Unit 4 Article Review - Deloitte CFO Insights

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The issue with blockchain technology is that involves such a fundamentally different computing paradigm compared to the tried and tested 1980s client-server model; It's difficult to predict the kind of impact the technology is going to have on markets and businesses. Cybersecurity and data protection is a very siloed task in the client-server model, where each individual department within a bank or business follows their own procedures for securing their operational data. de Moll et al. (2020) from Delliote United States published an article calling on all Chief Financial Officers (CFO) to begin exploring the impact of this technology while also not taking excessive risks that could otherwise jeopardize their business. They highlight the challenges in the blockchain space, since research into the technology can deviate quite a bit from the focus a particular company might have. This paper summarizes the direction the Deloitte United States team recommends CFOs and other financial leaders around the world take to begin exploring blockchain development, while also exploring what the current publications say about how blockchains can improve Business-To-Business transaction processing. The focus of this review is on corporate governance through hybrid blockchain transaction processing systems and how a combination of intermediation and disintermediation could lead to novel consensus mechanisms that address the confidentiality, security, and scalability issues present in the blockchain products of today.

Proceeding With Caution and Exploring JPM Coin

de Moll et al. recommend CFOs not just assume their business functions need blockchain technology and first begin with forgetting about the technology itself altogether. Instead, they recommend CFOs focus on brainstorming ideas on how blockchain could disrupt their own

particular operating model and whether or not it is worth it for the organization to dedicate efforts towards exploring the tech. The key thing here is that blockchain technology is about getting different companies and departments together to engage in multiparty transactions. Blockchain is about creating a consortia of business leaders who can work together to generate value and provide network security. The central idea here is governance. Particularly, data, information, security, analysis, and AI governance. As this paper will later delve into, governance is best handled through hybrid blockchain models which make use of both public and private blockchains.

This issue of CFO insights also featured the surprising move JP Morgan Chase made when entering the cryptocurrency market and creating a coin of their own. JPM Coin makes use of a permissioned blockchain that allows for enhanced liquidity management for corporate banking clients. While the cryptocurrency is closed off to the general consumer market for now, it's surprising to see such an established bank like Chase pursue product development in the blockchain space. While big players like Chase may not end up being the businesses that usher forth a new era of data exchange (this will likely be from trailblazers who have no operating costs and focus solely on blockchain), it goes to show how seriously companies of all sizes are taking this technology.

Governance : Why Go Hybrid and Not Public or Private?

The vision of the blockchain as described by Satoshi Nakamoto in around 2008 did not exactly endorse Know Your Customer (KYC) policies, any form of intermediation, or any kind of truly customizable governance agreement capabilities you find in blockchains like Ethereum (through the use of smart contracts). The advocacy of hybrid blockchains that make use of a

combination of client-server (CS) and peer-to-peer (P2P) server models is just not in the original vision of the cryto-punk movement. A fully public blockchain is completely transparent, tries to be as democratic as possible, but at the same time, it enables anarchy and fraud to quite a large extent. Ethereum, for example, has been struggling to manage economic/cyber attacks on their platform. Also, public blockchains suffer from scalability issues, since they rely on computers usually proving they have expending a lot of computer power in transaction validation through the consensus protocol known as Proof of Work. Private blockchains, on the other hand, can be too similar to the 1980s CS model. This blockchain governance model places an emphasis on KYC policies, which makes them closed off to the public for reading or writing data. The hybrid blockchain, which combines elements from both private and public blockchains, could be answer we need for better nuance and capabilities - academia and the peer-reviewed literature seems to agree.

Kim et al. (2022) describe hybrid blockchains and how the startup Insolar is leveraging hybrid chains. Hybrid chains allow for blockchains to better incorporate design concepts like interoperability, which can especially improve the end-user experience within inter-organizational networks. The difficulty is reconciling data between different public or private blockchains in real-time is no easy task. In fact, many organizations struggle with reconciling data in real-time between two businesses servers operating under the client-server model. Hybrid blockchains essentially fundamentally reexamine the concept of data interoperability. Kim et al. recommend using a semantic layer such as a SQL-based data model and embed it in a smart contract. Since Insolar is on the Etheteum blockchain, the rest of Kim et al.'s paper goes into a little about the feasibility of different product architectures on Ethereum, such as hard-

forks or side-chains. It exciting to see that hybrid governance is indeed possible on Ethereum's blockchain, but what about consensus? How can we move past the limitations of Nakamoto-style consensus mechanisms?

Novel Consensus Mechanisms on Hybrid Blockchains: Blockchain Governance Games (BGGs)

Smart contracts are definitely important, but platforms like Ethereum, which make use of Proof of Stake (PoS) or PoW, need to make use of a new consensus mechanisms for a number of reasons. Developers currently have no control over what consensus mechanism the Ethereum platform uses, since Vitalik Buterin has the final say in the growth of the platform (as odd as it is, blockchain products still end up with "Benevolent Dictators For Life" as leaders). Kim (2023) proposes a new class of consensus mechanisms that make use of hybrid governance structures to better envision dreams from the cryto-punk movement, while providing more economic solutions to the 51% attack than PoW's requirement of proving miners have expended sufficient energy playing a guessing game. Specifically, Kim discusses the concept of the Blockchain Governance Game (BGG), which is still a theoretical stochastic game framework for determining the best strategies for preventing network failures. BGGs can be seen as an alternative to the Trusted Execution Environment (TEE), meaning it is another way of preserving integrity and confidentiality between nodes in a network, which in this case is the business consortium.

Conclusion

Deloitte's United States branch has announced a call to action for CFOs around the world. While blockchain technology itself is a complicated beast that might take a number of independent actors to realize production applications that are actually profitable, almost every

company on this planet will be affected by the technology. Hybrid blockchains, which make use

of both public and private blockchains, prove to be the most promising in terms of scalability,

security, confidentiality, and interoperability. Being able to apply a KYC policy to at least the

mining nodes could make it more easy to govern the consensus layer and prevent the excessive

energy wastage we see in PoW. BGGs prove to be a novel way to develop decision tasks that are

more efficient than PoW. More work needs to be done by trailblazers to examine fluctuation

theory, Markovian distributions, and cohomological groups for federated aggregations, which

could ultimately lead to viable blockchains for production use-cases.

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