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THE **PAST, PRESENT** AND **FUTURE** OF **BLOCKCHAIN**

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Stop worrying about putting the cart before the horse; with blockchain, there may be no need for a cart or horse at all.

In Charles Dickens' famous novella, A Christmas Carol, Ebenezer Scrooge is visited by three ghosts. A notoriously grouchy old miser, Scrooge's encounters with these apparitions show him how his downright grumpiness affects those around him. And it is after these visits that he transforms into a kinder man.

In the same way that Scrooge's experience with his past, present and future inspired him to change his ways, new technologies and disruptive innovation are driving modern industries to look at where they've been, where they are and where they hope to be in the future.

Blockchain is one of these innovations.
"If you think about the transition from horses and carts to automobiles, there was a very big difference between improving the breed of horse or the quality of the cart and moving to a completely new paradigm of a 'horseless carriage'," says Farzam Ehsani, lead of Rand Merchant Bank's blockchain Initiative. "Blockchain technology holds the potential to create such a step change for financial systems across the world."

This is especially true as we move to a more fluid, dynamic and agile way of doing business, adds Ian Bessarabia, market development lead for Africa at Thomson Reuters.

The ghost of transactions past

Remember the heyday of the photocopy shop? At the time, if you needed a copy of your ID or telephone account, you had to visit your local printing store and shell out a few copper coins for your copies. This was the lay of the land before some smart individuals developed the scanner and those of us lucky enough to own one could duplicate whatever we wanted without getting anyone else involved.

"This 'Findustrial Revolution' is, therefore, unlocking the perfect opportunity for Africa and it's happening at exactly the right point in the continent's industrialisation." says Ian Bessarabia, Thomson Reuters

If we take this idea over to the world of trade and transactions, one could think of blockchain as being a little like the scanner in that it allows us to transact freely without a middleman. "A key benefit of blockchain is that the technology offers participants the ability to transfer value across the internet, without the need for a central third party. The seller and buyer interact directly without needing verification by a trusted third-party or intermediary," says Bessarabia.

Historically, all financial ledgers were managed by a single institution, with much effort and cost expended to correctly reconcile these diverse ledgers, notes Ehsani. Blockchain technology, for the first time ever, allows multiple institutions to collectively manage a shared ledger. This has tremendous implications for the reduction of costs and improved efficiencies in our financial system. "By combining disciplines such as computer science, cryptography, economics and game theory, blockchain produces a system in which digital assets are transferred without requiring a particular trusted intermediary to ensure the integrity of the system."

What blockchain technology offers is a new means and way of implementing transparent transactions. It can create environments that are replicated, shared and permissioned, while developing new transactions and business models.

The key benefits of a blockchain model transaction environment are real-time transaction completion, reduced costs, less risk and unprecedented levels of trust.

The ghost of transactions present

There's no denying the incredible potential of blockchain, but Barnard stresses that we're a long way from it becoming an industry norm. He cites problems of speed, scalability and interoperability to privacy, security and regulation. There also needs to be a clear business case outlining how this technology will save people money and whether or not these cost savings can be proven, he adds.

While blockchain technology currently underpins Bitcoin and other cryptocurrencies, it has the potential to disrupt a wide variety of business processes, notes Bessarabia.

"This Findustrial Revolution is, therefore, unlocking the perfect opportunity for Africa and it's happening at exactly the right point in the continent's industrialisation. The population and the technology are aligning to create a potential economic powerhouse." This presents new ways of supporting startups from both a funding and expertise perspective.

This is a particularly relevant proposition when one considers how African banks are already openly collaborating with different disruptive technologies and various startups, making the environment in Africa ideal to evolve a digital cash and payments services architecture.

For Ehsani, even though the financial services industry is being disrupted by blockchain technology, this doesn't mean that financial institutions should feel threatened. In fact, it simplifies and streamlines many of the challenges banks and financial institutions grapple with in their day-to-day operations. Applying this technology more broadly, blockchain is making a mark on industries as diverse as healthcare, music, and energy. Many businesses stand to benefit from the increased efficiencies and reduced costs that this technology can bring about, but businesses must be mindful of how blockchain could impact their existing business model and must strategise on how to adapt to this changing paradigm.

The ghost of transactions to come

Forrester argues that for the Internet of Things (IoT) to live up to its promises, devices will sooner or later need to communicate directly, autonomously and securely with each other. While well-architected blockchain-based systems can deliver those requirements, they're not available or even feasible today. The research firm believes this to be a good thing because it opens us up to great opportunities to iterate and take our time to get things right.

For Bessarabi, the opportunities are there. We just need to embrace them. Expansion within the financial sphere will see our stock exchanges becoming blockchainenabled. The idea is that every stock bought or sold would be on the ledger, he says. "You could trace back your ownership of that equity and even tie that to your estate planning documents. Extrapolating this out, those documents could also be housed on a blockchain with particular triggers for when you eventually die. Ultimately, that information is released to your beneficiaries based on the event (your date of death) recording by the Social Security Administration (SSA)."
"Blockchain technology holds the potential to create a step change for financial systems across the world." says Farzam Ehsani, Rand Merchant Bank

The legal fraternity provides another example because by automating processes around payments related to contract documents, blockchain will totally change the game for contract attorneys. From a land registry and deed management perspective, having a public blockchain ledger would allow everyone to know who owns what piece of land, which would also make the exchange of those plots much easier and more equitable, Bessarabi continues.

In some African countries, they are looking at using blockchain technology to keep census information. Voter records could be added to this process as a means to have a central repository of eligible citizens.

David Geral, Bowmans partner and head of banking and financial services regulatory practice, cautions that if this technology is to have a positive impact in the future, fintech companies must take the time to engage regulators before introducing products to the market, especially if such products require a company to significantly change its business model. It's important to understand what the regulator's thoughts or concerns are with a particular product or service. This should, ideally, be done before actually rolling these services/products out. "It can end up being a costly exercise developing and producing a product/service without considering the regulatory implications."

In line with this, Barnard stresses that all of these smart devices connecting via the IoT pose some serious security challenges. Blockchain may have been built for decentralised control, making it a more scalable security scheme. And it also strongly protects against data tampering and provides assurances that new data is well-defined. "However, new infrastructure is still needed to manage devices and control who has access to data."

Bessarabi believes that blockchain will undergo a lengthy period where take-up is gradual, much like what we experienced with the internet. Given the challenges, players must start by identifying opportunities, while also pinpointing any potential threats that could impact their business models. "The technological innovation space is primarily about iterative learning, and being able to collaborate on progress and change," he says. "Those who embrace this philosophy are likely to find themselves ahead of the innovation curve."

Blockchain barriers

Ian Bessarabia, from Thomson Reuters, outlines a few challenges related to blockchain uptake today and into the future:

- **A daunting regulatory and governance environment** – Banks and financial institutions operate in a heavily regulated environment. But innovations like blockchain are creating entirely new processes, which fall outside of the scope of existing regulations. In line with this, shared economies with multiple participants require new governance standards. These are largely yet to be established.
- **Challenging the status quo** – The pervasive financial industry mindset is often behind technological advances. Many are averse to anything that challenges the norm.
- **Reputational concerns** – New technologies present new opportunities in addition to opening businesses up to unfamiliar risks. It's essential that people are educated around what blockchain means for their industry and their business.
- **Scepticism** – Many organisations would rather wait until the market matures, and the technology has evolved, until they dip their toes into the blockchain space.

Blockchain? Bitcoin? WTF?

Launched in 2009, the aim of the cryptocurrency called Bitcoin was to simplify online transactions by bypassing institutional and governmental controls. It does so by storing all transactions over a peer-to-peer network rather than using a central monetary repository. This network is called a blockchain. So while Bitcoin is moved around over an open, anonymous, public blockchain network, it is not a blockchain itself. In this way, you can think of blockchain as being the operating system and Bitcoin as being one of the many applications that run using this system.

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