

How Will Blockchain Change Corporate Governance?

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Abstract In this article, we examine the importance of the blockchain on the corporate governance. Then, we find that the blockchain and smart contracts offer a solution to reduce these costs borne by the company. Thanks to blockchain and smart contracts, trust is not based on the organization, but rather on the security and auditability of the code that is verified by all the actors.

Keywords: *blockchain, cryptocurrency, bitcoin, corporate governance*

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1. Introduction

Governance research continues to focus on the role of the board of directors, the impact of auditing standards, executive compensation methods, or corporate fundraising issues, as well as the articulation of corporate governance, the company's relations with its various partners, new forms of governance such as cooperatives, the specificities of family businesses, diversity issues in governance (gender, in particular). CSR is also very well represented in current governance issues.

This trajectory of work in governance is taking a new direction today. A new object of governance appeared recently, complex to identify, resulting from what one could name the "digitalisation of the real". Through big data (more or less big), statistical processing (the algorithm) becomes a lever of governance: it predicts, it guides the action, even it decides. It can do this almost autonomously by unsupervised learning. At the same time, a second effect of this digitization is a massive sharing of information [1,2,3].

This new object - or these new objects - resulting from the digital transformation all rely on information. This is one of the reasons why governance research is particularly qualified to lead these reflections. Information is indeed the major issue of governance issues, because it is from the latter that the decision is organized, that power is exercised and action in companies or more generally organizations.

Bitcoin has achieved the feat of establishing itself as the first cryptocurrency network totally decentralized to the general public. It is used by millions of people around the world and continues to attract more and more users and public and private institutions.

Bitcoin thus appears as a true "proof-of-concept" of a completely decentralized exchange network without intermediaries in opposition to the traditional financial market. It is based on blockchain technology that allows information to be stored and transmitted transparently, securely and without validation from a central control body [4,5,6].

Rather than trusting a trusted third party to validate transactions, they are certified by a peer-to-peer computer network acting as a server that will execute the blockchain protocol and validate the information by consensus.

Also, the potential of this technology goes far beyond the scope of financial transactions and begins to invest in other areas such as health, the art market or energy.

One of the important but still little discussed aspects of this technology is the potential changes in corporate governance. By proposing a new way of apprehending contracts and bypassing the traditional dilemmas of agency theory, namely the agent-principal dilemma and agency costs [7,8], the blockchain could well sign the end of traditional centralized and hierarchical structures with the emergence of new forms of organizations.

The rest of this paper is structured as follow. Section 2 shows the chain of blocks of a changing world. In section 3, we present the application of blockchain technology to the world of insurance. Finally, section 4 concludes and remarks.

2. Rethinking Governance with Smart Contracts

The work of the economists Jensen and Meckling [7] on agency theory, a classic in organizational management, offers an interesting insight into the stakes of blockchain technology in the governance of organizations. According

to the theory of the agency, any organization consists of a set of contracts that define the relationships of the actors. A principal-agent relationship exists when one party (the agent) agrees to act on behalf of another party (the principal).

For Jensen and Meckling [7], the company is "nothing more than a series of contracts and relationships" that ensures trust between the parties. Governance is therefore about designing contracts with devices that optimally allocate property rights, create ownership structures, and define mechanisms so that interests are aligned between the principal and the agent.

Also, the blockchain offers a new, technological way of designing a governance model based on a computerized management of trust through smart contracts. Smart contracts are blockchain-based computer protocols that audit, monitor and enforce the negotiation and execution of a contract.

An example often cited to explain smart contracts is the purchase of music on Apple's iTunes platform. The computer code ensures that the buyer can only listen to the music file on a limited number of Apple devices. Thanks to blockchain technology and smart contracts, it is possible to guarantee trust in the entire contractual process, namely:

- The agreement represents the set of rules and defines the links, conditions, rights and obligations between the principal and the agent. It is electronically sealed by the smart contract. The agreement is validated by opt-in an action, that is to say that they are subject to prior consent. It is therefore an effective contractual choice and not a constraint on the parties when drafting their contract.
- The formalization that is done digitally using a computer code contained in the smart contract.
- The execution of the contract which is now done automatically thanks to the computer code which constantly checks, in near real time, the agreement between the principal and the agent.

3. Optimal Management of Agency Costs

In a classical governance model, several problems can arise because the agent is defined as opportunistic and seeks to maximize his personal interests beyond the wishes of the principal, and asymmetry of information between the parties [7].

Indeed, the delegation of power is associated with an imperfection of information that can be of two kinds: the principal has only limited information on the characteristics of the agent (so-called opposite selection situation) and he observes imperfectly his behavior (situation called moral hazard).

As a result, there are two issues related to uncertainty and verifiability because contracts cannot be contingent on events whose realization can only be observed by one party. Opportunistic behavior and asymmetry in the distribution of information between the agent and the principal entail agency costs because the principal must set up incentive systems but also control mechanisms (supervision and supervision) to ensure that the interests of one are aligned with those of the other.

As Nobel Prize winner Oliver Williamson [8] explains, these costs must be minimized so that the company can produce optimally.

The blockchain and smart contracts offer a solution to reduce these costs borne by the company. Thanks to blockchain and smart contracts, trust is not based on the organization, but rather on the security and auditability of the code that is verified by all the actors.

First of all, the transparency of the blockchain makes the information held by the agent and the principal completely verifiable. This removes ex-ante or ex-post opportunism [8] from the agent since all the information is presented to the actors. To continue, the uncertainty and uncertainty related to the transaction that previously weighed on the third party responsible for executing the contract no longer need to be because smart contracts certify in real time real transaction process.

These guarantees ensure that no participant can bypass the rules built into the blockchain. The difficulty of compelling or encouraging the parties to respect their commitments is no longer relevant since the computer code validates in real time the execution of the contract.

In addition, all of the agent's control tasks are now delegated to the blockchain and makes it possible to dispense with human management based on good will and therefore potentially fallible. In addition, blockchain and smart contracts reduce bureaucracy costs by standardizing the transaction rules of contracts between parties that are embedded in a computer code and validate electronically.

Finally, the issuance of electronic governance tokens can play the role of incentive and allow the establishment of opt-in and opt-out mechanisms rather than go through the traditional slow and imperfect top down structure while offering formal guarantees for the principal and the agent on their mutual collaborations. The blockchain thus promotes more collaboration and flexibility in corporate governance.

4. Towards a New Form of Governance with Decentralized Collaborative Organizations

The blockchain compromises the economic efficiency of hierarchies (which exploits incomplete contracts) and relational contracts (which requires trust between the parties). It eliminates the opportunism and transaction costs of stakeholders through transparency and governance mechanisms automatically executed in the form of smart contracts.

Also, new forms of fully decentralized organization such as decentralized collaborative organization (COD) are starting to emerge.

As the researcher Primavera Fillipi explains, they are based on the main principles of stigmergy observed especially in the provided. It also includes mechanisms resulting from holacracy, namely a circular organization without a chain of command and the use of roles that evolve according to the needs of the project. By removing these elements, the organization is refocusing its core business.

Several start-ups like Backfeed.cc or Colony.io are working to develop tools to implement this new form of governance. Experiments like the OuiFest festival edition showed that this was possible. However, several issues relating to contracting, namely can we really measure everything or evaluate?

5. Conclusion

Beyond its sulphurous media and its technical limits, legal or conceptual, bitcoin has had the merit of bringing out the blockchain technology on which it was built. The advantages of the blockchain can be summarized by the following five characteristics:

- The blockchain makes possible the disintermediation and therefore the direct exchange between users without trusted intermediary (regulator or central authority) through the use of algorithmic technology based on high-level cryptography that establishes this trust;
- It works through a decentralized consensus mechanism with a distributed and replicated register on all nodes of the network and a check performed by a community of users according to a majority principle;
- It ensures traceability via the time stamped registration of all transactions in a distributed register available to all;
- It is transparent and can be audited because of the ability to trace the entire chain and find the transaction history;
- It guarantees the inalterability and inviolability of the information because the transaction blocks are etched permanently and cannot be modified.

The blockchain, however, knows a number of limits, especially technical, which remain major obstacles to its industrialization and its generalization. It must therefore mature before it can be deployed on a large scale, and remains waiting for the killer app that will have the same effect as the browser for the Internet.

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