Potential Outcomes of Blockchain Technology Application for Transparency of Ultimate Beneficial Owner Registration Issue

Milla Sepliana Setyowati[1], Ida Ayu Rasthiti Adnyani[2], Arfah Habib Saragih[3]*, Adang Hendrawan[4]

AFFILIATION:
[1,2,3,4] Department of Fiscal Administration, Faculty of Administrative Sciences, Universitas Indonesia, Indonesia

***CORRESPONDENCE:**
arfah.habib11@ui.ac.id

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Abstract
The number of High Net-Worth Individuals (HNWI) in Indonesia is on the rise. Despite this increase, there has not been a corresponding rise in state revenues from income taxes associated with HNWIs. This discrepancy suggests potential inefficiencies in tax collection and administration that could be addressed by implementing blockchain technology. This study aims to explore how blockchain could enhance the registration of Ultimate Beneficial Owners (UBO) and support tax modernization, a topic that has not been extensively explored in existing research. Employing a qualitative methodology, this research adopts a post-positivist approach, involving a comprehensive literature review and in-depth interviews with nine informants. The findings suggest that blockchain technology may offer significant advantages in terms of value delivery for UBO registration, though managing associated risks presents more complex challenges. The study discusses these dimensions in detail, aiming to identify effective strategies to optimize the benefits of blockchain in this context. Further analysis and discussion are needed to develop comprehensive solutions that leverage the potential of blockchain technology for enhancing state revenue collection from HNWIs.

Keywords: blockchain, UBO, value delivery, risk management, tax modernization

Introduction
The purpose of this study is to examine the potential impact of implementing blockchain technology on the transparency of Ultimate Beneficial Owner (UBO) registration in Indonesia. The release of the Panama Papers in 2016 highlighted increased cases of tax avoidance, notably among High Net-Worth Individuals (HNWI). Defined as individuals possessing assets of at least US $1 million (approximately IDR 13.2 billion, as noted by Kristiaji in Siregar (2016), the population of HNWIs in Indonesia has been on the rise since 2014. In 2014, the HNWI population stood at 47,000, holding a total wealth of US$157 billion (equivalent to IDR 2,086 trillion). This number grew to 48,000 in 2015, 66,000 in 2016, and reached 124,000 by 2017. From a taxation

perspective, this growing demographic could significantly enhance state revenue, provided there are effective mechanisms for transparency and accountability in place. The expectation is that an increasing population of High Net-Worth Individuals (HNWI) should correlate with increased state revenue from taxation. However, reality depicts a different scenario where the growth in HNWI numbers does not accompany a rise in income tax revenues derived from them.

Contemporary developments show that Multinational Corporations (MNCs), and by extension HNWIs, are likely to seek methods to minimize their tax liabilities, as predicted by agency theory. This pursuit of tax minimization extends to individual HNWIs, particularly in the context of asset ownership transparency. Agung, 2020 notes that higher income and education levels correlate inversely with tax compliance, where resources, skills, and extensive political connections enhance the ability of HNWIs to engage in aggressive tax planning or even evasion. According to Gunadi, 2018, tax avoidance involves legally sanctioned tax planning strategies to decrease tax liabilities and preserve wealth. HNWIs frequently employ complex structures to obscure their actual asset ownership, contributing to issues highlighted in Base Erosion and Profit Shifting (BEPS) (Majdanska & Migai, 2018).

Addressing these challenges is crucial, as transparency regarding the Ultimate Beneficial Owner (UBO) is integral to combating harmful tax practices, as outlined in BEPS Action Plan 5. To enhance transparency, Indonesian tax regulations are reinforced by Law number 36 of 2008, Article 18, and further supported by Presidential Regulation number 13 of 2018. This regulation mandates corporations to report ultimate asset ownership to the Directorate of General Legal Administration (DGLA), facilitating collaboration with the Directorate General of Taxes (DGT) to enhance the UBO tracking database, primarily concerning HNWIs (Husein, 2020).

In the context of the industrial revolution, achieving transparency in UBO registration necessitates technological solutions synonymous with tax modernization. Blockchain technology, as discussed by Saragih (2019) dan Setyowati et al. (2020), is seen as a transformative tool for Indonesia's tax administration due to its capacity for enhancing efficiency, security, and transparency. Blockchain operates as a decentralized distributed ledger that eliminates the need for intermediaries, ensuring data integrity and confidentiality (Utama, 2018). According to Deloitte (2017), blockchain technology possesses disruptive potential in accounting and tax administration, offering a promising avenue for managing UBO registrations, yet it remains underexplored.

Blockchain technology functions within the domain of Information Technology Governance (ITG). Weill & Ross (2004) describe ITG as the framework for decision rights and accountability, aiming to foster desired behaviors in the utilization of Information Technology (IT). Essentially, ITG facilitates choice-making and accountability, ensuring that the use of IT aligns with organizational benefits and strategic objectives. According to Ali et al. (2021), effective governance is vital for delivering business value through technology.

The literature presents several studies on blockchain technology. Chang et al., 2020 explored blockchain's impact on financial services, highlighting its role in addressing the challenges of industrial development 4.0. Utilizing a post-positivist approach and the Theory of Planned Behavior (TPB), their research identifies challenges such as scarcity, security, and energy consumption, along with ethical concerns including privacy,

regulatory issues, and cybercrime. The study particularly focuses on blockchain's application in combating corruption and money laundering in banking.

Yu et al. (2018) examined blockchain's introduction and application in financial accounting, discussing how it could mitigate information asymmetry between organizations and information users. The study, employing qualitative methods, also highlights the difficulties in obtaining accurate data for regulatory compliance, suggesting blockchain as a potential solution in the accounting sector.

Hoffman (2018) proposed that blockchain could advance taxation systems by enhancing complexity and transparency. His research concentrates on tax loopholes, particularly in VAT refunds, and discusses how blockchain, especially platforms like Hyperledger Sawtooth, can minimize administrative burdens and reduce costs in tax collection. The study, however, primarily focuses on VAT and not on UBO, which is more closely associated with income tax issues.

From these studies, it emerges that blockchain technology is increasingly being recognized for its potential to enhance UBO registration. This technology promises value delivery and effective risk management, addressing challenges such as business failure, corruption, money laundering, and tax avoidance through complex ownership structures. Despite its potential, blockchain also presents risks that need careful management. Therefore, it is crucial to analyze how blockchain can realize expected values and develop solutions to mitigate possible challenges in its implementation.

Table 1. Code of Informants

Group	Code	Informants
Government	I1	Director of Directorate of Information Communication Technology, DGT
	I2	Support System Development Section I of Directorate of Information Communication Technology, DGT
Academics	I3	Lecturer of the Faculty of Administrative Science, Universitas Indonesia
	I4a	Lecturer a of the Faculty of Computer Science, Universitas Indonesia
	I4b	Lecturer b of the Faculty of Computer Science, Universitas Indonesia
Practitioners & Asociation	I5	DDTC Tax Consulting
	I6	Blocktogo Indonesia
	I7	Association of Blockchain Indonesia (ABI)
	I8	Indonesia Blockchain Network (IBN)

Source : Prosseced Data, 2021

The Information Technology Governance Institute (ITGI) sets forth standards for IT governance aimed at ensuring effective strategic alignment between business and IT, as well as optimizing resource management, risk management, performance management, and value delivery (Wilkin & Chenhall, 2010). These guidelines underscore the critical role of proactive planning and implementation in IT governance processes. According to ITGI (2001), successful blockchain implementation in the context of transparency in Ultimate Beneficial Owner (UBO) registration can lead to significant outcomes such as value delivery and risk management. Value delivery, in this framework,

implies that the deployment of Information Technology (IT) should offer tangible benefits aligned with predefined objectives.

Karimi et al. (2000) suggest that the timeliness of value delivery is influenced by various factors, including the commitment of IT steering groups to manage IT functions effectively. Doughty (2001) emphasizes the crucial role of leadership in enhancing the realization of these values through technological applications. Furthermore, the involvement of senior managers or leaders is often a determinant of success in technology-driven projects, enhancing the achievement of desired outcomes (Young & Jordan, 2003). The promised benefits of blockchain, such as enhanced security, transparency, and real-time recording, are critical metrics for assessing value delivery, as outlined by Yafi (2020). These features encapsulate the core advantages that blockchain technology can offer in managing UBO registration effectively.

Risk management focuses on efforts to minimize the risks that may occur with the application of technology, in this case, blockchain. Chang et al. (2020) state that in implementing blockchain, there are also several challenges that the risks should be able to mitigate, such as scarcity, insecurity, and energy consumption. Scarcity refers to the tendency for a transaction recorded in blocks to increase even continuously which is not followed by a certain amount of block capacity which can cause scarcity. The impact is, it can delay small transactions and emphasize transactions with relatively higher fees (Biais et al., 2019). Thus, the indicator is ensuring that the blocks in the blockchain network are sufficient (adequate blocks for the records).

The existence of a smart contract feature on the blockchain that is automatically compiled based on a difficult mathematical system and formula should not allow the blockchain to be hacked. However, the potential for insecurity remains the focus of studies by several parties. The reason is, blockchain cannot prevent information leakage, especially for the type of public blockchain (privacy leakage). Blockchain runs on the internet which requires electricity. Apart from the internet, blockchain also requires at least a computing device. Price (2018) states that running a blockchain requires a lot of power and will continue to grow bigger. On that basis, the indicator refers to energy consumption, namely the use of electricity as a means of support (suitability electricity usage) including other energy used to support blockchain implementation.

Research Method

To achieve the research objective, we used a qualitative method. This study conducted by using a post-positivist approach, which will not only support the theory but also considering the discovery of data Creswell (2014). Following Anesa et al. (2019), the paradigm used in this study was interpretive. In addition, because the number of informants tends to be small, we did not use specific tools to process information from

in-depth interviews. The analysis was done manually. Figure 1. shows the workflow of this research.

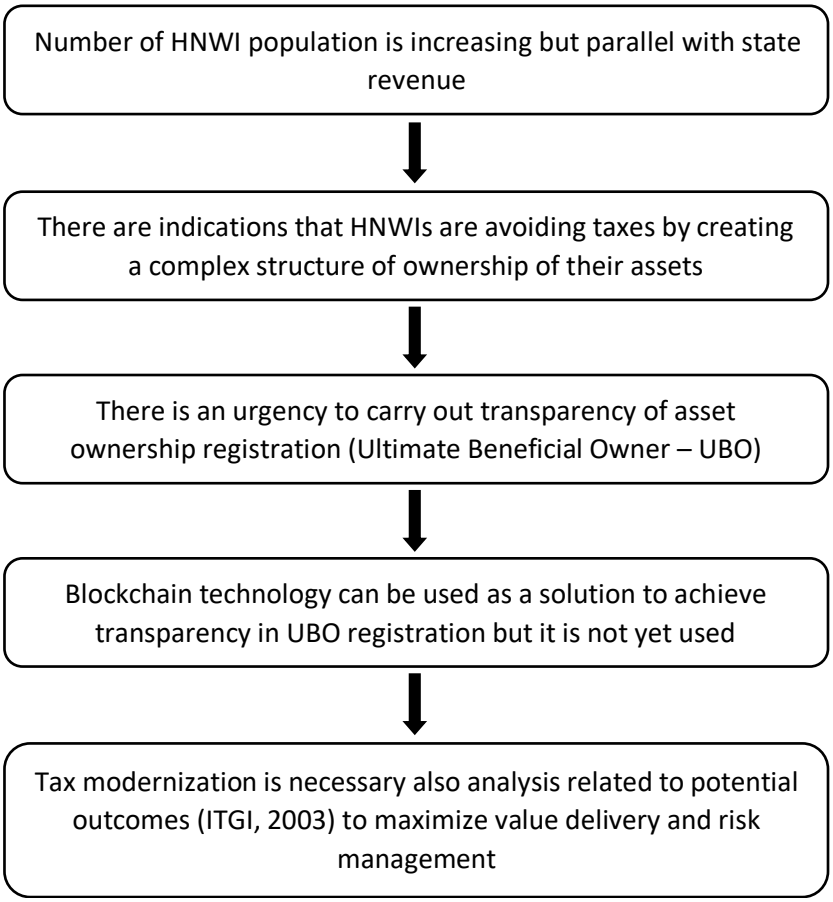

Figure 1. Work Flow of the Research

Source : Processed Data, 2021

Result and Discussion

The delivery of value relates to how blockchain technology creates added value or optimal results by utilizing features that are the speciality of blockchain compared to other technologies. The first indicator in the delivery of values as stated by ITGI (2001) is on-time delivery. The role of technology is inseparable from the role of resource management which has a major influence on how technology can successfully deliver the value it wants to realize promptly. This timely terminology is relative and can take some time. Several things that affect the length of time the value conveyed can be seen in Table 2.

Based on Table 2., it is known that to be able to ensure that the value that is the advantage of blockchain technology can be delivered promptly, I4b, in December 2020 in detail stated that:

> "In my opinion, researchers like me are trying to figure out how this technology can be down to earth. Like an e-wallet whose technology can go as high as a star. It's

just from the point of view of the application, it's easy just a click. So, how to use blockchain technology which should also be like an e-wallet ".

Table 2. Arguments from the Informants of Dimension of Value Delivery

Informants	Arguments for Indicator Delivery on Time
I1	Influenced by the role of the leader (work the top culture).
13	Will be hampered if there are political obstacles.
14b	Depend on user experience.
I9	Society does not need to know all the processes of blockchain systems.

Source : Prosseced Data, 2021

From the in-depth interview excerpt above, it is known that society does not need to know the basic concept of blockchain which is difficult to understand. I4b said again that it takes the role of a researcher or an industry that oversees him make this technology easy to use when it reaches the user. Ensuring that users experience the ease and usefulness of technology is important. Following the explanation by Bal (2019), the public should not need to be involved in the transaction process that runs on the blockchain. Easy-to-operate usage allows users to receive various promised benefits. Not only user experience can be an indicator to realize the delivery of blockchain values on time, the role and collaboration between Academics, Businesses, and Government (ABG) is also an indicator.

The big influence of resources, more specifically as mentioned by Karimi et al. (2000), includes the leaders or senior managers who play a role. Informants with code number I1 said that the Directorate of Information, Communication and Technology (ICT) at DGT is constantly developing and making innovations. With work the top culture, I1 ensures that in addition to the leader who is in charge of providing a vision and mission that prioritizes innovation, those who support him must be able to translate the vision and mission into an application. Accordingly, leaders should understand and participate actively in the process.

In terms of applying blockchain technology to UBO registration in Indonesia, it takes a long time to be implemented massively, but when it happens, the value to be conveyed can be felt more quickly. This is consistent with Young & Jordan (2003) that state that when there are participations from leaders or senior managers, a technology-based project will be successful and be able to increase the delivery of the desired values. As Mansury (2002) states that one of the definitions of tax administration refers to human resources. Specifically, it refers to officials and employees who work for institutions or agencies in the taxation sector. By becoming one of the elements of tax administration, the role of human resources owned by the Directorate of ICT, DGT can support the tax administration system in the all-digital era. The role of a good leader in the Directorate of ICT, DGT will assist in the realization of technology as a tool to facilitate tax administration in Indonesia which is growing in a better direction. Compliance culture in the IT sector has a significant effect on the level of ITG (Ali et al., 2009). Thus, tax modernization will accelerate rapidly.

In ensuring that the delivery of value with the blockchain can be realized on time, it is not only in terms of taxation. This was confirmed by I3 in an in-depth interview

"The obstacle is political. Are the people getting ready or not? They are usually comfortable with their current condition. So there must be political compulsion too. Continue technologically. Is it ready or not?".

About this statement, political issues often hinder its timely delivery. From this quote, it is emphasized that apart from the technological infrastructure, the human resources that play a role, as well as the political situation in a country, data management needs to be ensured that it does not need to be processed repeatedly because the data received is still in raw condition. This will also increase efficiency so that the delivery of value can be felt more quickly.

The second indicator of the dimension of value delivery is the delivery of value, which is the speciality of blockchain which consists of security, transparency, and real-time recording (Yafi, 2020). The three advantages regarding blockchain are not impossible to materialize but will be realized even though they have issues or limitations in one way or another. What will be realized from the implementation of blockchain for UBO registration in Indonesia is the value of transparency between nodes that agree to international coverage. Harmonization is needed from the Organization for Economic Co-operation and Development (OECD) and The Group of Twenty (G20) regarding the definition of UBO, UBO ownership threshold, and several other things including supporting document templates for UBO registration needs between agreed countries. The statement was stated by I5, in December 2020.

Blockchain exists to offer the value of transparency in the midst of issues and the growing need for trust globally. Tax issues are emphasized in the second pillar of the BEPS 5 Action Plan. By having a common ground to create information transparency, one of which is related to UBO which has a large potential for state revenue, the decision to implement blockchain technology is influenced by the benefits it has.

As it is known that the use of blockchain cannot be used comprehensively for all types of taxes. Referring to Fettke & Risse (2018), it is said that the blockchain concept is intensively addressed and discussed in tax law. In particular, in the case of indirect taxes such as Value Added Tax (VAT), customs and excise, and transfer pricing. Even though the issue of UBO is included in the realm of income tax, blockchain has the potential to be applied to private blockchain based on recording activities not tax payment transactions. Furthermore, UBO also concerns the scope of international tax where transfer pricing is one of the components in international tax.

The second feature refers to security by using a private blockchain and a variety of hyper-fabric blockchain networks in which a smart contract is loaded, ensuring the security of database storage related to UBO is guaranteed. Smart contracts are contractual agreements that maintain security on the blockchain. Blockchains have a high system security. This can be seen from the use of mathematical encryption as a complex tool and consists of multiple independent servers (Viriyasitavat & Hoonsopon, 2019). Wang et al. (2018) in this case, emphasizing that once it can be recorded in a block, it is impossible to make changes or deletions. The existence of a hash is a sign of the validity of the data which is recorded continuously in each block.

More specifically, I8, in August 2020, said that users felt this security with cryptographic knowledge to secure their accounts. It contains of 14 phrases with unique code and a low percentage to recover. If the user has forgotten the password, the account cannot be recovered. Education about the importance of saving passwords is also an

Table 3. Arguments from the Informants of Dimension of Value Delivery

Informants	Arguments for Indicator The Benefits were Promised
I2	Conflict of interest needs to be resolved first.
I5	Consensus & harmonization needs to be realized first.
I6	Benefits such as transparency, security, and real-time recording.
I8	Benefits will be realized especially because it is very safe.

Source : Prosseced Data, 2021

important focus. Thus, when the blockchain is deemed unable to deliver the value as promised in the initial, it is not only the blockchain that is hacked, but there are errors that come from human resources.

Lastly, regarding timely recording. Cohen et al. (2017) state that blockchain has the privilege of being able to prevent parties who have access from logging errors. Besides, this technology can also prevent data changes from occurring after the recording has occurred. However, this benefit has a definition that needs to be emphasized that every record that is entered on the blockchain, the data should has been tested for validity first. When the data is valid, it will be recorded immediately. If it is not valid, then the data cannot be recorded and even exchanged on the private blockchain. Based on changes or indications of hacking data that have been recorded in the new blockchain will be recorded in real-time (Laurence, 2017).

Based on the explanations, the benefits promised by blockchain are not based solely on technology. The benefits can be realized if other supporting aspects are also adequate and support the implementation of blockchain. In the issue of UBO registration, this benefit can be realized as referring to the features of blockchain-related to transparency, security, and timely recording. Based on this analysis, Table 3. contains a summary of the tables of relevant informant's arguments to answer this indicator.

Table 4. Arguments from the Informants of Dimension of Risk Management

Informants	Arguments for Indicator Scarcity
I1	From technology, scarcity refers to the storage that has to be large.
I4a	Scarcity occurs because data validation process slowly as there many transactions in a day.
I4b	There should be no issue for the number of blocks but registration must be predicted

Source : Prosseced Data, 2021

Continuing with the second dimension of potential outcomes, risk management. Blockchain also has risks as a technology. The following is an analysis of the dimensions of risk management related to blockchain implementation on the issue of transparency of UBO registration. The first indicator is scarcity. Scarcity is defined as the tendency for recording transactions in blocks to increase continuously which is not followed by a certain number of blocks so that it can cause scarcity. To ensure there is no scarcity, it is necessary to ensure that there are enough blocks in the network available. In Table 4. we can see the summary of informant's arguments.

Firstly, it must be determined whether the blockchain used includes whether it is a public or private blockchain. In the case of UBO registration in Indonesia using the private blockchain type, the issue of scarcity of unavailability of blocks due to the large

number of transactions carried out in a day is irrelevant. This is motivated because the private blockchain in the transaction records is limited to nodes, not the public in general. In general, the quantity will not be as much as the record that can occur on the public blockchain.

Based on the interview above, it can be seen that the private blockchain for recording UBO is still in normal storage data storage. In a day, blockchain can record a trillion transactions. If we use the assumption that in a day it occurs for ten thousand records from parties who declare themselves as UBO in all countries agree, then this proves that there is no scarcity of blocks to record on the blockchain.

The solution is to apply the use of hierarchical type blockchain or blockchain with a data validation process that has been tested regularly to the main chain to avoid errors or reduced performance on the blockchain. The issue of scarcity is not a risk because technical considerations are feasible. Even though the facts in the field used are a non-hierarchical or flat type blockchain that has to execute each process directly with the number of transactions reaching hundreds of millions of data per day. After finding a way to mitigate risks related to scarcity which could have implications for the slow recording process of UBO registration, it will not make small transactions and prioritize transactions with relatively higher costs in terms of costs as Biais et al. (2019).

The second indicator is insecurity. There is a risk of insecurity possible with blockchain technology even though the blockchain has a high security decentralized book feature. Several informants have given their arguments about this indicator. Table 5. shows the arguments clearly before the analysis.

Insecurity can occur with hacking when a node has 50 per cent control over the network in a private blockchain. Regarding insecurity, the use of private blockchains is safer than public blockchain. The reason for insecurity in the public blockchain occurs because it requires significant computing from the mining process so it is more vulnerable to insecurity.

Table 5. Arguments from the Informants of Dimension of Risk Management

Informants	Arguments for Indicator Insecurity
I1	Impossible to be hacked with multiple nodes.
I4a	The use of private blockchain is safe, but it requires commitment in recording from related parties.
I4b	Insecurity will be resolved with the use of hierarchical or blockchain type blockchain (hyper-fabric blockchain network).
I5	Data protection still an issue for those who have access or intermediaries
I6	The issue of insecurity returns to the commitment of each party.
I7	Data privacy still need to be concerned.
I8	High security, not easily hacked/recovered if forget the password.

Source : Prosseced Data, 2021

The existence of a smart contract feature on the blockchain that is arranged automatically based on a mathematical system and formula, should not allow the blockchain to be hacked. Providing blockchain should also reduce the risk and indication of fraud by providing access to monetary policy and taxation. This will provide full access

to the inspection process for every digital transaction made by individuals and companies. Thus, the problem of insecurity can be well mitigated considering the type of private blockchain used must be more secure than the public blockchain in terms of data leakage. Informant I1 expressed his opinion on this matter that:

> "Blockchain can not be hacked. If you want to be hacked, you have to confirm with the other nodes first. If hacked, 1000 nodes will have to be hacked. Which is less likely. That is the speciality of the blockchain. It is duplicated on various nodes ".

Based on the statement, it can be believed that the level of insecurity of the private blockchain is smaller when compared to the public blockchain. As a third party, the blockchain can also provide document details such as up-to-date notes to trips that involve changes or deletions from time to time. Interestingly, the blockchain can show if something is missing from a document. With a feature that has the term proving the negative, blockchain can not only report what is in a document, including what is missing. This was stated by informant I1, as quoted below:

> "… From one side is the security safer. But in terms of acceptability and change management, many do not immediately believe it ".

I1 considers this insecurity issue will not occur. I1 also states that there is nothing dangerous about the transparency of UBO data. Recalling the role of smart contracts, not everything will be transparent. Likewise, the database is also stored at each node before the necessary data exchange occurs. Even so, the potential for hacking will remain forever. Thus, there is a need for mitigation efforts for insecurity issues as stated by I4a:

> "..Back to how committed the company is to maintaining data confidentiality".

In this case, data leakage related to UBO is not impossible, so a commitment is needed to be able to maintain the confidentiality of data that has been registered in the blockchain. This is also supported by statement I5 that accessibility is crucial before the commitment of each party involved is realized. For that, the government must have a control target as a concentration of information.

When the security of the use of blockchain on the issue of UBO can be realized, it can simultaneously realize one of the goals of modernizing tax administration, namely achieving a level of trust or trust in tax administration. If this can be realized, the level of productivity of the tax authority and taxpayer compliance can increase. Thus, the process of modernizing taxation as a form of tax reform will be realized. This is following the explanations expressed by Pandiangan (2008).

The last indicator is energy consumption, as we know that, to be able to operate, the blockchain technology that runs on the internet, electricity is needed. Apart from the internet, blockchain also requires at least a computing device. Price (2018) states that running a blockchain requires a lot of power and will continue to grow bigger. On that basis, this indicator refers to the use of electricity as a means of support (suitability electricity usage) including other energy used to support blockchain implementation. Table 6. shows arguments from several informants.

This indicator aims to ensure that the application of blockchain to UBO registration in Indonesia should not consume excessive energy. The goal is that the efficiency side with blockchain adoption can still be realized. Furthermore, I4b explains that even blockchain will provide many times the efficiency compared to creating servers or e-mail with comparable energy consumption. But because this is not visible (intangible), the use of technology, including blockchain, is often doubtful to be applied.

The private blockchain used in UBO registration does not require a mining process, so excess energy consumption is eliminated. Here are some reasons that support that private blockchain on UBO registration in Indonesia will use less energy.

Table 6. Arguments from the Informants of Dimension of Risk Management

Informants	Arguments for Indicator Energy Consumption
I1	The more nodes, the more stable they need electricity and the internet.
I2	The private blockchain type will not exploit as much energy as the public blockchain. If later this technology does not have users, then this is an issue.
I4a	Private blockchain will not consume a lot of energy because it only uses voting media, not mining.
I4b	There will be no excess energy consumption because the result is efficiency. It is necessary to ensure that technology is easy to use.

Source : Prosseced Data, 2021

First, to be able to create a private blockchain server for UBO in Indonesia, it is enough by using a computer device with normal capacity. Of course, it is supported by a stable intranet or internet network. Furthermore, regarding other energy used to support the application of blockchain, it concerns how to ensure that energy is expended for its users. In this case, it refers to nodes that are incorporated in the UBO private blockchain in Indonesia. I2 states that one of the possible risks of blockchain for UBO listing is neither party uses nor refuses to use it. As a result, from the blockchain infrastructure provider, namely the ICT Directorate, DGT can suffer losses. The following is an excerpt from an in-depth interview that describes ways to mitigate these losses:

> "There must be mitigation, how to use it. Then education, based on the benefits, governance, so that it can be mitigated. Then, related because it is transparent means resistance to taxpayer data. So it's more about how we give understanding and transparency to taxpayers, what will the data be used for. If necessary, hold a disclaimer to the user on the blockchain to mitigate leakage or protect data as well".

I4b agrees that:

> "The theory, in the beginning, must be certain, how to prove that fraud will not occur, transparency is guaranteed, how about the initial contracts of all kinds. Everything happens in the blockchain network. But when it comes to the user's hand, it should be displayed by simply pressing yes and no ".

Referring to the two quotations above, it can be concluded that it is not solely the use of electricity and the internet in the application of blockchain which can consume excess energy and cause waste. In ensuring that blockchain can be useful and produce efficiency, especially transparency over UBO and even international coverage, it can be started with a strategy on how to socialize so that this technology can be accepted and used.

Conclusion

This study explores the potential outcomes of blockchain technology in the registration of Ultimate Beneficial Owners (UBO) in Indonesia, focusing on two main dimensions: value delivery and risk management. The research indicates that effective deployment of blockchain technology in UBO registration hinges on timely delivery supported by

engaged leaders and nodes who appreciate the benefits, particularly transparency. Non-disclosure of UBO information can elevate tax avoidance risks, which blockchain technology can mitigate. However, challenges such as the limited availability of blocks can be addressed through the use of private blockchains and hierarchical implementations. Additionally, the adoption of smart contracts that restrict access may help reduce security risks. Notably, the application of blockchain in this context does not lead to excessive energy consumption, thereby offering intangible efficiency gains.

To maximize the potential of blockchain in UBO registration, comprehensive solutions and strategic steps are essential for effective value delivery and risk management. However, achieving these outcomes requires sustained commitment from all stakeholders involved.

Academically, this study contributes to the field of tax administration by highlighting how blockchain technology can enhance transparency in UBO registration. Given the scarcity of research in this area, the findings also provide a foundational reference for further academic inquiry and practical application.

Practically, this research serves as a proposal to inform policy-making, particularly for the Directorate General of Taxes (DGT) and the Fiscal Policy Agency (FPA), encouraging the adoption of blockchain technology in the taxation sector. It aims to aid stakeholders in crafting policies that transcend mere taxation concerns and address broader financial integrity issues, such as those highlighted by the Financial Action Task Force (FATF) regarding the prevention of illegal money flows, including corruption and money laundering.

For both academics and practitioners, this study offers valuable insights and serves as a reference for future research. For taxpayers, the implications of this research could help ensure compliance and reduce the likelihood of audits or accusations of tax avoidance linked to UBO transparency.

This study acknowledges certain limitations which open avenues for future research. It exclusively examines the application of blockchain technology in UBO registration as defined by Presidential Decree No. 13 of 2018, within the context of Income Tax (PPh) and international tax domains. Future research could expand to explore blockchain's potential in other areas of taxation. Additionally, this study does not include perspectives from taxpayers who might already be using blockchain technology in other contexts. Future investigations could benefit from a broader range of informants to enhance data triangulation.

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