**Blockchain Accounting ― On the Way to a Paradigm Shift**

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Accounting is a mature and well-established academic discipline for several hundred years. Though the practice of accounting has also been adaptive to technical development, e.g., the use of instruments like calculator or computer, the property of accounting remains unchanged. Recently, with the development of blockchain, the foundation of accounting could be significantly influenced.

There are commonly two main types of business transaction, Business-to-Business (B2B) and Business-to-Customer (B2C). In B2B, both participating parties keep the transaction records in their own private ledger; this enables the reconciliation of the account. In the other case of B2C, the business keeps record of the transaction details while the customer usually does not. This leaves a room for fraud because we rely solely on the unilateral report of the business party. Blockchain technology could be implemented to change the situation.

In fact, there are several requirements to stimulate the evolution of accounting in the modern society. Electronic commerce and mobile commerce that close thousands of transactions within a short time call for real-time accounting. Electronic invoice system enables automated bookkeeping. International Financial Reporting Standards (IFRS) claim for financial transparency and promote internationalization, and, but not the last, big data analytics and artificial intelligence should support modern management accounting. These are the drivers to the evolution of accounting, probably to blockchain accounting.

Blockchain, especially its underlying distributed ledger technology (DLT), enjoys some unique properties that are

1. multiple backup of transactions to avoid system collapse caused by single node failure,
2. decentralized and independent processing to foster trust through consensus,
3. irreversibility once if a transaction is recorded on the blockchain to resist forgery,
4. data transparency to all members of the system,
5. timestamping keeping track of the creation of the data block, and
6. confidentiality and integrity through encryption and digital signature where an asymmetric cryptography is applied.

The above-mentioned properties meet the accounting requirements in the modern business environment. However, there are several fundamental points that are not coincident with current accounting practice, mainly,

1. Accounting is an action under governmental supervision while blockchain accounting undergoes self-governance.
2. The trust of current financial reports comes from the appraisal of authoritative accountants while it is maintained democratically by all members.
3. The double-entry bookkeeping system has been used for several hundred years which facilitates account reconciliation. It is not necessary in blockchain accounting because a transaction is recorded one time.
4. The environment supporting the implementation of smart contracts is not mature; economic activities should comply with national regulations that vary from country to country, sometimes even from transaction to transaction.

Therefore, the realization of blockchain accounting will take place in an evolutional way, but it has got started. The automated invoice system that supports automated bookkeeping is put in enforce in many countries. *e-*Commerce and *m-*Commerce facilitate real-time accounting. Many for non-profit organizations call for financial transparency. They are the first initiatives to implement blockchain accounting.

 Since blockchain accounting will not be realized at a single leap, it requires a stepwise development. In the first stage, we will adopt the triple-entry bookkeeping system in which a public ledger is utilized. In the public ledger, the properties of blockchain are exploited, especially multiple copies of the transaction data enabling data correctness, tamper-proof, data transparency, and data integrity. In this initial stage, accounting takes place as it is today, completely complying with national regulation. The expected participants are social associations and for-non-profit organizations because they have a simple accountancy and their financial state should be totally transparent.

 In the next step, a lot of small and medium-sized businesses are invited. It is suggested that private ledger can be abandoned if they are no more necessary. National regulations should be modified to adopt blockchain. The more the participants, the more benefits the blockchain accounting. In this stage, accountants will make use of their expertise and focus on the check of forged transactions. Blockchain will change their task of auditing.

Finally, big businesses will join the blockchain accounting and a world-wide public ledger will be established. It is especially beneficial for international businesses because they have branches in many countries. Smart contracts will be widely used and transactions will be executed and recorded automatically. The accountants will involve more in financial decision rather than in tedious account reconciliation.

To sum up, blockchain is very likely to change the fundamentals of accounting and the environment for nurturing blockchain accounting is becoming mature. It will make financial reports more secure, trustworthy and transparent. Accountants will be no more busy with tedious account reconciliation; instead, they will be more involved in the financial decision and management because the financial report will correctly reflect the real-time business financial state. We might conclude that blockchain accounting is very likely to redefine the function and requirement of accounting in the industry. A paradigm shift is on the way!