

Influential Article Review - A Comprehensive Assessment of the Blockchain Concept

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This paper examines business and economics. We present insights from a highly influential paper. Here are the highlights from this paper: Blockchain is considered by many to be a disruptive core technology. Although many researchers have realized the importance of blockchain, the research of blockchain is still in its infancy. Consequently, this study reviews the current academic research on blockchain, especially in the subject area of business and economics. Based on a systematic review of the literature retrieved from the Web of Science service, we explore the top-cited articles, most productive countries, and most common keywords. Additionally, we conduct a clustering analysis and identify the following five research themes: “economic benefit,” “blockchain technology,” “initial coin offerings,” “fintech revolution,” and “sharing economy.” Recommendations on future research directions and practical applications are also provided in this paper. For our overseas readers, we then present the insights from this paper in Spanish, French, Portuguese, and German.

Keywords: Blockchain, Systematic literature review, Business and economics, CiteSpace

SUMMARY

- In this section, we will discuss the following issues: What will be the future research directions for blockchain? How can businesses benefit from blockchain? We hope that our discussions will be able to provide guidance for future academic development and social practice.
- The economic benefits of blockchain have been extensively studied in previous research. For individual businesses, it is important to understand the effects of blockchain applications on the organizational structure, mode of operation, and management model of the business. For the market as a whole, it is important to determine whether blockchain can resolve the market failures that are brought about by information asymmetry, and whether it can increase market efficiency and social welfare. However, understanding the mechanisms through which blockchain influences corporate and market efficiency will require further academic inquiry.
- For researchers of blockchain technology, this paper suggests that we should pay more attention to privacy protection and security issues. Despite the fact that all of the blockchain transactions are anonymous and encrypted, there is still a risk of the data being hacked. In the security sector, there is a view that absolute security can never be guaranteed wherever physical contact exists. Consequently, the question of how to share transaction data while also protecting personal data privacy are particularly vital issues for both academic and social practice.
- Initial coin offering and cryptocurrency markets have grown rapidly. They bring many interesting questions, such as how to manage digital currencies.

- How can businesses benefit from blockchain? Businesses can leverage blockchains in a variety of ways to gain an advantage over their competitors. They can streamline their core business, reduce transaction costs, and make intellectual property ownership and payments more transparent and automated .
- Accounting settlement and crowdfunding. Bitcoin or another virtual currency supported by blockchain technology can help businesses to solve funding-related problems. For instance, cryptocurrencies support companies who wish to implement non-cash payments and accounting settlement. The automation of electronic transaction management accounting improves the level of control of monetary business execution, both internally and externally . In addition, blockchain technology represents an emerging source of venture capital crowdfunding .
- Data storage and sharing. As the most valuable resource, data plays a vital role in every enterprise. Blockchain provide a reliable storage and efficient use of data . As a decentralized and secure ledger, blockchain can be used to manage digital asset for many kinds of companies . Decentralized data storage means you do not give the data to a centralized agency but give it instead to people around the world because no one can tamper with the data on the blockchain.
- Supply chain management. Blockchain technology has the potential to significantly change supply chain management . Recent adoptions of the Internet of Things and blockchain technologies support better supply-chain provenance .
- Smart trading. Businesses can build smart contracts on blockchain, which is widely used to implement business collaborations in general and inter-organizational business processes in particular.

HIGHLY INFLUENTIAL ARTICLE

We used the following article as a basis of our evaluation:

Xu, M., Chen, X., & Kou, G. (2019). A systematic review of blockchain. *Financial Innovation*, 5(1), 1–14.

This is the link to the publisher’s website:

<https://jfin-swufe.springeropen.com/articles/10.1186/s40854-019-0147-z>

INTRODUCTION

The concepts of bitcoin and blockchain were first proposed in 2008 by someone using the pseudonym Satoshi Nakamoto, who described how cryptology and an open distributed ledger can be combined into a digital currency application (Nakamoto 2008). At first, the extremely high volatility of bitcoin and the attitudes of many countries toward its complexity restrained its development somewhat, but the advantages of blockchain—which is bitcoin’s underlying technology—attracted increasing attention. Some of the advantages of blockchain include its distributed ledger, decentralization, information transparency, tamper-proof construction, and openness. The evolution of blockchain has been a progressive process. Blockchain is currently delimited to Blockchain 1.0, 2.0, and 3.0, based on their applications. We provide more details on the three generations of blockchain in the Appendix. The application of blockchain technology has extended from digital currency and into finance, and it has even gradually extended into health care, supply chain management, market monitoring, smart energy, and copyright protection (Engelhardt 2017; Hyvarinen et al. 2017; Kim and Laskowski 2018; O’Dair and Beaven 2017; Radanovic and Likic 2018; Savelyev 2018).

Blockchain technology has been studied by a wide variety of academic disciplines. For example, some researchers have studied the underlying technology of blockchain, such as distributed storage, peer-to-peer networking, cryptography, smart contracts, and consensus algorithms (Christidis and Devetsikiotis 2016; Cruz et al. 2018; Kraft 2016). Meanwhile, legal researchers are interested in the regulations and laws governing blockchain-related technology (Kiviat 2015; Paech 2017). As the old saying goes: scholars in different disciplines have many different analytical perspectives and “speak many different languages.” This paper focuses on analyzing and combing papers in the field of business and economics. We aim to identify the key nodes (e.g., the most influential articles and journals) in the

related research and to find the main research themes of blockchain in our discipline. In addition, we hope to offer some recommendations for future research and provide some suggestions for businesses that wish to apply blockchain in practice.

This study will conduct a systematic and objective review that is based on data statistics and analysis. We first describe the overall number and discipline distribution of blockchain-related papers. A total of 756 journal articles were retrieved. Subsequently, we refined the subject area to business and economics, and were able to add 119 articles to our further analysis. We then explored the influential countries, journals, articles, and most common keywords. On the basis of a scientific literature analysis tool, we were able to identify five research themes on blockchain. We believe that this data-driven literature review will be able to more objectively present the status of this research.

The rest of this paper is organized as follows. In the next section, we provided an overview of the existing articles in all of the disciplines. We holistically describe the number of papers related to blockchain and discipline distribution of the literature. We then conduct a further analysis in the subject field of business and economics, where we analyze the countries, publications, highly cited papers, and so on. We also point out the main research themes of this paper, based on CiteSpace. This is followed by recommendations for promising research directions and practical applications. In the last section, we discuss the conclusions and limitations.

CONCLUSION

This paper reviews 756 articles related to blockchain on the Web of Science Core Collection. It shows that the most common subject area is Computer Science, followed by Engineering, Telecommunications, and Business and Economics. In the research of Business and Economics, several key nodes are identified in the literature, such as the top-cited articles, most productive countries, and most common keywords. After a cluster analysis of the keywords, we identified the five most popular research themes: “economic benefit,” “blockchain technology,” “initial coin offerings,” “fintech revolution,” and “sharing economy.”

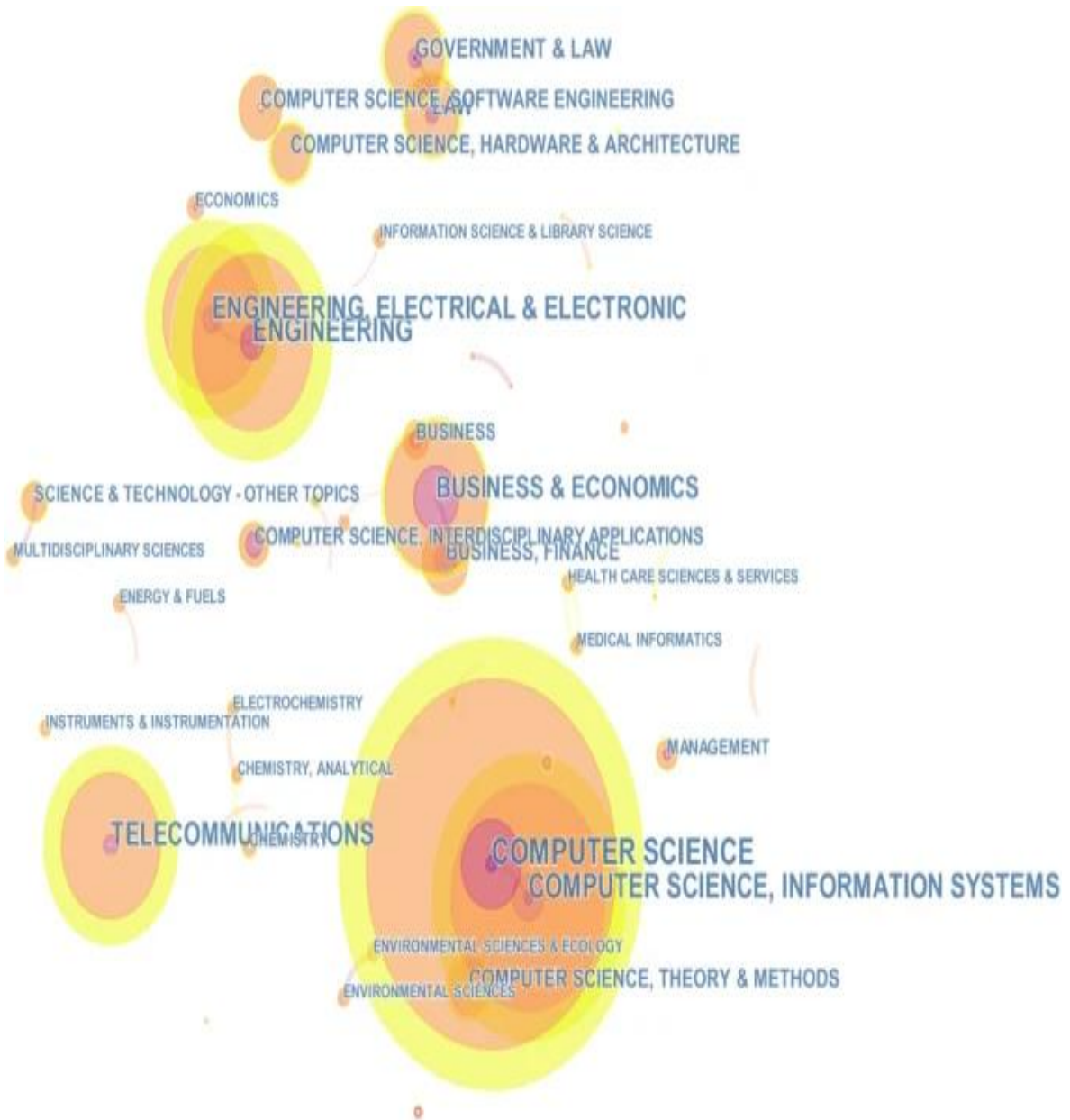
As an important emerging technology, blockchain will play a role in many fields. Therefore, we believe that the issues related to commercial applications of blockchain are critical for both academic and social practice. We propose several promising research directions. The first important research direction is understanding the mechanisms through which blockchain influences corporate and market efficiency. The second potential research direction is privacy protection and security issues. The third relates to how to manage digital currencies and how to regulate the cryptocurrency market. The fourth potential research direction is how to deeply integrate blockchain technology and fintech. The final topic is cross-chain technology—if each industry has its own blockchain system, then researchers and developers must discover new ways to exchange data. This is the key to achieving the Internet of Value. Thus, cross-chain technology will become an increasingly important topic as time goes on.

Businesses can benefit considerably from blockchain technology. Therefore, we suggest that the application of blockchain be taken into consideration when businesses have the following requirements: accounting settlement and crowdfunding, data storage and sharing, supply chain management, and smart trading.

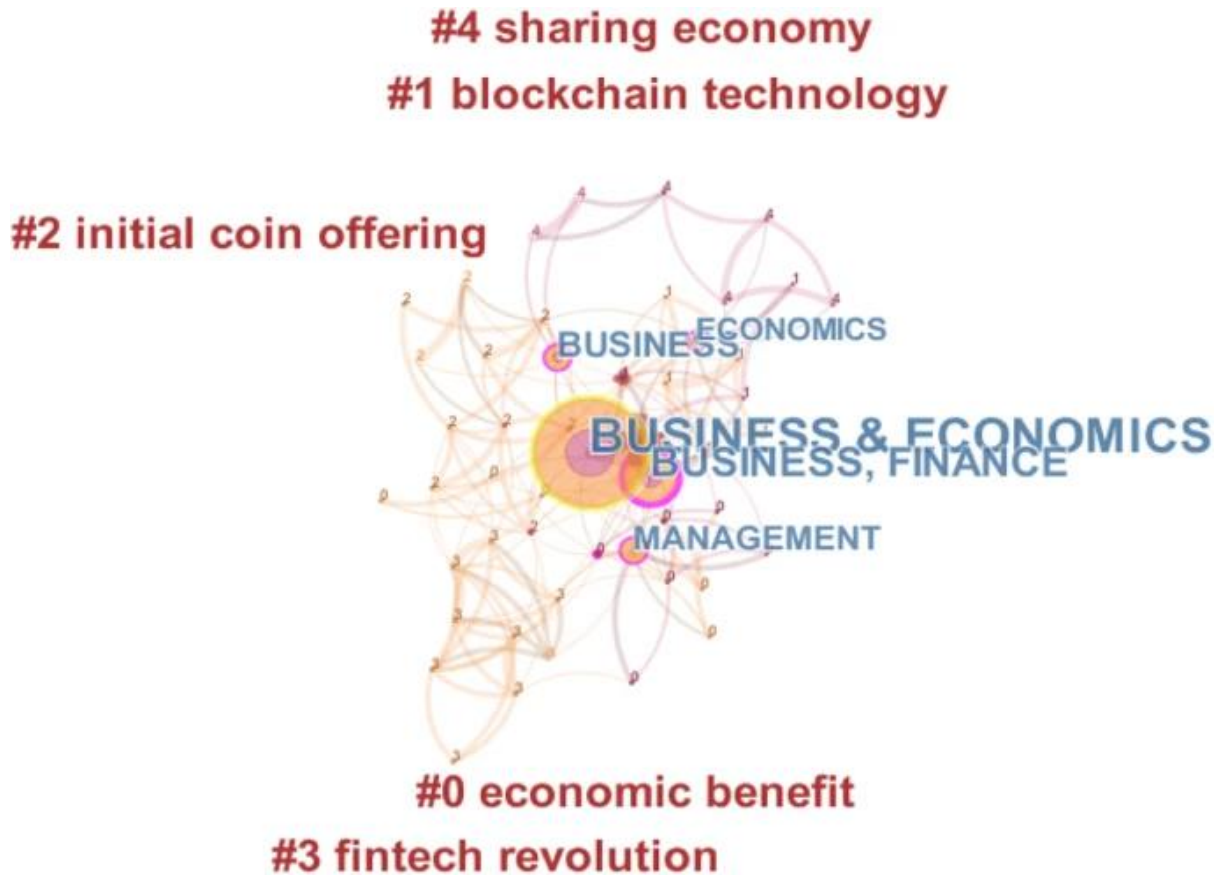
Our study has recognized some limitations. First, this paper only analyzes the literature in Web of Science Core Collection databases (WOS), which may lead to the incompleteness of the relevant literature. Second, we filter our literature base on the subject category in WOS. In this process, we may have omitted some relevant research. Third, our recommendations have subjective limitations. We hope to initiate more research and discussions to address these points in the future.

APPENDIX

FIGURE 1
DISCIPLINES IN BLOCKCHAIN



**FIGURE 2
DISCIPLINES AND TOPICS**



**TABLE 1
NUMBER OF ACADEMIC PAPERS ON BLOCKCHAIN**

	WOS-All	WOS-Articles	WOS-Business & Economics
Before2015	0	0	0
2015	4	1	0
2016	40	28	5
2017	200	158	45
2018	553	453	61
#2019	138	116	8
Total	925	756	119

TABLE 2

MAIN RESEARCH COUNTRIES

Country	No. of Papers	%/119
USA	41	34.454%
ENGLAND	14	11.765%
GERMANY	12	10.084%
PEOPLES R CHINA	11	9.244%
CANADA	8	6.723%
FRANCE	8	6.723%

**TABLE 3
TOP 11 JOURNALS PUBLISHING BLOCKCHAIN RESEARCH**

Source Title	No. of Papers
Strategic Change- Briefings in Entrepreneurial Finance	12
Financial Innovation	6
Asia Pacific Journal of Innovation and Entrepreneurship	5
Journal of Risk and Financial Management	4
Mit Sloan Management Review	4
Quality- Access to Success	4
Technological Forecasting and Social Change	4
Technology Innovation Management Review	4
Business Horizons	3
Intelligent Systems in Accounting Finance & Management	3
Journal of Risk Finance	3

**TABLE 4
CITED REFERENCES**

Title	Author & Year	Type	Citations
Blockchain: Blueprint for a New Economy	(Swan 2015)	book	21
Blockchain revolution: how the technology behind bitcoin is changing money, business, and the world	(Tapscott and Tapscott 2016)	book	17
Bitcoin: Economics, Technology, and Governance	(Böhme et al. 2015)	article	7
Corporate Governance and Blockchains	(Yermack 2017)	article	5
Bitcoin and Cryptocurrency Technologies: A Comprehensive Introduction	(Narayanan et al. 2016)	book	5
The Truth about Blockchain	(Lansiti and Lakhani 2017)	article	5

**TABLE 5
MOST CITED ARTICLES**

Title	Author & Year	Journal	Citations in WOS ^(a)
The Truth about Blockchain	(Lansiti and Lakhani 2017)	Harvard Business Review	49
Blockchain-based sharing services: What blockchain technology can contribute to smart cities	(Sun et al. 2016)	Financial Innovation	19
Citizen utilities: The emerging power paradigm	(Green and Newman 2017)	Energy Policy	18
Blockchain and Its Coming Impact on Financial Services	(Fanning and Centers 2016)	Journal of Corporate Accounting and Finance	15
Toward Blockchain-Based Accounting and Assurance	(Dai and Vasarhelyi 2017)	Journal of Information Systems	12
How Blockchain Will Change Organizations	(Tapscott and Tapscott 2017)	Mit Sloan Management Review	11
Hitching Healthcare to the Chain: An Introduction to Blockchain Technology in the Healthcare Sector	(Engelhardt 2017)	Technology Innovation Management Review	10

^a Data last updated on 2019-04-08

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VERSION TRADUCIDA: ESPAÑOL

A continuación se muestra una traducción aproximada de las ideas presentadas anteriormente. Esto se hizo para dar una comprensión general de las ideas presentadas en el documento. Por favor, disculpe cualquier error gramatical y no responsabilite a los autores originales de estos errores.

INTRODUCCIÓN

Los conceptos de bitcoin y blockchain fueron propuestos por primera vez en 2008 por alguien que usa el seudónimo Satoshi Nakamoto, quien describió cómo la criptología y un libro de contabilidad distribuido abierto se pueden combinar en una aplicación de moneda digital (Nakamoto 2008). Al principio, la extremadamente alta volatilidad del bitcoin y las actitudes de muchos países hacia su complejidad limitaron un poco su desarrollo, pero las ventajas de la cadena de bloques, que es la tecnología subyacente de Bitcoin, atrajeron una atención cada vez mayor. Algunas de las ventajas de blockchain incluyen su libro de contabilidad distribuido, descentralización, transparencia de la información, construcción a prueba de manipulaciones y apertura. La evolución de blockchain ha sido un proceso progresivo. Blockchain está actualmente delimitado a Blockchain 1.0, 2.0 y 3.0, en función de sus aplicaciones. Proporcionamos más detalles sobre las tres generaciones de blockchain en el Apéndice. La aplicación de la tecnología blockchain se ha extendido desde la moneda digital hasta las finanzas, e incluso se ha extendido gradualmente a la atención de la salud, la gestión de la cadena de suministro, el monitoreo del mercado, la energía inteligente y la protección del derecho de autor (Engelhardt 2017; 2017; Kim y Laskowski 2018; O'Dair y Beaven 2017; Radanovic y Likic 2018; Savelyev 2018).

La tecnología Blockchain ha sido estudiada por una amplia variedad de disciplinas académicas. Por ejemplo, algunos investigadores han estudiado la tecnología subyacente de blockchain, como el almacenamiento distribuido, las redes punto a punto, la criptografía, los contratos inteligentes y los algoritmos de consenso (Christidis y Devetsikiotis 2016; 2018; Kraft 2016). Mientras tanto, los investigadores legales están interesados en las regulaciones y leyes que rigen la tecnología relacionada con blockchain (Kiviat 2015; Paech 2017). Como dice el viejo dicho: los eruditos en diferentes disciplinas tienen muchas perspectivas analíticas diferentes y "hablan muchos idiomas diferentes". Este artículo se centra en analizar y peinar documentos en el campo de los negocios y la economía. Nuestro objetivo es identificar los nodos clave (por ejemplo, los artículos y revistas más influyentes) en la investigación relacionada y encontrar los principales temas de investigación de blockchain en nuestra disciplina. Además, esperamos ofrecer algunas recomendaciones para futuras investigaciones y proporcionar algunas sugerencias para las empresas que desean aplicar blockchain en la práctica.

Este estudio llevará a cabo una revisión sistemática y objetiva que se basa en estadísticas de datos y análisis. Primero describimos el número general y la distribución disciplinaria de los documentos relacionados con blockchain. Se recuperaron un total de 756 artículos de revistas. Posteriormente, refinamos el área temática a negocios y economía, y pudimos añadir 119 artículos a nuestro análisis posterior. Luego exploramos los países influyentes, revistas, artículos y palabras clave más comunes. Sobre la base de una herramienta de análisis de literatura científica, pudimos identificar cinco temas de investigación sobre blockchain. Creemos que esta revisión de la literatura basada en datos será capaz de presentar de manera más objetiva el estado de esta investigación.

El resto de este documento se organiza de la siguiente manera. En la siguiente sección, proporcionamos una visión general de los artículos existentes en todas las disciplinas. Describimos holísticamente el número de artículos relacionados con blockchain y la distribución disciplinaria de la literatura. A continuación, realizamos un análisis más frecuente en el campo de los negocios y la economía, donde analizamos los países, publicaciones, documentos altamente citados, etc. También señalamos los principales temas de investigación de este artículo, basado en citespace. Esto es seguido por recomendaciones para direcciones de investigación prometedoras y aplicaciones prácticas. En la última sección, analizamos las conclusiones y limitaciones.

CONCLUSIÓN

Este artículo revisa 756 artículos relacionados con blockchain en la Web of Science Core Collection. Muestra que el área temática más común es Ciencias de la Computación, seguida de Ingeniería, Telecomunicaciones y Negocios y Economía. En la investigación de Negocios y Economía, se identifican varios nodos clave en la literatura, como los artículos más citados, los países más productivos y las palabras clave más comunes. Después de un análisis en clúster de las palabras clave, identificamos los cinco temas de investigación más populares: "beneficio económico", "tecnología blockchain", "ofertas iniciales de monedas", "revolución fintech" y "economía compartida".

Como una tecnología emergente importante, blockchain jugará un papel en muchos campos. Por lo tanto, creemos que los problemas relacionados con las aplicaciones comerciales de blockchain son críticos tanto para la práctica académica como social. Proponemos varias direcciones de investigación prometedoras. La primera dirección importante de la investigación es entender los mecanismos a través de los cuales blockchain influye en la eficiencia corporativa y del mercado. La segunda dirección de investigación potencial es la protección de la privacidad y los problemas de seguridad. El tercero se refiere a cómo gestionar las monedas digitales y cómo regular el mercado de criptomonedas. La cuarta dirección de investigación potencial es cómo integrar profundamente la tecnología blockchain y fintech. El tema final es la tecnología de cadena cruzada: si cada industria tiene su propio sistema blockchain, entonces los investigadores y desarrolladores deben descubrir nuevas formas de intercambiar datos. Esta es la clave para lograr el Internet del Valor. Por lo tanto, la tecnología de cadena cruzada se convertirá en un tema cada vez más importante a medida que pase el tiempo.

Las empresas pueden beneficiarse considerablemente de la tecnología blockchain. Por lo tanto, sugerimos que la aplicación de blockchain se tenga en cuenta cuando las empresas tienen los siguientes requisitos: liquidación contable y crowdfunding, almacenamiento y uso compartido de datos, gestión de la cadena de suministro y comercio inteligente.

Nuestro estudio ha reconocido algunas limitaciones. En primer lugar, este artículo sólo analiza la literatura en las bases de datos de Web of Science Core Collection (WOS), lo que puede conducir a la incompleta literatura relevante. En segundo lugar, filtramos nuestra base de literatura sobre la categoría de temas en WOS. En este proceso, es posible que hayamos omitido algunas investigaciones relevantes. En tercer lugar, nuestras recomendaciones tienen limitaciones subjetivas. Esperamos iniciar más investigaciones y discusiones para abordar estos puntos en el futuro.

TRANSLATED VERSION: FRENCH

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INTRODUCTION

Les concepts de bitcoin et de blockchain ont été proposés pour la première fois en 2008 par quelqu'un utilisant le pseudonyme Satoshi Nakamoto, qui a décrit comment la cryptologie et un grand livre distribué ouvert peuvent être combinés dans une application de monnaie numérique (Nakamoto 2008). Dans un premier temps, la volatilité extrêmement élevée du bitcoin et l'attitude de nombreux pays à l'égard de sa complexité ont quelque peu freiné son développement, mais les avantages de la blockchain, qui est la technologie sous-jacente du bitcoin, ont attiré de plus en plus l'attention. Certains des avantages de la blockchain incluent son grand livre distribué, la décentralisation, la transparence de l'information, la construction inviolable et l'ouverture. L'évolution de la blockchain a été un processus progressif. La blockchain est actuellement délimitée en Blockchain 1.0, 2.0 et 3.0, en fonction de leurs applications. Nous fournissons plus de détails sur les trois générations de blockchain à l'Annexe. L'application de la technologie blockchain s'est étendue de la monnaie numérique à la finance, et elle s'est même progressivement étendue aux soins de santé, à la gestion de la chaîne d'approvisionnement, à la surveillance du marché, à l'énergie intelligente et à la protection du droit d'auteur (Engelhardt 2017; Hyvarinen et coll. 2017; Kim et Laskowski 2018; O'Dair et Beaven 2017; Radanovic et Likic 2018; Savelyev 2018).

La technologie blockchain a été étudiée par une grande variété de disciplines académiques. Par exemple, certains chercheurs ont étudié la technologie sous-jacente de la blockchain, comme le stockage distribué, le réseautage peer-to-peer, la cryptographie, les contrats intelligents et les algorithmes de consensus (Christidis et Devetsikiotis 2016; Cruz et coll. 2018; Kraft 2016). Pendant ce temps, les chercheurs juridiques s'intéressent aux règlements et aux lois régissant la technologie liée à la blockchain (Kiviat 2015; Paech 2017). Comme le dit le vieil adage : les chercheurs de différentes disciplines ont de nombreuses perspectives analytiques différentes et « parlent de nombreuses langues différentes ». Ce document se concentre sur l'analyse et le peignage des documents dans le domaine des affaires et de l'économie. Nous visons à identifier les nœuds clés (par exemple, les articles et revues les plus influents) dans la recherche connexe et à trouver les principaux thèmes de recherche de la blockchain dans notre discipline. En outre, nous espérons offrir quelques recommandations pour la recherche future et fournir quelques suggestions pour les entreprises qui souhaitent appliquer la blockchain dans la pratique.

Cette étude effectuera un examen systématique et objectif fondé sur des statistiques et des analyses de données. Nous décrivons d'abord le nombre global et la distribution disciplinaire des articles liés à la blockchain. Au total, 756 articles de journaux ont été récupérés. Par la suite, nous avons affiné le domaine aux affaires et à l'économie, et nous avons pu ajouter 119 articles à notre analyse plus approfondie. Nous avons ensuite exploré les pays influents, les revues, les articles et les mots clés les plus courants. Sur la base d'un outil d'analyse de la littérature scientifique, nous avons pu identifier cinq thèmes de recherche sur la blockchain. Nous croyons que cet examen de la documentation axé sur les données sera en mesure de présenter plus objectivement l'état de cette recherche.

Le reste de ce document est organisé comme suit. Dans la section suivante, nous avons donné un aperçu des articles existants dans toutes les disciplines. Nous décrivons globalement le nombre d'articles liés à la blockchain et à la distribution disciplinaire de la littérature. Nous effectuons ensuite une analyse plus approfondie dans le domaine des affaires et de l'économie, où nous analysons les pays, les publications, les articles très cités, et ainsi de suite. Nous présentons également les principaux thèmes de recherche de cet article, basés sur citespace. Elle est suivie de recommandations pour des orientations

de recherche prometteuses et des applications pratiques. Dans la dernière section, nous discutons des conclusions et des limites.

CONCLUSION

Cet article passe en revue 756 articles liés à la blockchain sur le Web of Science Core Collection. Il montre que le sujet le plus commun est l'informatique, suivie par l'ingénierie, les télécommunications, et les affaires et l'économie. Dans la recherche sur les affaires et l'économie, plusieurs nœuds clés sont identifiés dans la littérature, tels que les articles les plus cités, les pays les plus productifs et les mots clés les plus courants. Après une analyse en grappe des mots clés, nous avons identifié les cinq thèmes de recherche les plus populaires : « avantage économique », « technologie blockchain », « offres initiales de pièces de monnaie », « révolution fintech » et « économie du partage ».

En tant que technologie émergente importante, la blockchain jouera un rôle dans de nombreux domaines. Par conséquent, nous croyons que les questions liées aux applications commerciales de la blockchain sont essentielles à la fois pour la pratique académique et sociale. Nous proposons plusieurs orientations de recherche prometteuses. La première orientation de recherche importante est de comprendre les mécanismes par lesquels la blockchain influence l'efficacité des entreprises et du marché. La deuxième orientation de recherche potentielle est la protection de la vie privée et les questions de sécurité. Le troisième concerne la façon de gérer les monnaies numériques et la façon de réglementer le marché des crypto-monnaies. La quatrième orientation de recherche potentielle est de savoir comment intégrer profondément la technologie blockchain et la fintech. Le dernier sujet est la technologie inter-chaînes, si chaque industrie a son propre système blockchain, alors les chercheurs et les développeurs doivent découvrir de nouvelles façons d'échanger des données. C'est la clé pour atteindre l'Internet de la valeur. Ainsi, la technologie inter-chaînes deviendra un sujet de plus en plus important au fil du temps.

Les entreprises peuvent bénéficier considérablement de la technologie blockchain. Par conséquent, nous suggérons que l'application de la blockchain soit prise en compte lorsque les entreprises ont les exigences suivantes : règlement comptable et financement participatif, stockage et partage de données, gestion de la chaîne d'approvisionnement et trading intelligent.

Notre étude a reconnu certaines limites. Premièrement, cet article n'analyse que la littérature dans les bases de données web of Science Core Collection (WOS), ce qui peut mener à l'incomplétude de la littérature pertinente. Deuxièmement, nous filtrons notre base de littérature sur la catégorie des sujets dans WOS. Dans ce processus, nous avons peut-être omis certaines recherches pertinentes. Troisièmement, nos recommandations ont des limites subjectives. Nous espérons lancer davantage de recherches et de discussions pour aborder ces points à l'avenir.

TRANSLATED VERSION: GERMAN

Below is a rough translation of the insights presented above. This was done to give a general understanding of the ideas presented in the paper. Please excuse any grammatical mistakes and do not hold the original authors responsible for these mistakes.

ÜBERSETZTE VERSION: DEUTSCH

Hier ist eine ungefähre Übersetzung der oben vorgestellten Ideen. Dies wurde getan, um ein allgemeines Verständnis der in dem Dokument vorgestellten Ideen zu vermitteln. Bitte entschuldigen Sie alle grammatikalischen Fehler und machen Sie die ursprünglichen Autoren nicht für diese Fehler verantwortlich.

EINLEITUNG

Die Konzepte von Bitcoin und Blockchain wurden erstmals 2008 von jemandem vorgeschlagen, der das Pseudonym Satoshi Nakamoto benutzte, der beschrieb, wie Kryptologie und ein offenes verteiltes Ledger zu einer digitalen Währungsanwendung kombiniert werden können (Nakamoto 2008). Anfangs schränkten die extrem hohe Volatilität von Bitcoin und die Einstellung vieler Länder zu seiner Komplexität seine Entwicklung etwas ein, aber die Vorteile der Blockchain – die zugrunde liegende Technologie von Bitcoin – erregten zunehmend Aufmerksamkeit. Zu den Vorteilen der Blockchain gehören das verteilte Ledger, Dezentralisierung, Informationstransparenz, manipulationssichere Konstruktion und Offenheit. Die Entwicklung der Blockchain war ein progressiver Prozess. Blockchain ist derzeit basierend auf ihren Anwendungen auf Blockchain 1.0, 2.0 und 3.0 begrenzt. Wir geben weitere Details zu den drei Generationen von Blockchain im Anhang. Die Anwendung der Blockchain-Technologie hat sich von der digitalen Währung bis ins Finanzwesen ausgedehnt und sich sogar schrittweise auf das Gesundheitswesen, das Supply Chain Management, die Marktüberwachung, intelligente Energie und den Urheberrechtsschutz ausgeweitet (Engelhardt 2017; Hyvarinen et al. 2017; Kim und Laskowski 2018; O'Dair und Beaven 2017; Radanovic und Likic 2018; Savelyev 2018).

Blockchain-Technologie wurde von einer Vielzahl von akademischen Disziplinen studiert. Einige Forscher haben beispielsweise die zugrunde liegende Technologie der Blockchain untersucht, wie verteilter Speicher, Peer-to-Peer-Netzwerke, Kryptographie, intelligente Verträge und Konsensalgorithmen (Christidis und Devetsikiotis 2016; Cruz et al. 2018; Kraft 2016). Inzwischen interessieren sich Rechtsforscher für die Vorschriften und Gesetze für Blockchain-Technologie (Kiviat 2015; Paech 2017). Wie das alte Sprichwort sagt: Gelehrte in verschiedenen Disziplinen haben viele verschiedene analytische Perspektiven und "sprechen viele verschiedene Sprachen". Dieser Beitrag konzentriert sich auf die Analyse und das Kämmen von Papieren im Bereich Wirtschaft und Wirtschaft. Unser Ziel ist es, die wichtigsten Knotenpunkte (z.B. Die einflussreichsten Artikel und Zeitschriften) in der verwandten Forschung zu identifizieren und die wichtigsten Forschungsthemen der Blockchain in unserer Disziplin zu finden. Darüber hinaus hoffen wir, einige Empfehlungen für zukünftige Forschung zu geben und einige Vorschläge für Unternehmen zu geben, die Blockchain in der Praxis anwenden möchten.

Diese Studie wird eine systematische und objektive Überprüfung durchführen, die auf Datenstatistiken und -analysen basiert. Wir beschreiben zunächst die Gesamtanzahl und Disziplinverteilung von Blockchain-bezogenen Papieren. Insgesamt wurden 756 Zeitschriftenartikel abgerufen. Anschließend verfeinerten wir den Themenbereich auf Wirtschaft und Wirtschaft und konnten 119 Artikel zu unserer weiteren Analyse hinzufügen. Wir untersuchten dann die einflussreichen Länder, Zeitschriften, Artikel und die häufigsten Schlüsselwörter. Auf der Grundlage eines wissenschaftlichen Literaturanalyse-Tools konnten wir fünf Forschungsthemen zur Blockchain identifizieren. Wir glauben, dass diese datengesteuerte Literaturrecherche in der Lage sein wird, den Stand dieser Forschung objektiver darzustellen.

Der Rest dieses Papiers ist wie folgt organisiert. Im nächsten Abschnitt gaben wir einen Überblick über die bestehenden Artikel in allen Disziplinen. Wir beschreiben ganzheitlich die Anzahl der Arbeiten im Zusammenhang mit Blockchain und Disziplin Verteilung der Literatur. Anschließend führen wir eine weitere Analyse im Fachbereich Wirtschaft und Wirtschaft durch, wo wir die Länder, Publikationen, hochzitierten Arbeiten usw. analysieren. Wir weisen auch auf die wichtigsten Forschungsthemen dieses Papiers hin, das auf citespace basiert. Es folgen Empfehlungen für vielversprechende Forschungsrichtungen und praktische Anwendungen. Im letzten Abschnitt werden die Schlussfolgerungen und Einschränkungen erörtert.

SCHLUSSFOLGERUNG

Dieses Papier enthält einen Überblick über 756 Artikel zur Blockchain im Web of Science Core Collection. Es zeigt, dass der häufigste Fachbereich Informatik ist, gefolgt von Ingenieurwesen, Telekommunikation und Wirtschaft und Wirtschaft. In der Forschung der Wirtschaft werden mehrere Schlüsselknoten in der Literatur identifiziert, wie die am häufigsten zitierten Artikel, die produktivsten Länder und die häufigsten Schlüsselwörter. Nach einer Clusteranalyse der Keywords identifizierten wir die fünf beliebtesten Forschungsthemen: "wirtschaftlicher Nutzen", "Blockchain-Technologie", "Initial Coin Offerings", "Fintech Revolution" und "Sharing Economy".

Als wichtige aufstrebende Technologie wird Blockchain in vielen Bereichen eine Rolle spielen. Daher glauben wir, dass die Fragen im Zusammenhang mit kommerziellen Anwendungen der Blockchain sowohl für die akademische als auch für die soziale Praxis von entscheidender Bedeutung sind. Wir schlagen mehrere vielversprechende Forschungsrichtungen vor. Die erste wichtige Forschungsrichtung ist das Verständnis der Mechanismen, durch die Blockchain die Unternehmens- und Markteffizienz beeinflusst. Die zweite mögliche Forschungsrichtung sind Datenschutz- und Sicherheitsfragen. Der dritte betrifft die Verwaltung digitaler Währungen und die Regulierung des Kryptowährungsmarktes. Die vierte mögliche Forschungsrichtung ist die tiefe Integration von Blockchain-Technologie und Fintech. Das letzte Thema ist die Cross-Chain-Technologie – wenn jede Branche über ein eigenes Blockchain-System verfügt, müssen Forscher und Entwickler neue Wege zum Datenaustausch entdecken. Dies ist der Schlüssel zur Erreichung des Internets des Wertes. So wird die cross-chain-Technologie im Laufe der Zeit zu einem immer wichtigeren Thema.

Unternehmen können erheblich von der Blockchain-Technologie profitieren. Daher schlagen wir vor, die Anwendung von Blockchain zu berücksichtigen, wenn Unternehmen die folgenden Anforderungen haben: Buchhaltungsabwicklung und Crowdfunding, Datenspeicherung und -freigabe, Supply Chain Management und smart ersichtiger Handel.

Unsere Studie hat einige Einschränkungen erkannt. Zunächst analysiert dieses Papier nur die Literatur in Web of Science Core Collection Datenbanken (WOS), was zur Unvollständigkeit der relevanten Literatur führen kann. Zweitens filtern wir unsere Literaturliste nach der Themenkategorie in WOS. In diesem Prozess haben wir möglicherweise einige relevante Forschungen ausgelassen. Drittens haben unsere Empfehlungen subjektive Einschränkungen. Wir hoffen, in Zukunft weitere Forschungs- und Diskussionen zu initiieren, um diese Punkte anzugehen.

TRANSLATED VERSION: PORTUGUESE

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VERSÃO TRADUZIDA: PORTUGUÊS

Aqui está uma tradução aproximada das ideias acima apresentadas. Isto foi feito para dar uma compreensão geral das ideias apresentadas no documento. Por favor, desculpe todos os erros gramaticais e não responsabilize os autores originais responsáveis por estes erros.

INTRODUÇÃO

Os conceitos de bitcoin e blockchain foram propostos pela primeira vez em 2008 por alguém que usou o pseudônimo Satoshi Nakamoto, que descreveu como a criptologia e um livro-razão distribuído aberto podem ser combinados numa aplicação de moeda digital (Nakamoto 2008). No início, a volatilidade extremamente elevada da bitcoin e as atitudes de muitos países em relação à sua complexidade retardaram um pouco o seu desenvolvimento, mas as vantagens do blockchain - que é a tecnologia subjacente da Bitcoin - atraíram cada vez mais atenção. Algumas das vantagens do blockchain incluem o seu livro de contabilidade distribuído, descentralização, transparência da informação, construção à prova de adulteração e abertura. A evolução da blockchain tem sido um processo progressivo. Blockchain é atualmente delimitada para Blockchain 1.0, 2.0 e 3.0, com base nas suas aplicações. Fornecemos mais detalhes sobre as três gerações de blockchain no Apêndice. A aplicação da tecnologia blockchain estendeu-se desde a moeda digital e ao financiamento, e estendeu-se mesmo gradualmente aos cuidados de saúde, gestão da cadeia de abastecimento, monitorização do mercado, energia inteligente e proteção de direitos de autor (Engelhardt 2017; Hyvarinen et al. 2017; Kim e Laskowski 2018; O'Dair e Beaven 2017; Radanovic e Likic 2018; Savelyev 2018).

A tecnologia Blockchain tem sido estudada por uma grande variedade de disciplinas académicas. Por exemplo, alguns investigadores estudaram a tecnologia subjacente ao blockchain, tais como armazenamento distribuído, networking peer-to-peer, criptografia, contratos inteligentes e algoritmos de consenso (Christidis e Devetsikiotis 2016; Cruz et al. 2018; Kraft 2016). Entretanto, os investigadores legais estão interessados nos regulamentos e leis que regem a tecnologia relacionada com blockchain (Kiviat 2015; Paech 2017). Como diz o velho ditado: os estudiosos de diferentes disciplinas têm muitas perspetivas analíticas diferentes e "falam muitas línguas diferentes". Este trabalho centra-se na análise e penteados de artigos na área dos negócios e da economia. Pretendemos identificar os nós-chave (por exemplo, os artigos e revistas mais influentes) na investigação conexa e encontrar os principais temas de pesquisa do blockchain na nossa disciplina. Além disso, esperamos oferecer algumas recomendações para futuras investigações e fornecer algumas sugestões para as empresas que desejam aplicar blockchain na prática.

Este estudo realizará uma revisão sistemática e objetiva baseada em estatísticas de dados e análises. Descrevemos primeiro o número geral e a distribuição disciplinar de papéis relacionados com blockchain. Um total de 756 artigos de diário foram recuperados. Posteriormente, aperfeiçoámos a área temática para negócios e economia, e conseguimos adicionar 119 artigos à nossa análise mais aprofundada. Então exploramos os países influentes, revistas, artigos e palavras-chave mais comuns. Com base numa ferramenta de análise de literatura científica, conseguimos identificar cinco temas de investigação em blockchain. Acreditamos que esta revisão literária baseada em dados será capaz de apresentar objectivamente o estatuto desta investigação.

O resto deste trabalho é organizado da seguinte forma. Na secção seguinte, fornecemos uma visão geral dos artigos existentes em todas as disciplinas. Descrevemos holisticamente o número de artigos relacionados com blockchain e distribuição disciplinar da literatura. Em seguida, fazemos uma análise mais aprofundada no domínio das empresas e da economia, onde analisamos os países, as publicações, os trabalhos altamente citados, e assim por diante. Também apontamos os principais temas de investigação deste artigo, baseados na citespace. Seguem-se recomendações para a promissoras direções de investigação e aplicações práticas. Na última secção, discutimos as conclusões e limitações.

CONCLUSÃO

Este artigo analisa 756 artigos relacionados com blockchain na Web of Science Core Collection. Mostra que a área de temática mais comum é a Ciência da Computação, seguida da Engenharia, Telecomunicações e Negócios e Economia. Na pesquisa de Negócios e Economia, vários nós chave são identificados na literatura, como os artigos mais citados, os países mais produtivos e as palavras-chave mais comuns. Após uma análise em conjunto das palavras-chave, identificámos os cinco temas de investigação mais populares: "benefício económico", "tecnologia blockchain", "ofertas iniciais de moedas", "revolução fintech" e "economia partilhada".

Como uma importante tecnologia emergente, o blockchain desempenhará um papel em muitos campos. Por conseguinte, acreditamos que as questões relacionadas com as aplicações comerciais do blockchain são fundamentais tanto para a prática académica como para a prática social. Propomos várias direções promissoras de investigação. A primeira direcção importante da investigação é compreender os mecanismos através dos quais a blockchain influencia a eficiência corporativa e de mercado. A segunda direcção potencial de investigação é a protecção da privacidade e as questões de segurança. A terceira diz respeito à forma de gerir as moedas digitais e de como regular o mercado da criptomoeda. A quarta direcção potencial de investigação é como integrar profundamente a tecnologia blockchain e as fintech. O tópico final é a tecnologia cross-chain - se cada indústria tem o seu próprio sistema blockchain, então os investigadores e desenvolvedores devem descobrir novas formas de trocar dados. Esta é a chave para

alcançar a Internet do Valor. Assim, a tecnologia transversal tornar-se-á um tema cada vez mais importante à medida que o tempo passa.

As empresas podem beneficiar consideravelmente da tecnologia blockchain. Por isso, sugerimos que a aplicação do blockchain seja tida em conta quando as empresas têm os seguintes requisitos: liquidação contabilística e crowdfunding, armazenamento e partilha de dados, gestão da cadeia de fornecimento e comércio inteligente.

O nosso estudo reconheceu algumas limitações. Em primeiro lugar, este trabalho apenas analisa a literatura nas bases de dados da Web of Science Core Collection (WOS), o que pode levar à incompletude da literatura relevante. Em segundo lugar, filtramos a nossa base literária sobre a categoria de assunto em WOS. Neste processo, podemos ter omitido algumas investigações relevantes. Em terceiro lugar, as nossas recomendações têm limitações subjetivas. Esperamos iniciar mais investigação e discussões para abordar estes pontos no futuro.

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