

Blockchain Can Provide Enormous Benefit to Indonesia

ESPECIALLY WHEN IT COMES TO FINANCIAL INCLUSION

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OK, So You May Not Have Heard of Blockchain.

If I told you there was a technology that could unlock the value trapped within assets and put that value to work to improve the businesses and livelihoods of many people, would that be of interest? If that same technology could be used to increase participation in the financial system by making it easier to invest, to secure credit, and accumulate savings through lowering barriers and limits for access, would you agree that would be worthwhile to explore? And for a country like Indonesia where a large percentage of the population are underrepresented in the financial system, this technology could be of enormous value and be put to good use. Well, such a technology does exist, and it is called blockchain.

Blockchain was released to the world back in 2008. It is now often described as one of the most significant emerging technologies, along with biotech, artificial intelligence, and robotics, because it is likely to have a major impact on our lives going forward. However, many Indonesians will never have heard of Blockchain. And this is not just the person in the street. It seems many business leaders and owners are not aware of blockchain either. I think this is a situation which needs to be addressed because blockchain is a technology that could help unlock enormous value in Indonesia, and more importantly that value could be used to improve financial inclusion.

You Have Probably Heard of Bitcoin.

Most people have heard of Bitcoin. A digital currency that can be owned, stored, or transferred to others, all without the involvement of a bank or central authority. There is no Federal Reserve, or the equivalent of a Bank Indonesia, that controls or regulates Bitcoin. There is no central payment company like PayPal or GoPay that owns, promotes, or operates Bitcoin. Instead, Bitcoin is like digital gold. It can be “mined” just like gold. Once you have Bitcoin you can hoard it away and nobody can take it from you as long as you keep your digital wallet secure. There is no authority that can stop you receiving more Bitcoin or block you from transferring it to another person. If the internet is available, you can transact using your Bitcoin. In fact, much like gold. If you keep your gold ingots safe, you are storing your wealth out of a financial system controlled by governments and banks.

The inventor of Bitcoin is known only by the name Satoshi Nakamoto. While the identity of this person has never been confirmed, the idea for Bitcoin was released to the world through a now famous white paper reputedly authored by Satoshi Nakamoto in October 2008. In this paper, Nakamoto defined an electronic currency system that allowed instant payments between two or more parties connected through the internet without the need to trust any third-party intermediary, or indeed, without the need for the transacting parties to know or trust each other. What was trusted was the underlying technology – and that technology was blockchain.

Beneath all the hype that is Bitcoin – is blockchain. Blockchain is the technology that enables Bitcoin to work. It is blockchain that allows an individual to store and transfer Bitcoin without using a bank

or central system. Blockchain enables people to transact with anyone else connected to the same blockchain network and to trust that the transactions will work and cannot be tampered with, altered, or reversed.

It is worth noting that Bitcoin has never been hacked or compromised. Nobody has ever been able to create Bitcoin out of nothing, nor to alter or reverse Bitcoin transactions. Nobody has ever been able to break the blockchain security that underpins the trust in Bitcoin. You may have heard of successful attempts to steal Bitcoin from companies or individuals. And yes, this has occurred because fraudsters have managed to gain access to the wallets where people store their Bitcoins. Attacks have been successful because unauthorized persons have been able to gain access to a wallet by discovering an exposed password or security phrase. The underlying blockchain however, has never been broken.

Blockchain Is Much More Than Bitcoin, and It Has Moved On.

So, what is blockchain? Well first, it is important to understand that it is far more than Bitcoin. Bitcoin is an application that takes advantage of the technology that is blockchain. The term “crypto” is often used to describe the technology space in which blockchain sits, and you will hear Bitcoin described as a “crypto-currency”. Crypto is short for cryptography, which is nothing new, and is used to make blockchain secure. Satoshi Nakamoto was able to describe a new and clever way to employ cryptography to enable the use of electronic money between peers on the internet.

In essence what Satoshi Nakamoto described is a transaction ledger that records transactions involving the creation of Bitcoin, and the movement of Bitcoin from one party to another. The innovation is that this ledger is not owned by any one party but exists as a decentralized database distributed amongst all the participants in the Bitcoin network. Hence you will often hear blockchain referred to as distributed ledger technology or DLT. Cryptography is employed to ensure that the distributed ledger can never be altered or deleted, only authorized entities can send and receive Bitcoin, and a consensus algorithm ensures that all parties who have a copy of the ledger can agree that the ledger is true and correct. Underlying the consensus algorithm is another feature of blockchain which is transparency – all participants can view the blockchain. While the identities of Bitcoin owners may stay secret, the transactions they execute are there for everyone to see. It is often said that blockchain allows peers to transact with confidence, in a trustless environment.

The second thing to understand is that blockchain has evolved considerably since its initial definition by Satoshi Nakamoto back in 2008. We have now seen other crypto pioneers build on Nakamoto’s original work. People like Vitalik Buterin, one of the co-founders of a blockchain system called Ethereum; Charles Hoskinson, another of the co-founders of Ethereum, who has gone on to create a so-called third generation blockchain known as Cardano; and Gavin Wood, also one of the founders of Ethereum, and creator of Polkadot – yet another third generation blockchain.

Yes, we are up to the third generation of blockchain technology. Where Bitcoin is now described as first generation – a blockchain that enabled an electronic currency that could be stored and transferred between peers on the internet, Vitalik Buterin and his colleagues made a significant breakthrough by defining a second generation blockchain that could do so much more, while still maintaining the principles of distributed, immutable, and transparent as defined in the Nakamoto white paper. Ethereum was the first implementation of a second generation blockchain and introduced two important concepts. The first being tokens stored on the blockchain that could represent any asset, not just digital money. These tokens are often called NFTs (or Non-Fungible Tokens) which is a fancy way of saying a token with unique attributes. Bitcoin, by way of contrast is

an example of a fungible token – every Bitcoin has the same attributes. The second important Ethereum innovation was smart contracts – a program that can be created and installed on the blockchain that can execute a transaction if a pre-agreed event occurs. Once established, smart contracts cannot be altered or reversed. As an example, a smart contract might be used between parties to execute an insurance contract if the policy holder is involved in a car accident, or to execute payment if goods are received, or to execute a will if someone is deceased.

The significance of what Ethereum delivered as a second generation blockchain can be summarized quite simply as the ability to represent any real-world asset as a token, or even break that asset up into many tokens, and to track the transactions that are performed against those assets. This includes the ability to automate the execution of transactions against the assets when certain events take place, using smart contracts. Typical transactions that happen for assets are they can be created, can be owned, can be bought and sold, can earn income, and can be destroyed. All these can be recorded on the blockchain with the same security and transparency, in a trustless network that is not owned or controlled by one party, as was described by Satoshi Nakamoto back in 2008.

Ethereum is often described as a second generation blockchain. While it delivered significant innovation such as NFTs and smart contracts, it did not deliver on performance and scalability, resulting in exceedingly high usage fees and slow response times. It is the third generation of blockchain represented by implementations such as Ethereum 2.0, Cardano, and Polkadot, just to name a few, that will solve these problems.

Back to the Benefits and Indonesia

So, when we are looking to take advantage of this innovative new technology that is blockchain, what is it that we are looking for to realize the promised benefits? The answer lies in trust and lowering the cost of participation.

Let us first look at the question of trust. When we examine almost any ecosystem where multiple parties participate and transact, we find that for that ecosystem to work and provide benefit to all participants, they all need to have a degree of trust in each other. In most traditional ecosystems that exist today, parties operate in silos, with their own databases, and systems. In such an environment trust is typically established through some sort of central authority or intermediary – let us call them central trusted parties. For example, in the payment industry, we trust banks, for insurance we trust insurance companies, for real estate we trust estate agents, for assets and equities we trust a broker, for markets and supply chains trust is placed in a variety of organizations including banks, market aggregators, and third-party agents that create transparency between supply chain participants to enable the flow of goods and payments. The existence of these central trusted parties allows the participants in a network to establish sufficient trust for transactions to flow.

However, there is a cost to establishing this trust. The central trusted parties require payment to perform the checks and balances on behalf of all the ecosystem participants which adds a layer of cost to the ecosystem. In addition to this cost, the processes associated with ensuring the checks and balances can result in delays and increasing transaction times.

Which leads us to the second question of cost of participation in an ecosystem. The need to pay for central trusted parties raises the barrier to entry, blocking those who cannot afford the fees from participating to achieve benefit. In Indonesia this is certainly the case. A large sector of the population is blocked from participating in financial systems because the barrier to entry is too high.

Either they cannot afford the fees to participate, or the provision of financial products and services to these sectors of the population is unprofitable for the providers of such products and services.

The application of blockchain can address both questions. First, as we have seen, blockchain can allow parties to participate and transact in a trustless environment. The distributed ledger – the blockchain, is what establishes the trust, and therefore can be used to replace the central trusted parties. This does two things – it removes the layer of cost due to the central trusted parties, and additionally can remove some of the delays attributed to the processing of the central trusted parties. In fact, blockchain and smart contracts can be used to automate many of the transactions that take place in an ecosystem.

With a layer of cost removed, this potentially lowers the barrier to providing financial services to those who previously were excluded from accessing products such as loans, credit, insurance, and saving and investment.

As an example, we see many essential supply chains in Indonesia involving micro merchants, farmers, fishers, family-based businesses, who do not have access to supply chain finance or business loans. Traditional banking, insurance and supply chain agent business models are too expensive. The merest setback can put these traders out of business for good. The opportunity exists to establish a blockchain network as the distributed ledger for the supply chain, provide benefits such as transparency, automation, and traceability, and allow banks and insurance companies to join those same blockchain networks for the provision of supply chain finance and business loans. The game changing advantage that blockchain provides is real-time visibility of the supply chain transactions for a bank to justify the supply of credit and loans, and an insurance company to provide protection at a micro level.

We can look more broadly at how blockchain might assist in releasing value that is currently locked up in assets connecting these assets to a distributed network. There are many assets in Indonesia where the value is locked up and inaccessible to all but the wealthiest. This is again because the barriers to invest and benefit from these assets are currently too high. Investing in buildings, private companies, public infrastructure, and even exotic assets such as art, requires significant amounts of capital. This is because today these assets are traded as a whole, and we don't have the systems and networks to break these assets down into small enough parts and allow the trading of these parts. If I wish to invest in real estate, I must buy a whole building.

How does this change with blockchain? With blockchain, a building could be divided into micro-components with each component represented as an NFT on the blockchain, available to be owned, bought, and sold in a peer-to-peer marketplace. This would greatly increase the number of Indonesians who could participate in the property investment, enabling them to grow wealth. This would unlock the value represented by such assets because micro-investors could use this equity to secure finance to invest in growing their own businesses, all on the same blockchain network.

By connecting assets that today are owned by a few to blockchain networks that allow these assets to be tokenized and traded, we are freeing up value and putting it to work for a much bigger audience. This is the future that blockchain could enable in Indonesia.

About the Author:

Paul Brisk is an Australian living in Jakarta. He is one of the co-founders of the Indonesian company ChainSmart. ChainSmart views blockchain as a long-term strategic focus and offers blockchain as a service for supply chain management, finance, automation, and traceability.