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THE ROLE OF BLOCKCHAIN TECHNOLOGY TO SOLVE A PROBLEM DISTRIBUTION OF GOVERNMENT ASSISTANCE WAGES SUBSIDIES

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Abstrak

Banyak organisasi, khususnya sektor pemerintahan masih menggunakan kegiatan berbasis sentralisasi seperti dalam pelayanan publik. Salah satu kegiatan yang diselenggarakan oleh pemerintah yang membutuhkan sentuhan teknologi blockchain adalah penyaluran Bantuan Subsidi Upah (BSU) dari pemerintah untuk tenaga kerja Indonesia yang terdampak pandemi Covid-19. Dalam praktiknya, pelaksanaan subsidi upah bantuan masih menemui banyak kendala. Makalah ini akan mengulas peran blockchain untuk memecahkan masalah distribusi subsidi upah bantuan pemerintah. Dengan menggunakan tools seperti smart contracs, desentralized apps, interopabiity framework dan Government-To-Person (G2P), penyaluran bantuan subsidi upah dapat berlangsung secara transparan dan akurat hingga sampai ke penerima manfaat.

Kata Kunci: teknologi blockchain, kontrak pintar, terdesentralisasi, subsidi upah bantuan, G2P.

Abstract

Many organizations, especially government sector still using centralization-based activites such in the public services. One of the activities organized by the government that requires a touch of blockchain technology is the distribution of assistance wages subsidies (BSU) from the government for Indonesian workers affected by the pandemic Covid-19. Practically , implementation of assistance wages subsidies still met many problems. This paper will overview the role of blockchain to solve a problem distribution government assistance wages subsidies. Using tools such as smart contracs, decentralized apps, interopabiity framework and Government-To-Person (G2P), the distribution of wage subsidies assistance can take place transparently and accurately to reach the beneficiaries.

Keywords: blockchain technology, smartcontract, decetralized , assistance wages subsidies, G2P.

Introduction

In the contemporary world, almost every business sector are shifting through the digitalization(De Reuver, Sørensen, & Basole, 2018).The government sector is no exception. One of the challenges faced by the government sector in technology implementation is the bureaucratic system(Turnip, Lubis, & Lubis, 2018). How to manage a technology-based information management without having to undermine the bureaucratic order, The bureaucratic system still uses multilevel approvals that more and more parties are involved to verify a data, the more accurate, secure and reliable the data.

The downside is that it takes up a very long and convoluted process. The use of blockchain technology in this century has become relevant to be adopted in the government sector because all its activities will cut down on long processes and will become much more efficient.

The blockchain can be introduce as a distributed ledger spread across multiple computers which can be found all over the world and run by anyone with an Internet connection(Yoo, 2017). These distributed ledger systems enable different types of transactions to be recorded, reported and audited simultaneously in ways that significantly reduce the possibility of fraud or error, which is especially helpful in situations where there is a lack of trust between users. One of the activities organized by the government that requires a touch of blockchain technology is the distribution of assistance wages subsidies (BSU) from the government for Indonesian workers affected by the pandemic Covid-19 . In practice, the distribution of assistance from the government still has to go through various stages of matching data from various related agencies. Of course , in the end this caused many problems ranging from finding invalid population data , the length of the distribution process to assistance not reaching hands workers.

This paper will present overview of blockchain technology and its role to be used to to solve a problem distribution of government assistance wages subsidies in Indonesia.

Research methods

The disruptive waves brought by blockchain technology to look closer how these technology backed solutions in line with the governments public services area in line with acceleration of SDGs (Aysan, Bergigui, & Disli, 2021). To do so, we performed an in-depth literature review of blockchain technology, based on the available literature and source information from the internet to examine actual or potential blockchain technology contributions. Here are the author's steps in collecting data:

1. Seeking relevant information related to the topic of the problem through the publication of international journals, government website portals and other supporting literacy
2. The author reads the data found and identifies the problem
3. The author collects points from the data obtained
4. Start writing a paper

Results and Discussion

In 2020, the Indonesian government has again rolled-out assistance eages subsidies (BSU) in the form of the Covid-19, as well as economic stimulus during the pandemic(Nhamo, Dube, & Chikodzi, 2020). Workers who are entitled to receive BSU will receive assistance of Rp. 500 thousand per person and given directly for two months amounting to Rp. 1 million. In implementing the BSU, the Ministry of Labour appointed BPJamsostek as a provider of worker data throughout Indonesia. BPJamsostek or BPJS Employment is a state-owned agency that records workers' social security(Kabul, 2022). Bpjamsostek known trusted because of the accuracy of its employee data. To be able to receive BSU, workers must meet several requirements, including being active participants of BPJS Employment until June 2021, having a maximum salary of IDR 3,500,000 per month, and working in PPKM level 3 and level 4 areas set by the government.

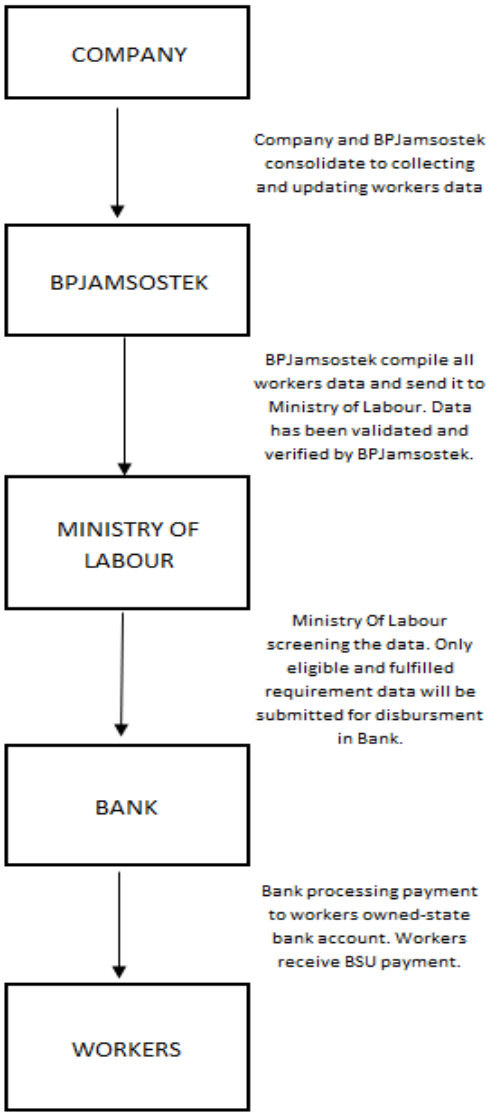


FIGURE 3 Assistance wages subsidies distribution flow
(processed by author)

As we can see in Figure 3, the flow of payments that workers can receive through many intermediaries. And it makes lenghty process and inefficient. Many problems were found such as the funds not channeled to recipients. This is because the field is that the data held is less accurate and doesn't full coverage all data of Indonesian workers(Loganathan, Rui, Ng, & Pocock, 2019). BSU data collected from registered workers data recorded at BPJamsostek. Many company not aware of employee administration then not reporting it to BPJamsostek such as invalid identity card numbers, inactive employee and personal workers information. Also many workers still have state-owned bank accounts(He, Huang, Liu, & Zhu, 2018). State-owned bank accounts are one of the administrative requirements that are quite troublesome because workers have to go to the bank to open an account. Opening an account requires activation by the bank and there is often a mismatch of the worker data that the bank receives with the actual

recipient data . Communication between banks at the head office and branch offices that are not synchronized has resulted in the activation process being carried out quickly(Shukla, Jagtap, & Karniadakis, 2021). Another case are disbursement funds contrained because the account is duplicated, closed, passive, invalid, frozen, the account does not match the NIK, or the account is not registered. So, the payment could not successfully transferred and the workers not receive the funds. Due to the problem of inaccurate data in the distribution of BSU to workers in Indonesia, the fund distribution not going optimal(Tobing, Muhyiddin, Sari, Rizki, & Al Ayubbi, 2022). Blockchain technology shows the potential for revolution in public service practices to be more efficient and real time.

Theoritically, acccording to research from Tan et al. (2022) tools to optimilize the using of blockchain technology in government public services are :

1. Decentralizes Apps and Smartcontracts

Decentralized Apps dan smartcontracs are new forms of organizations can redefine the mechanisms of control and coordination in public management. As explained in literature review, smart contracts are mechanisms that contain digital assets of two or more involved parties. Automatically assets are distributed according to predefined response actions when trigger conditions are met. The blockchain network through smart contracts could enforce the term of the agreement between two parties. Through the combination of smart contracts and Decentralized Application (DApps), it is possible to create decentralized autonomous organizations (DAO) where the operational rules are encoded on blockchain in the form of smart contracts, and DAOs can autonomously or semi-autonomously operate without centralized control or third-party intervention.

2. Interopability Framework

Interoperability is the ability of organisations to interact towards mutually beneficial goals, involving the sharing of information and knowledge between these organisations, through the business processes they support, by means of the exchange of data between their information communication technology systems. This framework has conceptual model states interoperability governance in the public sector requires an integrated governance approach across legal, technical, semantic, and technical interoperability. European Interoperability Framework (EIF) has a conceptual model that address all layers have an impact to delivery digital public services in the European Union. The implementation of EIF is a concrete step taken by improving public administration in the European Union which has successfully integrated blockchain technology with public services.

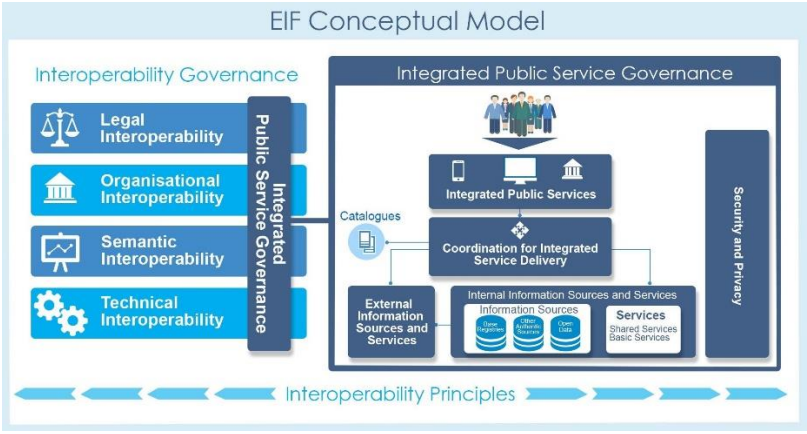


FIGURE 4 EIF Conceptual Model
(Source : https://www.cryptomathic.com/news-events/blog/eidas-and-the-new-european-interoperability-framework-one-step-closer-to-the-single-market)

3. Accountability Governance

There are four forms of accountability mechanisms in blockchain governance, namely:

a. **Coercion**, the characteristic of coercion is a binding regulation that sets detailed standards in its implementation. Coercion in the blockchain counter there is the term "Lex cryptographica" which means the exchange rules are the default code where the code becomes the law in blockchain governance. Deterministic governance can automatically be created through smartcontracts.
b. **Volunterism**, In the context of blockchain, the governance mode of volunterism is captured by a kind of "soft fork" that modifies the function of the blockchain but does not change the blockchain structure The implementation of the soft fork relies on the majority of users to implement the suggested changes. The change takes effect only if most of the network's mining powers adopt it.
c. **Targeting** , The practice of targeting in blockchain is often used for the introduction of proposals for improvement and decentralization of applications in blockchain networks.
d. **Regulatory framework**, Framework regulation creates binding rules for users. User has the freedom to choose whether or not to accept the policy option. This mechanism of accountability in the context of blockchain is best captured by a "hard fork". The hard fork occurred when a rule change was adopted in the blockchain protocol and nodes of the latest version of the blockchain no longer accepted older versions of the blockchain.

Along with the theory and problem above, the government also continues to conduct studies and efforts to improve the distribution of wage subsidies assistance with the concept of Government-To-Person (G2P) payment systems. G2P is an evolution in the method of distributing social assistance in Indonesia. G2P can directly facilitate formal savings, money transfers between individuals (P2P), and make payments security, and greater efficiency compared to informal transactions. In addition, the use of

blockchain technology also does not require the requirement of ownership of transaction tools such as debit cards, QR codes, smartphones or simple mobile phones in the recipient's family or household benefit Ownership of a smartphone to run an authentication application is sufficient at the merchant / store level. With this condition, digitalization of transactions and expansion of the reach of public services for the distribution of government assistance and subsidies will become easier. The following advantages of G2P program are :

1. With the digitization of the G2P program, beneficiaries get closer access points, cheaper costs, better services, and deeper financial services interactions.
2. The government can reduce the cost of distributing cards, reduce dependence on vendors, improve the quality of service, and increase the coverage of beneficiaries.
3. Service providers benefit in the form of business scale more efficiently adjusting the beneficiaries served, reducing onboarding costs due to reduced use of paper/documents and human interaction, and interoperability between service providers that improves the efficiency of the G2P program assistance transfer process.

As we can wee in Figure 5, the process of disbursing aid funds requires the involvement of only three parties: government, financial system and recipients. With the help of blockchain technology in the financial system, the distribution of aid funds is no longer mandatory requiring opening a bank account. The payment system in G2P can provide beneficiaries with a choice of payment service providers. Of course, the process becomes widely accessible, shortening the distribution process and upah subsidy assistance can reach the recipient. G2P realizes a transparent government where recipients can track the process of money being distributed. Using smartcontracts, the distribution of aid only binds two parties, namely the government and beneficiaries. Where after the government spends the money, the money will definitely go directly to the beneficiaries of the benefit and according to its designation. The security system in the blockchain will ensure that the transfer process cannot be tampered off by unauthorized parties. Thus, the process will be free from corruption and fraud.

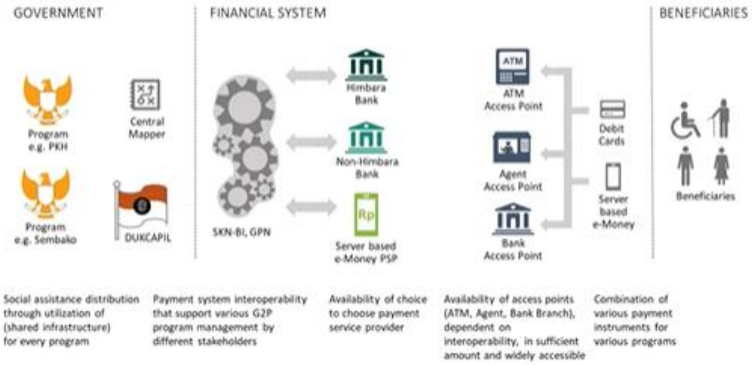
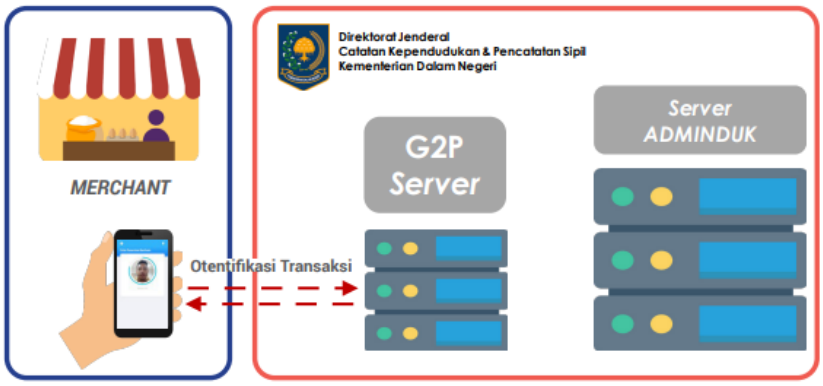


FIGURE 5 Government-To-Person (G2P) mechanism
(Source : worldbank.org)

Realizing the ease of implementation of blockchain technology in the distribution of wage subsidy assistance is a major revolution in the government bureaucracy(Nor, Abdul-Majid, & Esrati, 2021). So some of these things become necessary to improve the process of distributing wage subsidy assistance, including:

Database Reformation

The main thing that the government can do is reform databases, especially Indonesian workers data using the concept of private blockchain(Syaifuddin, Nurmandi, & Khadafi, 2022). The reformed database must be up-to-date and in line with population administration data at the Directorate General of Population and Civil Registry, Ministry of Home Affairs (Adminduk-Dukcapil). And data collection that can be accessed by all ministries (central government). The feature required in G2P is a server that can be directly connected to Adminduk-Dukcapil data. After the biometric data from the registration for the purpose of transaction authentication is stored on the G2P server, the data on the Dukcapil Administrative server can be used to verify the biometric data of the beneficiaries. In addition to functioning as a storage area, reverse data from the G2P server can also enrich the Dukcapil Adminduk data because it will contain the latest facial biometric data, mobile phone numbers, bank account accounts, and other data attached to the beneficiaries.



Collaborating with Blockchain and Fintech Companies

The high operational costs of conventional systems due to fraud, cyber-crime, and high cross-border transaction costs, prompted some banks and the financial industry to start using blockchain technology. Using cryptography technology that can send help safely(Sharma et al., 2021). This recommended technology can be controlled by smart contracts as a form of supervision and can be used by various types of smartphones(Demertzis, Iliadis, Tziritas, & Kikiras, 2020). With plating that can track in real time about disasters that occur and adjust the assistance needed by the community in this case is cash assistance, the system will send cryptocurrency automatically(Ramezani & Camarinha-Matos, 2020).

Supporting Regulatory Needs

As explained in the previous section, a number of regulations are needed to ensure the distribution of assistance using facial blockchain technology by fintech operators runs well (Ramezani & Camarinha-Matos, 2020). Based on the results of studies related to G2P that have been carried out by TNP2K since 2012 and various trials of aid distribution, the distribution of assistance using facial blockchain technology can be applied with a regulatory framework that includes things as follows:

1. Revision or amendment to Presidential Regulation No. 63 of 2017, which mandates the distribution of non-cash social assistance only through banks, so that the distribution of the G2P program can utilize financial technology (Fintech).
2. Technical regulations regarding the integration of government social assistance distribution using blockhain technology, which regulate the following aspects:
    a. Option forms or models of cooperation between banks and fintechs in the field to support the implementation of blockchain technology in public services.
    b. Governance of beneficiary data, including data transfer, interoperability system between banks and fintech providers, and improvement of the technical aspects of G2P servers and their connectivity with all fintech industry players.
    c. Minimum standards of service by the fintech provider industry in distributing assistance to beneficiaries. What needs to be emphasized in this regulatory framework is how to create easy registration procedures for beneficiaries, especially vulnerable groups such as the elderly, persons with disabilities, remote indigenous communities.
    d. Preparation of data storage and management infrastructure for authentication purposes including data servers and technical guidance on management standards.
3. Strengthening regulations for the distribution of government assistance and subsidies on a non-cash basis, regulatory support for the storage and management of blockchain technology, as well as support for other technical regulations related to technology standards and fintech services.

Blockchain technology in digitizing will help the government, especially in terms of data privacy and original information that can increase the accuracy of transaction reports. By classifying the poor based on available digital data such as the illustration above, the government's goal in realizing 5 principles, namely: right target, right amount, right time, right quality and right administrative will be easier to achieve.

Conclusion

It is undeniable that blockchain technology has come to our midst and it can be concluded that the data base and IT infrastructure greatly affect. Although it still needs a lot of evaluation, blockchain technology is proven to be able to help and facilitate subsidized assistance without many intermediaries. The application of blockchain technology in employee systems is also a revolution in government systems in many countries. That the role of blockchain will accelerate progress and realize global challenges and the Sustainable Development Goals (SDGs) by increasing labor productivity and reducing unemployment is a critical component of sustainable and inclusive economic growth. In the future, implementation of blockchain technology can be supported by adequate IT infrastructure investment, collaboration between technology sectors, the role of the government in strengthening regulations, and trained human resources.

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