Jurnal BPPK Volume 17 Nomor 3/2024 Halaman 176-182

BADAN PENDIDIKAN DAN PELATIHAN KEUANGAN KEMENTERIAN KEUANGAN REPUBLIK INDONESIA

JURNAL BPPK

BLOCKCHAIN AS DIRECT SERVICES TO COMMUNITY AND REVENUE GATEKEEPER

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ARTICLE INFORMATION

ARTICLE HISTORY
Received
27 August 2024

Accepted to be published
31 December 2024

KEYWORDS:
Blockchain
Customs
International Trade
State Revenue
Copyrights

ABSTRACT

Blockchain, yang merupakan salah satu penemuan terbaru dalam bidang jaringan TI, secara perlahan namun pasti mulai memasuki setiap aspek aktivitas manusia modern. Meskipun ini mungkin merupakan penggunaan blockchain yang paling dikenal di dunia mata uang kripto, kemajuan besar yang dicapai oleh mata uang kripto disebabkan oleh keunggulan yang ditawarkan oleh teknologi blockchain. Itu hanya salah satu aspek, sementara masih banyak aspek lain yang belum dimanfaatkan dari teknologi blockchain ini, salah satunya adalah penggunaannya dalam perdagangan internasional. Perdagangan data elektronik antar negara tidak dapat dihindari, namun sayangnya, di Indonesia belum ada upaya pengawasan yang memadai terhadap perdagangan data elektronik. Sama seperti perdagangan lintas batas konvensional, perdagangan data elektronik juga memiliki potensi bahaya jika tidak diawasi, bahkan pendapatan negara yang dapat diperoleh bisa hilang tanpa pengawasan. Oleh karena itu, melalui penelitian ini, diharapkan dapat ditemukan suatu konsep pengawasan yang dapat diterapkan pada perdagangan komoditas elektronik lintas batas. Penelitian ini dilakukan menggunakan metode deskriptif analitis melalui tinjauan jurnal terbaru mengenai blockchain dan pengawasan perdagangan internasional. Hasil penelitian ini menunjukkan adanya potensi pemanfaatan blockchain sebagai alat untuk memantau perdagangan internasional komoditas elektronik. Dengan memanfaatkan blockchain, manfaat yang diperoleh antara lain pengawasan yang lebih efektif dan efisien, adanya dasar untuk mengenakan pungutan atas perdagangan internasional komoditas elektronik yang terjadi, membantu upaya perlindungan hak cipta, serta mencegah kerugian yang ditimbulkan akibat transaksi komoditas elektronik bagi masyarakat.

Blockchain, which is one of the latest discoveries in the field of IT networks, is slowly but surely entering every aspect of modern human activity. While this is probably the most well-known use of blockchain in the world of cryptocurrencies. The massive progress of cryptocurrencies is due to the advantages offered by blockchain technology. That is just one aspect, while there are still many other aspects that have not been utilized from this blockchain technology, one of which is its use in international trade. The buying and selling of electronic data between countries is inevitable, but unfortunately there has been no adequate supervision effort in Indonesia over electronic data trading. As with conventional cross-border trade, electronic data trading also has the potential for danger if not supervised, even state revenues that can be obtained can be lost without supervision. Therefore, through this research, it is hoped that a concept of supervision can be found that can be carried out on cross-border electronic commodity trade. This research was conducted using a descriptive analytical method through a review of the latest journals on blockchain and international trade supervision. The results of this study are that there is potential for the use of blockchain as a tool for monitoring international trade in electronic commodities. By utilizing blockchain, the benefits obtained include more effective and efficient supervision, there is a basis for imposing levies on international trade in electronic commodities that occur, assisting copyright protection efforts, and also preventing harm caused by electronic commodity transactions to the community.

1. INTRODUCTION

1.1. Background of Study

Nowadays, technological developments are increasingly massive, many breakthroughs that were previously unfamiliar have become the mainstay of the present.

One of them is the use of blockchain. Since it was first introduced by Satoshi Nakamoto in 2008 through Bitcoin which can be used as a means of exchange, now there are other services that also use blockchain both in the public and private sectors.

Examples of private services can be taken from cryptocurrencies such as bitcoin which were previously mentioned, while examples of public sector services that use blockchain are elections in Estonia, and also land registration in Georgia and Sweden (Cole, 2024).

Previous evidence suggests to us that the use of blockchain is not only dominated by the private sector, but there are opportunities for the public sector to also utilize this technology. As for looking at the description above, the use of a means of exchange that utilizes blockchain is considered necessary to anticipate its use in the future, especially since exchange is now not only physical, it can also be in non - physical form and occurs across countries such as the potential for data trading (Li, Li, Zhao, Guizani, Yu & Du, 2020). Therefore, the encouragement for the public sector to participate in utilizing blockchain in relation to the exchange of goods between countries is a serious matter to discuss, so that there is no stuttering if the exchange in question has become a common thing that occurs in the world.

Customs institutions, which are one of the public entities, may be the first to be sensitive to this development. Their duties, which are not far from the cross-border trade process, and also play a role in collecting revenue, will be greatly assisted by utilizing blockchain. Utilizing blockchain, can at least prevent unsupervised exchange of goods between countries, while also being a valid source of data for calculating potential state revenue.

So far, there are no regulations governing the use of blockchain by customs institutions in Indonesia. Previous studies have also not been found discussing the use of blockchain by customs institutions in Indonesia. Therefore, through this article, it is hoped that it can be known how the potential use of blockchain by the Directorate General of Customs and Excise as a customs institution in Indonesia. The topics that will be discussed in this article include the use of blockchain for supervision, as well as its use in calculating the potential revenue that Indonesia can obtain.

2. LITERATURE REVIEW AND HYPOTHESIS

2.1. Blockchain

Blockchain is a technology that is slowly starting to be relied on in today's era. Since its introduction in 2008 by Nakamoto as explained in the introduction to the research conducted by Lopes-Sorribes, Rius-Torento, and Solsona-Tehas (Lopes-Sorribes, Rius-Torento, & Solsona-Tehas, 2023) One of its decentralized characteristics, namely not relying on a centralized entity and utilizing a global network of distributed nodes (Utomo, 2021) is the advantage of blockchain. In addition to being decentralized, there are many other characteristics that are beneficial from using this blockchain, including validation/consensus, immutability, replication/peer to peer network, transparency, security, and smart contracts (Utomo, 2021). The smart contract referred to here is a system that can automatically execute a contract if a condition is met (Hu, Li, Pan, Li & Zheng, (2021)

Blockchain is starting to be utilized not only in the private sector, but also in the public sector. An example of a public sector that utilizes blockchain is the Estonian government in election activities (White, Killmeyer, & Chew, 2017). One of the characteristics of transparency is very suitable to answer the needs of open voting. From the Estonian example, we can understand how promising blockchain is to be used in various activities or interests.

Unfortunately, in Indonesia, the use of blockchain has not been widely considered. Previous studies have been conducted to determine the potential use of blockchain, and none have studied its implementation in existing programs. This shows that Indonesia has not seriously worked on the use of blockchain. Looking at other countries that have implemented blockchain such as Estonia, there is actually a possibility for the Indonesian government which provides public sector services to participate in developing this technology, in addition to the private sector which is actively exploring blockchain by competing to create cryptocurrencies such as Ethereum, Tether, Dogecoin, or others (Hayes, 2024).

2.2. International Trade

International trade has been difficult to avoid since ancient times. Different needs and specializations between countries allow for international trade. As written by Dr. Serlika Aprita and Rio Adhitya in the book International Trade Law, international trade can be carried out between individuals, individuals with countries, or between governments of a country (Aprita & Adhitya, 2020).

For transactions involving the government of a country, there are certainly rules that must be met for accountability, so that this type of transaction is relatively safer. However, it is different with transactions between individuals. Although only on the basis of trust a transaction can occur, it is not uncommon for such transactions to not be accompanied by adequate evidence, for example sending gifts brought directly by people traveling abroad. Thus, the accountability of transactions between individuals is considered more challenging in its monitoring.

Like anything else, international trade also has its own rules. It is necessary to monitor goods leaving or entering a country in accordance with the policies taken by the country concerned. In Indonesia, the institution that monitors international trade transactions is the Directorate General of Customs and Excise (DGCE). In international trade, DGCE plays a role in supervising the entry and exit of goods, as well as collecting revenue for the country from these international trade transactions.

2.3. Directorate General of Customs and Excise (DGCE)

The Directorate General of Customs and Excise is a customs institution in Indonesia. In carrying out its duties, there are several functions inherent in DGCE as a customs institution, as are also possessed by customs institutions in other countries. These functions include supervising international trade, ensuring public welfare by preventing the entry of dangerous goods and goods that do not meet established standards, collecting revenues that are useful for national development, and maintaining national markets and commodity producers by regulating economic activities with foreign countries (Shpak, Melnyk, Adamiv & Sroka, 2020).

In the field of international trade supervision, DGCE can conduct physical inspections of goods imported from abroad in accordance with the mandate stated in Law (UU) No. 17 of 2006 Amendment to Law Number 10 of 1995 concerning Customs. The inspection of imported goods is intended to realize other functions, namely ensuring public welfare by preventing the entry of dangerous goods and goods that do not meet the established standards. In addition, by conducting supervision, DGCE can also determine the tariffs that can be imposed on imported goods, so that the levy on imported goods becomes state revenue and is used for national development.

2.4. DGCE's Utilization of Blockchain for International Trade Monitoring

In Law No. 17 of 2006 Amendment to Law No. 10 of 1995 concerning Customs, it is clearly stated in article 3 that the inspection of imported goods includes document inspection and physical inspection of goods. In transactions using blockchain which is a software without a physical form, it is quite difficult for DGCE to conduct a physical inspection. However, document inspection is still possible. Documents concerning information about transactions carried out using blockchain, as long as they meet the legality and validity according to regulations, can be the object of inspection.

Meanwhile, transactions between individuals using blockchain intermediaries do not require documentation as a primary element. One of the characteristics of blockchain which is anonymous allows anyone to make transactions without having to know who the perpetrator of the transaction is. This is what then becomes a challenge in document examination of international trade transactions using blockchain.

The absence in international trade supervision is in line with the development of research in Indonesia. The fate of blockchain development by the public sector has also not been widely carried out. Research on the use of blockchain in international trade that has been carried out is regarding support for the smoothness of the supply chain such as reducing bureaucratic stages and also helping with faster certificate verification (Chang, Iakovou & Shi, 2019). Meanwhile, the potential revenue that can be received by the government has not been widely researched, especially in Indonesia. With the increasingly rapid development of technology, it is felt necessary to also anticipate early so that the use of blockchain in international trade in the future can provide benefits to all parties, both countries and communities that are subjects of international trade.

3. RESEARCH METHODOLOGY

The research conducted this time uses a qualitative descriptive approach. This research focuses on reviewing journals, articles, or other sources around the potential use of blockchain as a means of international trade.

The journals, articles, or other sources selected are those published currently. The selection of this time period is intended to obtain the latest relevant information, so that the latest understanding of blockchain developments and its role in international trade can be summarized.

After obtaining the required information, the next step is to compile a conclusion from the findings of this study. In addition to the conclusion, it is also expected that future challenges and obstacles can be identified, so that they can be anticipated in the future.

4. RESULTS AND FINDINGS

4.1. Utilization of Blockchain

The use of blockchain in the public sector is possible. One example that can be known in Indonesia is the development to check the authenticity of educational certificates. By using blockchain, validation and verification of these certificates can be done more effectively and efficiently. The verification process using blockchain can also reduce the risk of fraud (Suryawijaya, 2023).

Verification by utilizing blockchain can also reduce manual verification activities by human resources. Verification that focuses on human resources contains the risk of errors due to physical limitations and subjectivity. These two weaknesses can be overcome if they rely on an automated verification system.

With blockchain, supervision of the authenticity of goods can also be monitored. International trade that emphasizes trust because it does not meet face to face is prone to fraud. However, with blockchain, fraud is difficult to do. This fraud prevention can be exemplified in the trade of non-fungible tokens (NFTs). NFTs are unique and cannot be exchanged for something similar (Wang, Li, Wang & Chen, 2021).

By combining the two characteristics, international trade that occurs can be carried out more efficiently and get certainty of results from qualified verification and validation activities. In addition, the authenticity or originality of a product sold in international trade can also be maintained, and commodity buyers do not need to worry about the

authenticity of commodities purchased on the international market.

4.2. International Trade Supervision by DGCE

DGCE has a role to protect trademarks and also the rights attached to the brand (Labetubun & Pariela, 2020). Trademarks are part of intellectual property rights. Therefore, by helping to protect trademarks, DGCE also helps to protect intellectual property rights. A protected trademark also means being able to maintain the quality provided by the party producing a commodity. However, this does not mean that protecting the trademark is only useful for producers, but also for consumers or buyers themselves because it means that the quality of the commodity received is also original according to expectations when the purchase agreement was made at the beginning.

In international trade, DGCE also plays its role as a revenue collector. Revenue collection is obtained from levies on international trade transactions that occur. To impose the levy in question, of course, a valid data source is needed that can provide information on the actual transaction value of the trade. Using blockchain in this case bitcoin, the value can be obtained after entering a specific address (Gagneja, Goode, Rentos & Rezk, 2020). So, from the known transaction value, a levy can then be imposed according to the applicable rate.

4.3. International Trade Supervision Using Blockchain

International trade is a trade that has been going on for a long time. If international trade in the past only traded physical commodities, but with the advancement of technology now trade without physical form can be possible to occur. International trade needs to be monitored to protect interested parties, including countries to gain acceptance and protect their communities from commodities that are considered dangerous. As for individuals, monitoring international trade can maintain the quality of the commodities concerned so that the goods obtained are in accordance with the buyer's expectations when making transactions.

In Indonesia, DGCE is an institution entrusted to supervise international trade. The inherent role of supervision includes collecting levies and also maintaining the quality of goods traded across countries. If physical commodity trade can be physically inspected, it is different from non-physical commodity trade in the form of electronic data which cannot be physically inspected. Although direct inspection cannot be carried out, non-physical commodities need to be supervised because of the potential income contained in the transaction, and also the need to maintain the quality of the traded commodities whether they are genuine and according to the buyer's expectations, so that they do not harm the community when the commodities are transferred online to the recipient country.

So far, non-physical inspection of electronic commodity trading has not been regulated. The transfer of electronic commodities between countries can take place just like that, and can even be said to be untraceable by official authorities such as the DGCE. Given the importance of supervision of international trade in non-physical commodities, an appropriate supervision mechanism is needed. Therefore, the use of blockchain is considered appropriate to be used as a supervision tool.

An example of non-physical trade using blockchain can be exemplified through NFT. Data registered as NFT can be sold across countries, while maintaining its authenticity, so that the data is maintained and protected from forgery. In addition, buying and selling on the bitcoin platform can also be known the transaction value when entering a specific address recorded as the transaction identity, and the transaction can be used as a basis for determining the tariff for an international trade agreement.

Considering the research findings above, DGCE can be expected to develop a platform that utilizes blockchain technology, so that every cross-country commodity trade is required to use the platform in question. The purpose of this blockchain-based platform is to be a valid monitoring medium in terms of shipping non-physical commodities between countries. Through this supervision, DGCE can carry out its function of providing services to ensure the authenticity of the commodities sent, protect the public from negative exposure to commodities that are considered dangerous, and at the same time be able to levy levies on international transactions.

5. CONCLUSIONS

5.1. Conclusion

Blockchain technology, which is increasingly widely used today, opens up various potential developments, including the field of public sector services. Several other countries have exemplified the application of blockchain in providing services, even in Indonesia itself, the use of blockchain has begun to be pioneered, such as verifying educational certificates. Therefore, to participate in developing public services using blockchain, efforts to supervise international trade by utilizing blockchain should be encouraged to develop further.

By using blockchain, supervision of the authenticity of traded commodities can be maintained. The data verification and validation process can also be helped to be faster so that it can reduce service time. Also for the basis of tariff imposition, the use of blockchain provides a guarantee that the transactions that occur will be recorded and the nominal value can be known in general.

DGCE as an institution tasked with supervising international trade feels the need to adopt blockchain as one of the monitoring tools. With the potential for faster service provided, it can provide a good image for DGCE itself in the eyes of the public. In addition,

DGCE can also have additional objects of collection as additional state revenue by referring to transactions recorded on the blockchain. If the supervision carried out using the blockchain can be implemented, the additional impact can also be felt directly by the public, namely maintaining the quality of commodities received by buyers in this case imports, and can also prevent the public from the negative impacts of commodities imported into the country, which are considered to have potential dangers.

However, this research is still in its early stages. The absence of a pilot project for the use of blockchain in international trade supervision means that the results of this study cannot be compared with the real conditions that occur. Furthermore, this study only focuses on the potential for blockchain development in international trade supervision, without touching on the challenges that will be faced in its direct application. The research conducted this time also has challenges regarding the limited reference literature that the author was able to collect, so that it has the potential not to fully describe the chosen research topic.

5.2. Recommendation

The suggestion that the author can convey regarding this research is that it can be used as a future study for the use of blockchain, especially by DGCE in monitoring international trade. Another suggestion related to this research is for other researchers to be able to add reference literature that the author has not previously examined. Another addition is that further researchers can analyze the challenges of implementing the use of blockchain in monitoring international trade and can also conduct case studies if there is an implementation of the use of blockchain in customs institutions outside Indonesia.

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