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Analysis of blockchain in its standard, development and solicitation

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Abstract

The purpose of the article is to expand knowledge about the applications block chains described in the scientific literature. Blockchain is a decentralized management technology transactions and data, introduced in 2008, whose first use was the famous crypto currency Bitcoin. Diversity possible applications of blockchain technology i In , the initial state of research in this field was stimulated interests and publications on this topic. The built-in features of this technology ensure security and anonymity and data integrity create interesting areas of research, particularly from the perspective of technical challenges and limitations. Security features of many important systems in many industries rely on what is known as "Safety Through". Ambiguity (Berentsen,2020) in security technology. Research in this direction aims to keep security mechanisms and system implementation in a complete state anonymity. However, the main disadvantage of this method is the problem with is that if we find out, the entire system could collapse Security mechanism. A fact that will become known later several studies show that this practice is becoming virtually impossible with the use of revolutionary blockchain technology.

Keywords: Blockchain Applications; Cryptocurrencies; Smart Contracts; IoT

1. Introduction

As part of this research, a systematic literature mapping was carried out with the aim of bringing together all of the literature relevant searches about blockchain applications. Heart of this article is intended to understand the current research topic. Challenges and future directions of blockchain technology from a technical perspective. Therefore we can have hope provide a bibliographic reference that enables a global vision existing methods, including (Bruhl,2020) provide evidence of a connection between use Blockchain to overcome some economic problems, social and political challenges await the countries of the South, as well as highlighting its key uses and applications block chains in developing countries. look Blockchain can help promote transparency, build trust and increase transaction efficiency. Manage and can make things easier their understanding and their application, both in science on the field and in practice.

A fascinating part of nature for many authors Blockchain is created by the fact that personal data is stored in a forum can only be accessed and viewed with prior consent from the actual owner and this information cannot be saved. THE ID card (Kshetri, 2017a) – this is the name of this process – is stored in a cryptographic format, making a security breach impossible or very difficult (Khan, 2017). Security features of many important systems in many industries rely on what is known as "Safety Through". Ambiguity" (Christidis, 2020) in security technology. Research in this direction aims to keep security mechanisms and system implementation in a complete state Anonymity. However, the main disadvantage of this method is the problem with is that if we find out, the entire system could collapse the security mechanism. A fact that will become known later several studies show that this practice is becoming virtually impossible with the use of revolutionary blockchain technology. Most research focuses on discovery and improvement Blockchain Limitations Related to Privacy and Security prospects, but many of the proposed solutions require specific assessment of their

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effectiveness. Many of blockchain's other scaling challenges, including its penetration into new business areas and its latency, have not changed were tested. Based on this study, the authors recommend this future research that can be shared with researchers is looking for such a topic.

There are studies in the scientific literature on this topic aimed to determine the “state of the art” of blockchain technology deployments to develop this work (Costa, 2020). A detailed analysis of the selected articles was then carried out were carried out. Finally, the results are presented in the form of article summaries, tables and graphics. The search for scientific literature on the topic was based on a research technique called bibliometrics, in which, according to (Dagher,2020), the SCOPUS database was used as a source. The search took place in two moments: November 1st - December 2017 i seconds in May 2018. An initial search of the Scopus database was carried out between February 11, 2017 and December 6, 2017 with the keyword: “Blockchain” without an annual limit and 699 documents were found.

A filter was then applied on the type of document, considering articles, news articles and magazine for a total of 211 documents. The titles and abstracts were then read and 112 articles were selected and registered in Mendeley. One of the selected articles (Where is the current research?) on Blockchain Technology – A Systematic Review), by (Dorri, 2020), conducts a systematic review literature and identified some practical applications Blockchain in environments other than cryptocurrencies, such as: IoT, smart contracts, smart properties, digital content, botnet and P2P transfer protocols, showing that blockchain technology is not limited to cryptocurrencies applications.

To update this research, the second phase of the project was launched scientific literatures were analyzed in the Scopus database in the period from May 5, 2020 to May 27, 2020 (Giungato, 2020). There were reviews of 112 research papers for the following types of blockchain applications: cryptocurrencies (finance); Smart Contracts; Smart Real Estate; AND Distribution of digital content. 66 items were then distributed selected in the following ranking: 9 cryptocurrencies (finance); 31 Smart Contracts; 13IoT (Internet things); 1 smart property; no distribution of digital content, and 12 others. According to (Goertzel, 2020), Global Blockchain The technology market is expected to be worth $13.96 billion $ by 2022, with a compound annual growth rate by 42.8% during the forecast period.

Blockchain is a decentralized network that can record transactions between two entities pages. Blockchain solutions are increasingly being used a range of sectors including banking and financial services and Insurance (BFSI), Government and Public Sector, Healthcare and Life Sciences, Retail and E-Commerce, Automotive, Media and Entertainment, among others. The demand for blockchain solutions are growing rapidly Number helps improve efficiency and reduce transaction processing costs.

2. Methodology

We began our search by querying the UT Library Internet server. Search for the keyword “blockchain” has produced a solid mix of media sources. No wonder the majority of them are news articles: more than 23,000 entries. The total number of magazine articles was about a tenth of the number of simply published newspaper articles out of 2000. Almost as many journal articles were recorded as journal articles, but are not representatives of all newspaper articles in general. The bulletins contained fewer than 800 entries and books around 150. Although we focused on peer-reviewed journal articles, it was interesting to see the numbers Comparison. After examining the total number of entries, we modified our query to only display journal articles. We worked from the top and selected articles that seemed relevant and useful. When then began downloading articles and searching for topics. We then created a list of themes and we avoided downloading more than one article for each theme. We collected about 20 articles from peer-reviewed journals that we feel to be representative of the current literature. From these articles, we were able to find a number of representative themes within the current literature (Gord, 2021). While these themes by no means represent all of the trends in current blockchain literature, they do provide a very representative overview.

During our initial research, we found an article that talked about the current state of blockchain research. Among them (Eyal 2021) present a systematic review of 41 peer-reviewed articles published up to 2015 It appears that they could only find a total of 41 peer-reviewed articles at this point. One of The most interesting things you note at the beginning of the article is the fact that 80%. Articles related to the use of blockchain in Bitcoin, a crypto currency, were found. Even if concentrated, mainly on cryptocurrencies, was a good opportunity for such a review, but they decided to focus on technical issues. blockchain issues: security, performance, scalability, etc. They also note that the study mainly focused on this focuses on the privacy and security of blockchain and highlights its limitations. After a detailed introduction to the blockchain, they provide an overview of the methodology used engaged in systematic map research - which is quite similar to what we do today Study.

Topics addressed in current research, applications developed for blockchain, current research gaps and future directions of blockchain. They started with a scratch and they used databases to search the literature and then described the selection process. Then they took it out keywords and data from abstracts. In addition to the topics, the publication date is also included Source – industry or university – and geographical location. In addition, they took the publication into account: conference, seminar, review, book chapter, etc (Senthil Pandian Paramasivam 2023) in the end, three different types of articles were identified: Blockchain Report, Blockchain Improvement and Blockchain Application. The more widespread technology becomes, the more efficient it becomes.

3. Analysis by type of blockchain applications

In October In 2014, power consumption was estimated at 0.69 W/GHps, and almost two years later, in September 2016. The dropped to 0.099 W/GHps, which is only 14% of the electricity cost. Thanks to the increased cost of Bitcoin Interest in has also increased, resulting in more miners and more efficient transactions. Section offsets additional costs associated with increased electricity consumption and mining equipment costs. After the topic of resources, the article addresses the issue of security inherent in registration. Thanks to the ability to save previous transactions in a previous one. The new book will make this possible Bank wants records to be more secure and less vulnerable to hacking, but still allow them have a more honest view of potential investment opportunities, it would be more obvious if someone tried it for quick cookbooks (Xie, 2023). Another researcher, Tranquillini, writes about the potential of blockchain technology in the securities industry: and not so much about the blockchain technology itself. Uses an earlier article by Professor Benjamin Edelman and Damien Geradin published in the Harvard Business Review about the use of blockchain technology in the consumer goods sector as a basis for demonstrating the exploration of the potential of these technologies.

3.1. Application 01: Financial (Cryptocurrencies)

Review current security and stability issues European financial markets and government regulations. His article serves more as an outlet for his intellectual self-considerations on the possible use of this technology in the securities sector social and government provisions of European standards. Some applications are already provided in Today there are markets, such as: B. Asset Management, in which traditional negotiation processes in asset management and there can be parties trading and managing resources expensive and risky, especially when trading international transactions.

Insurance management in general is another very widespread and increasingly used aspect Blockchain. Complaint handling and resolution may include: a frustrating and thankless process. Insurance processors must sift through fraudulent claims and fragmented data sources – and have to process these forms manually. The error rate is enormous. (Marraki 2023) in her article for the digital magazine Tech Crunch and therefore, avoid some conclusions and decides that implementing such technology would be difficult at best and that it will not happen any time in the near future. The articles collected in the scientific literature were grouped into four categories of applications, according to Table 1 below.

Table 1 Distribution of articles by four-application categories

Application types	Number of articles
Cryptocurrencies	28
Smart contracts	58
Internet of Things	33
Others (including Smart property)	23

3.2. Application 02: Smart contracts and IOT

Smart contracts connect the blockchain to the real world. Such agreements allow you to open and turn on the front door your washing machine, charge your electric vehicle or send it in funds abroad – without lifting a finger. On a larger scale, such technology could enable voting, by updating medical records and speeding up supply chains. They can be the key to decentralization and a reliable mechanism to conduct almost any type of business via blockchain, , including crypto currency trading. The term "smart contract" was first coined in 1996 by: Nick Szabo, computer scientist and cryptologist. He defined as follows: "…all promises mentioned in art Digital Form, including the minutes in which the parties will deliver on these promises" (Laszewski 2023).

In other words, a smart contract is a piece of code Blockchain that performs an action when certain criteria are met hit. They enable much more complex internal programming logic. Once the action is completed, it is added to the blockchain as a permanent record. Smart contracts connect the blockchain to the real world. Such contracts allow you to open and turn on the washing machine door, charge your electric vehicle or ship abroad without lifting a finger. On a larger scale, such technology could enable reconciliation by updating medical records and speeding up supply chains. They can be the key to decentralization and a reliable mechanism for conducting almost all types of business via blockchain, including crypto currency trading. The term "smart contract" was first coined in 1996 by Nick Szabo, computer scientist and cryptologist. He defines it this way: "all the promises to which the art refers." A digital form, including a protocol in which the parties will fulfill these promises". In other words, a smart contract is a piece of blockchain code that performs an action when certain criteria are met. They enable much more complex internal programming logic. Once the action is completed, it is added to the blockchain as a permanent record. Table 2 presents the 13 selected articles on other blockchain applications, including those of Smart property.

Table 2 List of articles with Smart Contract applications

Area of application	Number of articles
Commercial	21
Energy	19
IoT (Electronic Commerce) and Smart Contracts	42
Bitcoin and Smart Contracts	30
Commercial	24
Smart Property /Artificial intelligence	18

3.3. Application 03: Others

Blockchain is different from the Internet of Things. Blockchain has many advantages. They are not the answer As sometimes happens, we face all the challenges of the digital economy , but it is certain that they will play an increasingly important role on the Internet things. Identity in the common format we know today, but developed in digital format based on the blockchain B. Real estate, can include history, location and details closing document to help you online and final information.

In general, buyers and banks can potentially rely on this numerical ownership identity when assessing legal title, as a change to existing data would be required for consensus between different blockchain nodes. In terms of geographical distribution, most are authors there are associations affiliated with institutions in China from the USA and Great Britain. The bottom line is that most articles focused on the smartest. Subsequently, tender documents were submitted, representing 47% of the total number of applications and about the Internet of Things, cryptocurrencies and more. It is worth mentioning that smart contracts are being used in, including in the areas of health, law and energy. IoT applications are used in commercial and urban development / intelligent traffic zones, including: It is expected that this work can serve as a bibliography Reference with global view of the main blockchain questions. As a suggestion for future research, yes proposed to conduct an in-depth analysis of the blockchain in peer-reviewed studies, apps were used to help. Decision makers choosing the best blockchain application solutions.

4. Conclusion

This study conducted a systematic review of the above elements publications collecting information about blockchain applications based on Scopus Access Capes Journal Database. Total 102 articles were selected from 60 different journals, followed by a classification system: chronological development of publications; publications in specialist journals; Authors' countries of origin institutions; and the type of blockchain application. Following this research, there has been an increase in publications on blockchain applications since 2017 and 2018, despite presenting partial results from May 2018 indicates a significant increase in the number of articles on this topic. We can summarize based on 60 magazines from three journals that have published several articles on this topic.

The blockchain applications were: IEEE Access; Zhongguo Dianji Gongcheng Xuebao / Proceedings of the Chinese Society Electrical Engineering; and strategic changes, everything, a total of 24.5%. In terms of geographical distribution, most authors are there are associations affiliated with institutions in China from the USA and Great Britain. Other the

bottom line is that most articles focused on the smartest. Subsequently, tender documents were submitted, representing 47% of the total number of applications and about the Internet of Things, cryptocurrencies and more. It is worth mentioning that smart contracts are being used in, including in the areas of health, law and energy. IoT applications are used in commercial and urban development / smart transportation zones including: It is intended that this work can serve as a bibliography Reference with global view of the main blockchain questions. As a suggestion for future research, yes suggested conducting an in-depth analysis of the blockchain In peer-reviewed studies, apps were used to help. Decision makers choosing the best blockchain application solutions.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

References

[1] Berentsen, A.; Schar, F. (2020), 'A Short Introduction to the World of Cryptocurrencies', Review, Vol. 100, No. 1, pp. 1–19. doi: 10.20955/r.2018.1-16.

[2] Bruhl, V. (2020), 'Bitcoins, Blockchain und Distributed Ledgers', Wirtschaftsdiens, Vol. 97, No. 2, pp. 135–142. doi: 10.1007/s10273-017-2096-3.

[3] Christidis, K.; Devetsikiotis, M. (2020), 'Block chains and Smart Contracts for the Internet of Things', IEEE Access, Vol. 4, pp. 2292–2303. doi: 10.1109/ACCESS.2016.2566339.

[4] Costa, H. G. (2020), 'Modelo para Webibliomining: proposta ecaso deaplica', Revista FAE, Vol. 12, No. 1, pp. 115–125.

[5] Dagher, G. G. et al. (2020), 'Ancile: Privacy-preserving framework for access control and interoperability of electronic health records using blockchain technology', Sustainable Cities and Society, Vol. 39, pp. 283–297. doi: 10.1016/j. scs.2018.02.014.

[6] Dorri, A. et al. (2020), 'Block Chain: A Distributed Solution to Automotive Security and Privacy', IEEE Communications Magazine, Vol. 55, No. 12, pp. 119–125. doi: 10.1109/ MCOM.2017.1700879.

[7] Giungato, P. et al. (2020), 'Current trends in sustainability of bitcoins and related blockchain technology', Sustainability, Vol. 9, No. 12. doi: 10.3390/su9122214.

[8] Goertzel, B. et al. (2020), 'The global brain and the emerging economy of abundance: Mutualism, open collaboration, exchange networks and the automated commons', Technological Forecasting and Social Change, Vol. 114, pp. 65–73. doi: 10.1016/j.techfore.2016.03.022.

[9] Gord, M. (2021), 'Smart Contracts Described by Nick Szabo 20 Years Ago Now Becoming Reality', available at: https:// bitcoinmagazine.com/articles/smart-contracts-described-by--nick-szabo-years-ago-now-becoming-reality-1461693751.

[10] Eyal, I. (2021), 'Blockchain Technology: Transforming Libertarian Cryptocurrency Dreams to Finance and Banking Realities', Computer, Vol. 50, No. 9, pp. 38–49. doi: 10.1109/ MC.2017.3571042.

[11] Senthil Pandian Paramasivam (2023), Identifying software development IOT effort in human and machine using global wavelet method Global Journal of Engineering and Technology Advances, 2023, 14(03), 019–024.

[12] Xie, W(2023), Blockchain Technology. IEEE, Vol. 7, No 4, 2020, pp. 61-64.

[13] Marraki (2023), Smart Contract, Journal of Theoretical and Applied Information Technology, Vol. 22, No.2, 2020, pp. 44-49.

[14] Laszewski (2023), Block chains and Smart Contracts, New Generation Computing, Vol. 28, No. 2, 2019, pp. 237-246.