION OF THE SLR RESULTS

In this section are presented and discussed the results of the SLR made. Through the selected articles, it was possible to answer the following questions.

[SQ1] for what areas and what types of applications the blockchain technology is being proposed, according to the academic literature?

a) Electricity sector:

Gabrich et al. (2017) claim that an area that could benefit from blockchain technology is the electricity sector by the use of surplus energy from distributed generation. A blockchain would enter, in this case, the step of data storage, which could be done reliably in the purchase, sale or donation of energy. Livingston et al. (2018) did interviews with startups that wanted to create new markets or improve existing ones for electricity trading, facilitating peer-to-peer transactions, facilitating payment of electric vehicle consumption charges, tracking production, or raising funds for clean energy. For Dahlquist and Hagström (2017), blockchain technology is an alternative in the electric power sector. The focus of the work is a case study of a payment system for electrified roads, with technology for transferring energy to vehicles.

b) Real estate or registration of real estate:

Veuger (2017) brings a proposal aimed at the real estate sector, through which one could register with property registration using blockchain, which can be a more efficient way to make the registration for the transfer of property. The author points out that there should be a clear connection between the administration in the blockchain and physical property. Other authors who discuss the advantages of using blockchain in this same sector are Singh and Vardhan (2018), who focus on the problem of transfer of Real Estate in India. The work of Benbunan-Fich and Castellanos (2018) highlights this area with a comparison of the land registry in Georgia and Honduras. The accession of Georgia to blockchain would be easier, since the records are digitized, but Honduras would have the additional task of digitization. Lemieux et al. (2019) did a study on the potential uses of blockchain technology for record-keeping. In the financial area, payment systems, issuance of corporate shares and settlement of treasury could occur on the same day; outside the financial area, the use in smart contracts and wills, protection of personally identifiable information in the blockchain in data lake and automation of back office.

c) Medicine:

In the medicine field, Zhang et al. (2018) described a prototype, called FHIRChain, designed by the authors to provide patients with more collaborative support for the clinical decision, using blockchain technology and the rapid interoperability features in healthcare. Another author who analyzes the use of blockchain in the field of medicine is Salehar (2017), which addresses the possible developments in the e-health market. Some examples are the concept of a platform for personalized treatment, with the collection of patient data and the connection of different care providers, such as volunteers to elderly patients.

d) Identity management:

The article by van Wingerde (2017) proposes a new paradigm, self-government identity management, which would be possible through the technology of blockchain. The proposal of a decentralized system, so that the subject himself can manage the administration of his data, is presented as an inspiring solution. Duffy et al. (2016) bring an interesting study on the use of blockchain for identity management. The authors say that for this there are attractive features of the technology, such as being decentralized and distributed, which could help reduce fraud and comply with existing regulations. However, as the authors claim, this is not yet a viable solution for a national-level identity management system in a country that is not fully digital.

e) Agriculture:

In Dubey (2018) thesis, The Indian government's IndiaChain project is cited, which goal is to create a blockchain network in the country. Some areas of Niti Aayog (the government of India's main idea Bank) provide for the following uses of blockchain: digitization of certificates, education, creation of land registration, distribution of electricity and agriculture. This latter area is the focus of the author's work, which claims that since the sector employs more than half of the Indian population, the proposal would bring good social, economic and political impacts.

f) Commercial transactions:

Suominen (2018) discusses how the blockchain it is improving several areas in Southeast Asia, including supply chain management, cross-border logistics, customs procedures and trade finance. According to the author, companies and regional governments are already world leaders in the use of technology blockchain to make the movement of goods between countries more efficient, improving logistics, trade finance, customs clearance and supply chain traceability.

g) Financial market:

Lewis et al. (2017) argue that blockchain technology will likely be a key source of future innovation in the financial market by enabling the creation of immutable transaction records accessible by all participants in a network. Despite all the applications of blockchain technology being in the early stages of development, the authors argue that there are many promising applications in financial markets, as they have the potential to provide large efficiency gains in businesses, which currently require expensive intermediation.

h) Taxation:

In van Rijswijk et al. (2019), an instrument aimed at exploratory scenario planning is presented aiming at facilitating strategic decision-making. The authors applied the method of exploratory scenario planning in

blockchain technology and explored different impacts of blockchain in taxation during 2025. The researchers analyze the scenarios presented, citing, for example, that authorities should not overestimate the influence of blockchain technology in the type of emerging innovations. They also claim that because they are still immature, they can harm their adherence to future developments.

i) Smart cities:

The article by [Hussein et al. \(2017\)](#) brings a comprehensive study of blockchain, examining the research efforts of this technology. It was presenting a proposed life cycle for the blockchain, aiming at improving business process management (BPM) and Internet of Things (IoT) concepts. The authors conducted a practical proof of this relationship for a smart city. [Ruta et al. \(2016\)](#) propose a new Service-Oriented Architecture (SOA), based on a blockchain semantics. For the authors, blockchain technology can replace large-scale transactional systems that still suffer from unworkable trust management strategies. There are several areas of interest for smart cities mentioned in the work, such as markets for material and immaterial resources and collaboration between autonomous entities.

j) Smart contracts:

Smart contracts appear to be a viable solution for replacing paper contracts or digital documents, according to [Ream et al. \(2016\)](#). These contracts are more efficient and secure for both sides of the transaction. According to the authors, other benefits are arising from the use of smart contracts based on blockchain technology, such as real-time updates, accuracy, lower risk of manipulation, fewer middlemen or even elimination, lower costs, and new business or operating models.

For [Kehrli \(2016\)](#), smart contracts are often the core component of blockchain platforms of the next generation. The article explores what a smart contract is and how it works, as well as emphasizes that every week there is an Ethereum use case.

[SQ2] What kinds of blockchain technology applications are geared towards government transparency, according to the academic literature?

As for the anti-corruption issue, [Kim and Kang \(2017\)](#) cite that, despite the opportunities when using blockchain technology, it will not solve all the problems, it is necessary to analyze also the negative side and limitations. The conclusion is that this can be a tool capable of eradicating fraud, corruption and bribery by providing transparency to operations, but it is important to consider its negative cascade effect, which can prevent sustainable growth. In this way, one must develop a well-planned policy to maximize the benefits of using blockchain technology. [Adam and Fazekas \(2017\)](#) highlight that digital public services are not effective and may even provide opportunities for corruption. As the authors claim, if, on one hand, blockchain can impact the supply of information by offering increasing levels of transparency and accountability to the public sector by cutting “middlemen” and reducing opportunities for corruption, on the other hand, it requires changes of processes, investments and training.

Another application in the government area is present in [Young \(2018\)](#), in which, through smart contracts in blockchain, the relationship between government and governed can change. The authors argue that the next step in the evolution to public governance is blockchain, due to the search for inherent consensus, scalability and decentralization that the industry begins to demand. With this technology, it would be possible to control a government’s institutions to create greater oversight and prevent its actors from acting beyond the mandate.

[Jalakas \(2018\)](#) thesis, which aims at the analysis of blockchain from a public administration perspective, has the empirical part concentrated in Estonia, as it is the leading country in terms of adoption of blockchain in the public sector. The authors say that the case of Estonia provides operational efficiency, can increase intra-government legitimacy and be used to transform public services. One of the ideas proposed is the joining of other technological advances to those of blockchain. The use of machine learning, which can filter data to be more relevant, and the capabilities of smart contracts based on blockchain, as a safe way to automate organizational procedures, can make public services personalized, benefiting State and citizens.

[Hughes et al. \(2018\)](#) propose blockchain for the UK, whose goal is for government departments to make 1% savings in efficiency by adopting blockchain and other technologies. For the authors, the state should use blockchain to allow social freedom, increase efficiency and rebuild the trust of society, but care must be taken, as the state should not be allowed to use technology to invade the lives of individuals.

One area that has been heavily criticized for the lack of transparency that exists and which is always subject to uncertainty is voting. In [Dogo et al. \(2018\)](#) article, a review of academic articles on the application of blockchain technology is made to provide security in electronic voting. In addition, in developing countries, blockchain technology could be used as an alternative to very precarious manual or digitized voting systems.

CONCLUSIONS

- How can decision-makers in the government sector benefit from the results of this work?

The objective of the article was to verify which applications of blockchain technology are aimed at the public sector, contributing to decision-makers thinking about their inclusion. This technology has gained prominence and is growing in several areas, as evidenced by this research, which has found reports or possibilities of use in the electrical, real estate, medicine, identity management, agriculture, commercial transactions, financial market, taxation, smart cities, smart contracts, government administration and in electronic voting.

Regarding government transparency, blockchain technology could be useful, bringing benefits such as the eradication of fraud (Kim & Kang, 2017). However, caution is needed in the use of digital public services as they can provide opportunities for corruption (Adam & Fazekas, 2017). In addition, care must be taken that the State does not invade the privacy of citizens (Hughes et al., 2018). Therefore, governments that prioritize the transparency of their actions can benefit from blockchain technology.

- What are the conclusions shown and what is the future direction of research related to the application of Blockchain in the public sector?

The SLR conducted indicates that on-screen technology has the potential to help the public sector. However, future needs surveys will be needed to assess whether the blockchain technology is more suitable for each proposed situation. In addition, in many areas there is still fear regarding the use of this technology because there are not so many applications in operation, that is, because it has not reached a desirable level of maturity. An application of blockchain which deserves caveat is in the area of voting because transparent or verifiable voting becomes a problem in cases where voting must be secret, as in the cases of elections for representatives of the executive and legislative branches.

As future developments of this research, it is necessary to evaluate which national public policies are involved with blockchain technology, differentiating the cases that are still ongoing research, or promise of uses, from the cases in which it is already effectively employed. Another development would be to verify the different conflicts of interest in each of the scenarios, in order to identify difficulties present in each context.

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