

BLOCKCHAIN AND ITS APPLICATION TO PUBLIC SECTOR ACCOUNTING IN INDONESIA

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Abstract: The main purpose of this research is to analyze the existing literature on the importance of Blockchain and its possible impact on the Public Sector Accounting In Indonesia. This research design applies literature study approach on blockchain and its application to Public Sector Accounting in Indonesia. The data analysis technique is done by clarifying some of the terminological confusion that exists with regards to blockchain, and what challenges could be the future of this technology. The results of this study find that Blockchain as a public sector accounting application in Indonesia involves an important transformation of the traditional accounting system, with modification consequences that result in high levels of performance. One of the main contributions of this research is the importance of understanding information technology, being one of the first to analyze the impact of Blockchain in public sector accounting in Indonesia. Data and information used in the preparation of blockchain planning documents must be data that has been inputted into the Regional Development Information System (RDIS/SIPD).

Keywords: Blockchain, Accounting System, and Public Sector

Introduction

In Indonesia, blockchain technology has actually been implemented, such as PT Bank Central Asia Tbk (BCA). BCA has implemented blockchain internally to speed up payment transactions and reduce the complexity of back office transactions. State-Owned Enterprises (SOEs) have also glanced at blockchain, namely PT Pos Indonesia. The logistics company is developing *Digi.ro.in*, a current account service that adopts blockchain technology. Blockchain was originally designed to be a complementary technology to bitcoin. As the times evolve blockchain is likely to move from a support tool to a tool that has a huge impact on financial services and other industries (Fanning and Centers, 2016). Blockchain technology is attracting attention due to its key features of security, anonymity, and data integrity, without third parties controlling transactions. Therefore, there is more and more interest in this area of research from the perspective of technical challenges and limitations (Yli et al, 2016).

We can say that the concept of trust lies squarely in the fact that it does not require trust. Blockchain applications in accounting are one of the most contentious issues (Young, 2017). In the rare accounting literature that exists, Blockchain has been defined from Single-Entry bookkeeping to accounting Triple-Entry (O'Leary, 2017). In the future, it is very important to review the previous literature in this study. Currently the development of blockchain also leads to Public Sector Accounting which implements block-based accounting information systems. Referring to article 274, SIPD is now an integral part in the process of preparing regional development planning documents. The birth of SIPD was motivated by conditions that are quite strange. For example, in the past regional development data (tends to be) incomplete and spread

in each Regional Device Work Unit (SKPD), also rarely updated. In addition, other conditions, Bappeda faces serious obstacles in collecting data from SKPD due to weak coordination between Bappeda and SKPD, lack of human resources and funding in Bappeda for data management, and lack of strong desire (political will) from the leadership (to encourage data and information). This technology can be called Blockchain which is to group transaction information in blocks. Blockchain as a public ledger of executed transactions (Nofer, et al, 2017) open trade ledger, or a distributed ledger with no trust that is publicly available and has negligible usage costs (Fierro et al, 2017).

Other conditions that need attention in the implementation of blockchain, namely the process of formulating strategies, policies, and development programs that previously have not been fully supported by the availability of accurate and adequate data and information. "(In the past) it has not been supported (data and information) that really describes the conditions, potential, and real problems in the area," he said, because of the weak government development through program planning and activities for coaching and supervision to local governments.

Seeing that, the importance of implementing blockchain as a medium that serves to compile regional development data, while providing data provision services for policy formulation. SIPD will become a system that documents, administrats, and processes regional development data into information presented to the community and as a decision-making material in the framework of planning, implementing, evaluating the performance of local governments. Meanwhile, the goal is to optimize the utilization of regional development data and information.

In this case the government has issued Law No. 25 of 2004 on the National Development Planning System; PP Number 8 of 2008 which is further elaborated in Article 13 Permendagri No. 54 of 2010 on The Procedure for Implementation of PP Number 8 of 2008; Law No. 23 of 2014 on Local Government; and Permendagri Number 8 of 2014 on Regional Development Information System. In Law No. 23 of 2014, article 274 affirmed that regional development planning is based on data and information managed in the Regional Development Information System.

With the issuance of several legal umbrellas, as an implication, local governments have obligations related to data and information. First, local governments are obliged to provide local government information, namely: regional development information and regional financial information. Second, local government information is managed in a local government information system. Concrete steps, local governments must collect, fill, and evaluate SIPD data. Furthermore, SIPD data is processed and presented in the form of regional development information. In addition, local governments need to use regional development information as a reference in regional development planning and regional spatial planning. The policy issued by the government is intended to improve the quality of development planning, control, and evaluation through support for the availability of accurate, up-to-date and accountable regional development data and information.

Given this phenomenon, Blockchain is said to have the opportunity to become a transformative technology (Önder & Gunter, 2020). There is considerable agreement that the technology will have an important impact. According to some, the impact will be transformational, on economic exchange and development. It is a technological institution that will be an important step in humanity's desire to exchange values reducing uncertainty (Nofer et al, 2017). Therefore, it is believed that blockchain can become the fifth disruptive computing paradigm and be part of a group of computing paradigms consisting of mainframes, PCs, the Internet and mobile/social networks (Pierro, 2017).

Literature riview previously examined how blockchain is implemented in various sectors such as banking or financial sector, health care, accounting or audit. The study conducted on the importance of Blockchain and its usefulness in accounting, it shows that through this system, transactions can not only be recorded, but transactions can be measured, verified and classified

without the need for intermediaries. This means cost savings for companies in the future and will certainly provide the greatest transparency for their stakeholders. In addition, implementing the Blockchain system in accounting is directly related to the trust of information presented by the company and involves continuous auditing whenever there is a transaction, which is an advantage for the company (Benchoufi & Ravaud, 2017). Other research on the issue also agrees that blockchain implementation in accounting can have many advantages for companies, as well as for their internal and external users (Rückeshäuser, 2017).

Literature Review

Blockchain

Blockchain and cryptocurrency are one of the most disruptive technologies. Tapscott and illustrate that Blockchain is a revolutionary technology in the 21st century. According to Swan, Blockchain has the potential to change various lives both social, economic, political, governmental, legal and cultural (Risius & Spohrer, 2017).

The existence of Blockchain technology has a long history and is allegedly associated with a group calling itself Cypherpunk. This group wants privacy in economic transactions and social relations in the era of open society and all electronic. When several parties make a transaction, it must be ensured that each party only knows the content of the transaction. The identity of the transacting party must be ensured as little as possible revealed to other parties or the public (Demirkan, et al, 2020). Blockchain is a rule in computer science that aims to know the structure and sharing of data. But now Blockchain is the "fifth evolution" of the current development of computing so that Blockchain can be interpreted as a data structure that allows us to create a digital book from a data and share data in a network (Fullana, O., & Ruiz, 2021).

Blockchain acts as a protocol that allows parties to transfer value or assets without any third or trusted party. Transfers are publicly recorded and validated by the network, allowing a variety of assets to be traded. To build trust without intermediaries, all transactions bundled and stored locally in blocks are verified on many different participant-owned devices (nodes) of the network. The block comes with a hash code that contains numbers and letters created with respect to the information stored in this block. The hash code serves to connect blocks, where each subsequent block refers to the hash of the previous block (Dai & Vasarhelyi, 2017).

The current types of blockchains include (Tapscott, 2016):

- a. Public Blockchain
Public Blockchain is a Blockchain that provides requirements for developers when developing systems within the Blockchain network. The source code provided may be open or not.
- b. Permissive Blockchain
Permissive Blockchain is a Blockchain that provides requirements for developers when developing systems within the Blockchain network.
- c. Private Blockchain
A private blockchain is a blockchain that has a small scale of use and does not require native tokens. This blockchain is a favorite for consortium participants who have trusted members.

These three blockchains use cryptographic functions to allow each participant (Node) in a particular network to manage ledgers securely by involving third parties as controls.

Blockchain implementation in the accounting area

The application of Blockchain in the area of accounting to analyze different types of accounting is that blockchain accounting is based on Triple-Entry bookkeeping accounting (Faccia, 2020). We advocate the full validity of Double-Entry bookkeeping (the financial accounting system used by companies today), maintaining that so-called Triple-Entry bookkeeping equals verified Double-Entry bookkeeping (Nicolò, 2020). Another blockchain-related concept is Distributed Ledger Technology (DLT). Since Blockchain and DLT are digitized and decentralized notebooks, it is often confusing what each is referring to. Literature reviews

show that Blockchain is a type of DLT with certain features, but not all DLT is Blockchain. DLT is simply a decentralized database managed by various participants, and we fall that with its broad and broad goals, It will better adapt than Blockchain to research subject matter, accounting.

To achieve the objectives set out in this study, a literature review of blockchain implementation in the field of accounting will be conducted. Since there are no such implementation cases at this time, it is impossible to use different research methodologies (such as case studies; data-driven research models, etc.) other than literature reviews. This research study contributes to the academic literature on Blockchain in general. In addition, a review of the literature has shown a rare academic study of the importance of blockchain systems in accounting. Therefore, this text will appeal to the academic literature to develop empirical studies to prove practically the many advantages that the application of blockchain systems brings to companies. We state that changes in the accounting system are coming, so that academic accounting research can go hand in hand with programmers and technicians in the study of current and future uses of Blockchain in the company (Liu et al, 2020). This will require an ongoing dialogue between accounting, which is ours, and technology, because it will forever change our relationship with the digital world.

Digitalisation of the accounting system is still in its infancy compared to other industries, some of which have been massively disrupted by the advances of technology. Some of the reasons may be found in the exceptionally high regulatory requirements in respect to validity and integrity. The entire accounting system is built, such that forgery is impossible or at least very costly. To achieve this it relies on mutual control mechanisms, checks and balances. This inevitably affects every day's operations. Among other things there are systematic duplication of efforts, extensive documentations and periodical controls. Most of them are manual, labour intensive tasks and far from being automated. To date, that seemed to be the sacrifice of revealing the truth.

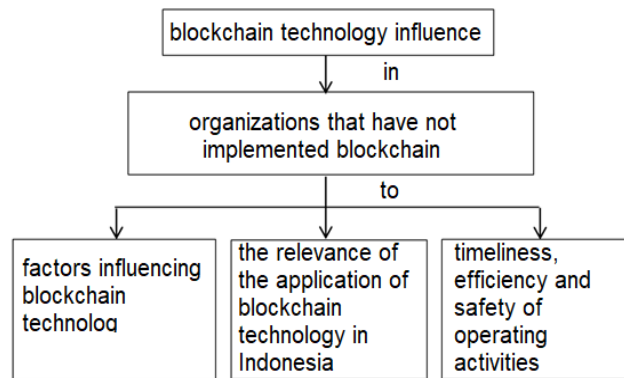
Method

This research is a qualitative study with library research. Literature research is more than just serving the functions mentioned to obtain research data. Strictly, library research limits its activities only to library collection materials only without the need for field research (Irawan, 2022). Qualitative research of literature studies is used to examine the application of blockchain in the framework of SIPD Management Accounting System. The data source used in this study is secondary data. In this study, secondary data comes from literature, articles, journals and sites on the internet related to research conducted. The secondary data taken is literature on how blockchain works that will help the financial accounting information system of the region.

Result and Discussion

Result

The presence of blockchain technology is an opportunity for Public Sector Accounting to achieve more timely, efficient and secure data processing. Putting aside the benefits that may be obtained, blockchain itself is a concept that is still in the development stage (Fullana & Ruiz, 2021) where its application to an industry can not be ascertained the impact and what factors affect the process of implementing blockchain technology. Therefore, in deciding on the use of this blockchain technology, the government in the regional financial statement information sector may need to consider the results of the application of blockchain from various perspectives.



Blockchain technology may represent the next step for accounting:2 Instead of keeping separate records based on transaction receipts, companies can write their transactions directly into a joint register, creating an interlocking system of enduring accounting records. Since all entries are distributed and cryptographically sealed, falsifying or destroying them to conceal activity is practically impossible. It is similar to the transaction being verified by a notary – only in an electronic way.

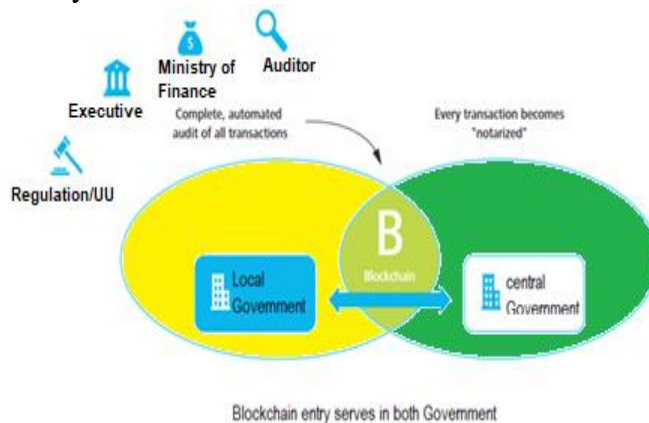


Fig. 1 – Blockchain technology enables complete, conclusive verification without a trusted party

The companies would benefit in many ways: Standardisation would allow auditors to verify a large portion of the most important data behind the financial statements automatically. The cost and time necessary to conduct an audit would decline considerably. Auditors could spend freed up time on areas they can add more value, e.g. on very complex transactions or on internal control.

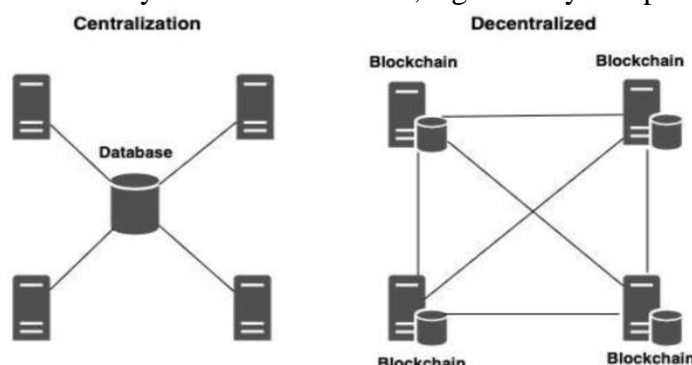


Fig.2. Decentralization Concept on Blockchain

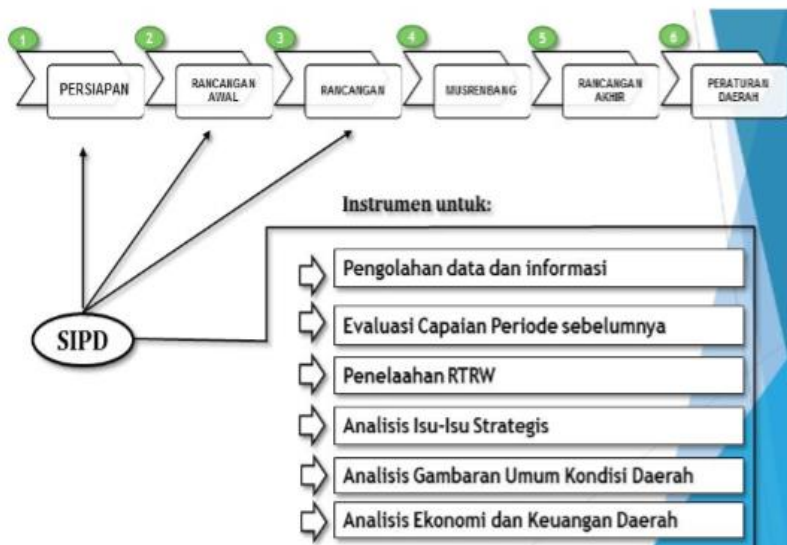


Fig 3. SIPD Design
Source : Kemendagri, 2021

SIPD basically summarizes the process of preparing regional planning documents as a tool in the provision of data for data and information processing, evaluation of previous period achievements, RTRW research, analysis of strategic issues, analysis of general overview of regional conditions, analysis of regional financial economy. So that in the preparation of planning documents.

Main page

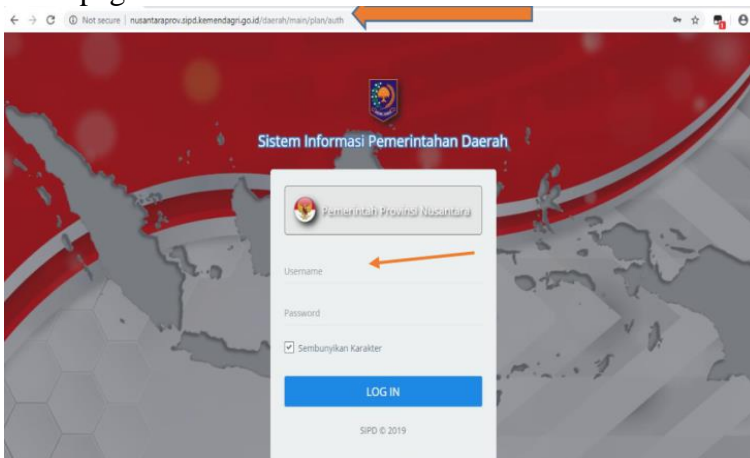


Fig.3. Main page
SKPD Admin User (Head of SKPD)

SKPD User Admin in this case the Head of SKPD logs in using their respective users, with their respective passwords from regional admins or TAPD. Furthermore, after the user logs in, it will appear as the following image:

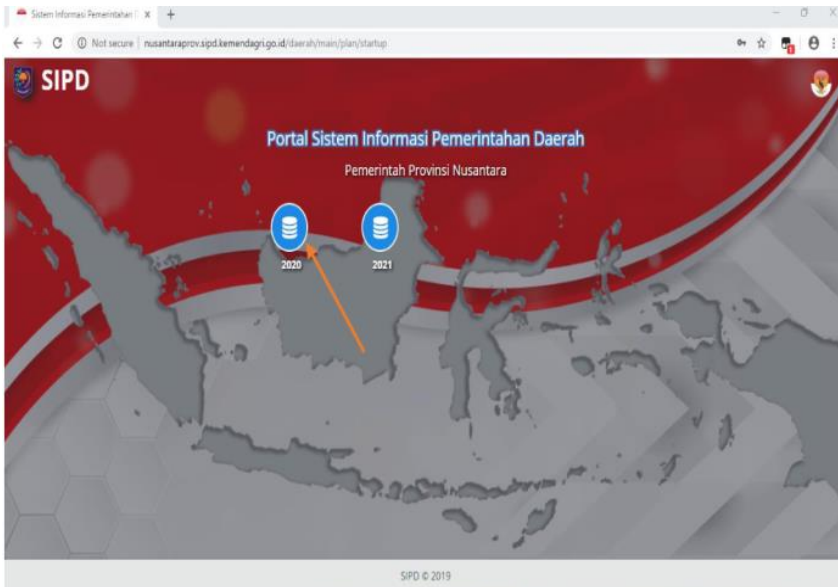


Fig.4. Front page

After you look at Figure 2, then click the menu that shows the year of planning and budgeting.

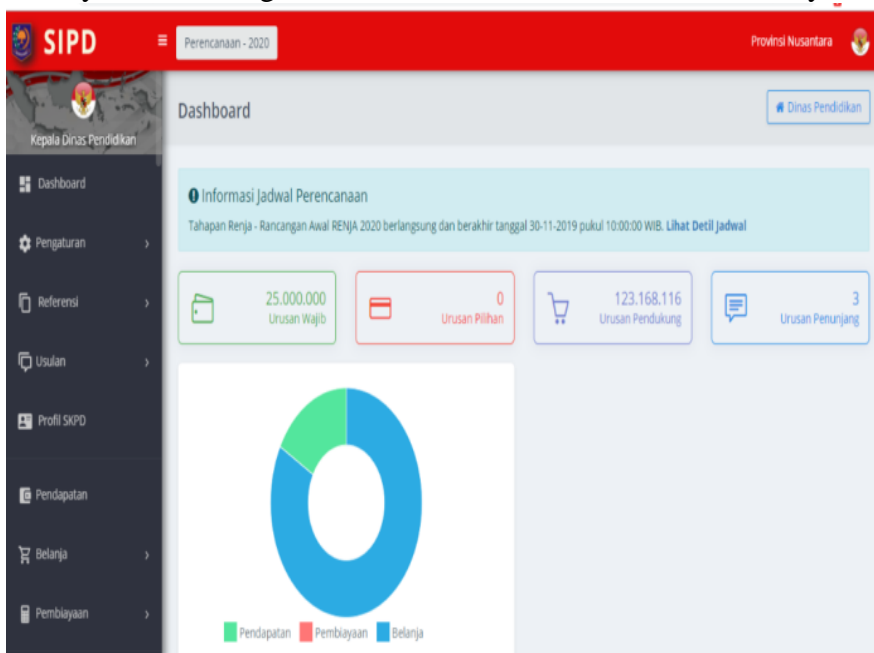


Fig 5. Dashboard Page

As seen in Figure 3 of the Dashboard Page above can be explained as follows:

- In the upper left corner there is the name of each Regional Device.
- There is a Menu Planning-2020 is the year of planning according to the input of the stage schedule in TAPD
- Information Schedule Stages are stages made by TAPD Total Recapitulation of Direct Shopping based on Mandatory Affairs, Choices, Supporters and Support.
- Diagram of total revenue, spending and financing

Discussion

Without realizing the presence of coronavirus pandemic or covid-19 in all parts of the world forces humans to change. Covid-19 forces the country to change the lives of its people which has

become a habit. Covid-19 forced the economy of a world to fall drastically. Covid-19 is able to force the exchange rate and JCI to be volatile.

As blockchain technology progresses, accounting has changed a lot. Digitization of accounting systems is inevitable with the presence of blockchain accounting. Blockchain is more or less defined as a threat, data distribution or public ledger that records all digital transactions or events effectively, efficiently and permanently. Blockchain ac-calculates that provide several advantages (Demirkan & McKee, 2020), namely: (1) reduce the cost of keeping records, (2) authenticity of information, (3) focus on activities that provide added value, (4) reduce fraud, (5) reduce the need for reconciliation, and (6) timely reporting.

A block chain is a digital ledger that records different transactions made on a network. Blockchain has the potential to be useful as in the previous paragraph. Blockchain has turned financial manual reporting towards a digital system that creates truth for all involved. Thus the evolution carried out by Blockchain does not completely disappear the needs of an accountant. But the presence of Blockchain will change the working pattern or the way accountants do their professional work.

The use of blockchain can boost the potential of the accounting profession by reducing maintenance costs and reconciling the ledger. Nevertheless blockchain can be a camoufl for accounting because blockchain will take over the job of accountants. Reality shows that the chains empower this accounting profession to validate economic realities. Blockchain provides potential to accounting and auditing. Blockchain helps auditors to track an account. Blockchain technology for Audi- to conduct audit searches it tracks. For an accountant, Blockchain helps with branding, tracing asset ownership and error transactions (Pedreño et al, 2021). Blockchain can be used as a source of leverage for data reported by accountants to users of the information that is accounting generated. Blockchain is one of the most important technologies that can improve efficiency and transparency. So blockchain which is a nuisance cannot be avoided by running. But blockchain must be welcomed because blockchain provides benefits that increase the potential of the profession, one of which is accountants.

Welcome disruption with a change of sincerity and smile and courage Of wisdom will make people forget the comfort zone in the past. Dealing with disruption with a smile shows that individuals who do change see that disruption will provide a better change than now. It's brave to show that people are disturbed not afraid to face distractions. It must be admitted that fear is always human in the face of distraction. It is courage that will bring people to disruption as friends who are able to increase the potential abilities of individuals (Pashkevych et al, 2020). Blockchain can be an alternative to accounting fraud prevention. Blockchain as the concept of implementing accounting fraud can be utilized by internal companies. Blockchain is utilized with a distributed system that unites and contest divisions and increases transparency of the financial state of the company throughout the use of corporate assets in each division. Blockchain can also be utilized by external companies. Establishing an anti-fraud relationship between the company's management and the company's external parties, parties related to the company's finances such as IDX, investors, external auditors can see the company's financial information in real time.

Conclusion

Blockchain as a public sector accounting application in Indonesia involves an important transformation of the traditional accounting system, with modification consequences that result in high levels of performance. One of the main contributions of this research is the importance of understanding information technology, being one of the first to analyze the impact of Blockchain in public sector accounting in Indonesia. Data and information used in the preparation of blockchain planning documents must be data that has been inputted into the Regional

Development Information System (RDIS/SIPD). SIPD is one of the important tools in supporting the implementation of development in the region, especially in terms of the availability of valid data for development planning analysis and mapping.

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