An Analysis of Blockchain Definitions: A Post-print Based on the Examination of Papers from Finance, Computer Science, and Journalism and Communication

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Abstract

Discursive power in technology is directly related to dominance in development. This paper collects the top ten most-cited papers on blockchain technology as a research topic from the fields of finance, computer science, and journalism and communication on CNKI (China National Knowledge Infrastructure), clarifies the citation sources of blockchain definitions mentioned in these papers, analyzes word frequency and other aspects in the definitions, and finds that the differences in blockchain definitions across these fields are concentrated in two aspects: application orientation and application scenarios. It further proposes that it is necessary to strengthen China' s discursive power in blockchain technology.

Full Text

An Analysis of Blockchain Definitions: An Examination of Papers from Finance, Computer Science, and Journalism & Communication Fields

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Abstract: Discursive power in technology directly relates to developmental dominance. This paper collects the top ten most-cited papers on blockchain technology from CNKI in the fields of finance, computer science, and journalism & communication, clarifies the citation sources of blockchain definitions mentioned in these papers, and analyzes word frequencies in these definitions. The study finds that differences in blockchain definitions across these three fields concentrate on two aspects: application direction and application scenarios, and

proposes that China needs to strengthen its discursive power in blockchain technology.

Keywords: blockchain definition; comparative analysis; application scenarios; discursive power

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1.1 Citation Source Analysis

In finance-themed blockchain papers, four main definitions prevail. The first, from Wikipedia, describes blockchain as a database technology derived from Bitcoin. The second, from Deloitte, frames blockchain technology as a shared value transfer protocol that provides a public, distributed, secure ledger. The third definition, focusing on technical essence, considers blockchain an independent third-party-free technical solution [**?**]. All three represent extensions by authors who cited existing definitions and adapted them to their research emphases, thereby strengthening the connection between the definition and their arguments. Other authors directly quoted definitions from relevant literature without extensive analysis, instead focusing on blockchain' s disciplinary applications. The fourth definition, from the *China Blockchain Technology and Application Development White Paper*, describes blockchain as a chain structure emphasizing storage of highly secure and tamper-proof data [**?**].

In computer science, definitions predominantly cite foreign literature. Three main definitions appear, sourced from Wikipedia, the 8btc website, and Melanie Swan' s monograph *Blockchain: Blueprint for a New Economy*. These consistently define blockchain as a distributed database originating from Bitcoin—a series of data blocks associated with cryptographic algorithms that can verify transaction authenticity and prevent counterfeiting [**?**]; a database generated using cryptographic methods [**?**]; and an open, transparent, decentralized database [**?**]. All three definitions derive from foreign scholars or industry concepts, analyzing blockchain' s composition principles and identifying its essence as a database. In computer science, blockchain applications similarly center on database functionality, aligning with the selected definitions.

In journalism and communication papers, blockchain definitions rarely cite foreign literature, instead drawing primarily from domestic scholars. Three main definitions emerge. The first, from "Blockchain Revolution and the Role and Responsibility of Mainstream Media," posits that blockchain represents a future worldview and social paradigm built on new technological foundations, exploring how individuals with equal rights can reshape trust and organization [**?**]. In this definition, the author first cites blockchain definitions from other articles before offering corresponding perspectives that integrate blockchain with journalism, arguing that blockchain' s role extends beyond data storage and transmission to constitute a new form of social organization. The second definition, from a broad perspective, considers blockchain technology a new application model of computer technology. The third definition views blockchain as a decentral-

ized database. These latter two definitions originate from the *China Blockchain Technology and Application Development White Paper (2016)* and the journal article *Blockchain Society*, respectively.

1.2 Word Frequency Analysis

To further clarify keywords in the cited papers, this study uses ROST NEWANALYSIS TOOLS to eliminate irrelevant words and present high-frequency keywords in tabular form. In finance papers, blockchain definition keywords include "data," "distributed," "center," "algorithm," and "database," highlighting characteristics such as low cost, security, transparency, and chain structure. Blockchain' s algorithmic functions can record financial information data, transaction processes, and credit indices, accurately presenting finance-related content and data in backend programs. Recording customer credit data and indicators provides convenience for bank credit system management. Blockchain' s distributed ledger technology features strong tamper-resistance and security, with high confidentiality and difficulty of decryption, thereby ensuring security in financial fund transactions.

In computer science papers, blockchain definitions center on keywords such as "data," "center," "node," and "cryptography," emphasizing revolutionary changes in data structure computation methods in computer science and highlighting the widespread application of consensus algorithms. In journalism and communication papers, blockchain definitions focus on "technology," "consensus," and "information." Blockchain' s timestamped database offers storage functions that can preserve information sources, content, and authors, verifying them through multiple methods to strengthen control over false information. The consensus mechanism enables editorial staff to reach agreement on protocols and strategies, implementing authentication and tracking solutions for news information sources.

Through analyzing blockchain definitions used in finance, computer science, and journalism papers, we can observe the cross-disciplinary development and extension of blockchain definitions. As the underlying technology of Bitcoin, blockchain first served as a payment guarantee credential in finance, including stock, bond, and crowdfunding transactions. As blockchain technology continues evolving, its application in computer science operates at the technical level, serving as a programmable means that plays an important role in data editing and operational principles. Some foreign news platforms such as Civil, Presscoin, and Steemi have connected blockchain technology with various aspects of journalism, drawing greater attention to blockchain' s application in news.

In summary, from the perspective of definition content, blockchain definitions will continue to become more specific due to their broad application prospects. From the perspective of definition sources, blockchain' s application across various disciplines in China started relatively late, with few Chinese scholars explicitly providing definitions in blockchain-themed papers, resulting in weak

discursive power regarding blockchain definitions. Going forward, China should focus on developing a discourse system for basic blockchain technology development and definitions, which can help guide the technology' s development direction. Chinese scholars should intensify efforts to explore blockchain definitions, summarizing definitions with Chinese characteristics from the perspective of blockchain' s intrinsic value. They should also connect blockchain definition interpretation with disciplinary practice from the application level, continuously enhancing China' s discursive power in the blockchain field.

References

[1] Jiang Runxiang, Wei Changjiang. Application Progress and Value Exploration of Blockchain [J]. Gansu Finance, 2016(2): 19-21.

[2] Zhu Xingxiong, He Qingsu, Guo Shanqi. Application of Blockchain Technology in Supply Chain Finance [J]. China Circulation Economy, 2018(3): 111-119.

[3] He Pu, Yu Ge, Zhang Yanfeng, Bao Yubin. A Survey of Blockchain Technology and Application Prospects [J]. Computer Science, 2017(4): 1-7+15.

[4] Zhang Ning, Wang Yi, Kang Chongqing, Cheng Jiangnan, He Dawei. Blockchain Technology in Energy Internet: Research Framework and Typical Application Preliminary Study [J]. Proceedings of the CSEE, 2016(15): 4011-4023.

[5] Yu Guoming. Blockchain Revolution and the Role and Responsibility of Mainstream Media [J]. News and Writing, 2018(9): 64-67.

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Note: Figure translations are in progress. See original paper for figures.