



Building blocks of the future

Blockchain is set to transform financial transactions, and thus the world of corporate reporting as well. *Sally Percy* examines the implications for the financial services industry, for the finance function and for audit.

Imagine a world where transactions are executed automatically and verified in real time, and where a computer settles derivative contracts on your behalf. Could the world you're imagining soon exist, thanks to blockchain?

Blockchain may be best known as the distributed ledger technology that underpins the digital currency Bitcoin, but it could also be used for a host of other purposes that involve transmitting data securely. These include payment processing, online voting, executing contracts, signing documents digitally, creating verifiable audit trails and registering digital assets such as stocks, bonds and land titles. Its potential for application within the transaction-based financial services industry is particularly vast, but it is relevant to organizations in every sector.

Going a stage further, blockchain could even overturn entire business models in certain sectors by empowering the growth of "virtual organizations," also known as decentralized autonomous organizations (DAOs). DAOs operate through computer programs known as "smart

contracts" that carry out the wishes of human shareholders by automatically executing the terms of a contract – for example, transferring money or assets.

By the first quarter of 2016, US\$1.1b of venture capital had been invested in Bitcoin and blockchain start-ups, according to the *Q1 2016 State of Blockchain* report by CoinDesk, a news website specializing in digital currencies. "Blockchain technology represents nothing less than the second generation of the internet," claims Alex Tapscott, CEO of consultancy Northwest Passage Ventures and co-author of the book *Blockchain Revolution*. "It is going to have a profound impact not just on financial services, but on the world of business and society as a whole. For the first time in history, two or more parties need not know or trust each other to transact or do business online."

AUTOMATED PROCESSES

In the future, finance teams could make use of distributed ledgers – together with artificial intelligence – to automate a range of processes, from

payments through to foreign exchange trades and the filing of tax returns. For greater efficiency, finance functions could even outsource parts – if not all – of their routine work to DAOs.

Finance teams could work with blockchain in different ways, observes Professor Nigel Smart from the department of computer science at the University of Bristol in the UK. “They could have multiple distributed ledgers, each one doing something different. Or they could have big distributed ledgers, with lots of different things going on within one ledger. Some data may be visible to everybody, while other data may be encrypted so that it is only visible to a small group of people.”

Since the data stored in distributed ledgers is authenticated by multiple parties and continually updated, it offers finance teams the possibility of both real-time reporting to management and external auditors, and being able to work more effectively with their external audit and tax providers.

IMPLICATIONS FOR AUDIT

Blockchain could have considerable implications for audit as well. Tapscott says: “If, each time a company entered into a transaction, an unchangeable record was automatically reported to a distributed ledger, ... you could actually have a real-time audit, because all transaction data is recorded to the distributed ledger.”

“I can see the world moving to real-time auditing,” concurs futurist Rohit Talwar, Editor of *The Future of Business*. “Audit firms will provide plug-ins for blockchain, do the audit in real time, spot anomalies and then send in humans to dig deeper if necessary – unless software can do it for them, of course.” Blockchain could also spell the end of random sampling by auditors, since code could perform a check on every single transaction in future.

Talwar also suggests that blockchain, together with artificial intelligence, could transform the way in

What is blockchain?

Blockchain is a type of database known as a distributed ledger that operates on a consensus basis. Whenever a user submits a new data block to the blockchain, the majority of other users must confirm that it is valid. The database does not have a central administrator.

Every data block in the ledger is linked to the previous block by a cryptographic algorithm called a hash, with the linked blocks forming a chain – hence the name “blockchain.”

Each user holds a copy of the distributed ledger on their own computer and the data is replicated and synchronized across all copies of the ledger in real time. If one of the computers holding a copy of the distributed ledger fails or comes under attack, the other computers continue to maintain the database.

which fraud investigations and forensic accounting are undertaken. “The real-time systems would highlight and investigate anomalies and unusual transaction patterns as they emerge,” he explains.

Nevertheless, many commentators suggest that auditors will always be needed to design the appropriate audit strategies in complex systems – making decisions about what level of audit is required, how data should be captured, and the type of audit analytics that should be applied. An even more crucial role will be to provide assurance in an increasingly complex control environment and, for instance, to ensure the party or entity that is entering the records on the distributed ledger does actually exist and the transaction has economic substance.

“Auditors do far more than just add up the numbers and make sure they come to the right

“A challenge and an opportunity”

Bank of Ireland is focusing its innovation efforts in two core areas, says Garvan Callan, Customer, Digital and Innovation Director for the bank’s retail business. The first of these is incubating tech start-ups, which entails providing them with facilities in flagship branches and helping them to take their products to market. The second is monitoring important strategic trends, including blockchain.

“We see blockchain as a technology that can potentially reshape how we work as an organization and how we interact with our customers,” Callan explains.

Blockchain could have an impact on three areas of the bank’s business, according to Callan. There are potential opportunities in providing more efficient payment processing and settlement

processes for customers; improving the customer interaction process by making it faster and offering a single, time-stamped view of transactions; and creating a new layer of data and process transmission that sits on top of the bank’s existing legacy IT structure.

“Blockchain could be a way to enhance the traditional exchange, payment and settlement infrastructures, which find it hard to keep up with the exponential growth in customer expectations around digital,” Callan explains.

While blockchain offers huge opportunities for financial services institutions, it also challenges them, he adds, since they will have to “scale up what is effectively an open-source technology in a closed environment.”

“Change will not happen overnight”

In *Blockchain and T2S: A potential disruptor*, a report published by Standard Chartered, Alan Naughton, the bank’s Head of Product, Securities Services, says that blockchain has “the potential to impact markets globally.” However, he warns that “change will not happen overnight” and that distributed ledger technology will take years to come to fruition.

“It will require harmonized standards and regulation agreed by the industry, regulators and governments. The scale of the challenge should not be underestimated,” Naughton argues.

He also suggests that the current, relatively small level of transactional volumes is an issue. “If blockchain is to truly evolve, it must prove itself beyond niche or small segments of the market. It needs to show that it can handle huge volumes of time-critical transactions in a highly regulated environment.”

“Blockchain is not just about technology”

Swiss bank UBS launched its Crypto 2.0 Pathfinder program in 2015 as part of its strategy to improve customer experience.

Senior Innovation Manager Alex Batlin heads the program, which is researching blockchain and its likely impact on business models. “We’re looking at anything to do with value transfer,” he says. “It could be payments, derivatives or securities. But we’re not looking at virtual currency, because that has attracted a lot of legal controversy.”

UBS was one of the first nine members of the R3 consortium of banks that is exploring blockchain technology. “There’s no point being the only ones looking into something if it’s a network effect

you’re seeking,” Batlin explains. “You won’t make a business out of it.”

Blockchain is not just about technology, he continues. “It’s about integration with existing legal and regulatory frameworks. We’ve worked with regulators and central banks to see how we can co-design the systems in a way that’s good for us and good for them.”

Annika Schröder, Innovation Manager at UBS, adds that blockchain is just one aspect of a broader technology revolution that is taking place. She says: “Robotic automation processes can be applied to anything from low-level, manual repetitive work to work that requires advanced knowledge.”

value,” Smart adds. “They also audit control mechanisms, disaster recovery mechanisms, processes, resilience and systems. So the auditors will also need to audit whether the distributed ledger systems are working correctly.”

TOO GOOD TO BE TRUE?

In principle, blockchain is extremely secure. That’s because every transaction on blockchain is digitally signed, providing assurance that only a certain party could have recorded it. In addition, the data is validated by a majority of other users on the system. Having said that, if the majority of the users on the distributed ledger become corrupt, it is possible to break the chain. Blockchain can also be vulnerable to programming mistakes, as a Swiss-based DAO – actually called The DAO – discovered when it lost US\$50m in virtual currency in June 2016 after someone exploited a programming mistake. The reality is that no system is flawless – not even blockchain.

Blockchain has other shortcomings that need addressing. These include its comparative slowness, heavy consumption of power (which makes it expensive to run and environmentally unfriendly), privacy issues (other users on the ledger need to be able to see data if they are to validate it), a lack of standards governing the industry and its limited scalability to date.

Given the opportunities and risks associated with blockchain, it is not surprising that the technology

“In future, every single company is going to need a blockchain strategy.”

Alex Tapscott, author

has attracted the attention of governments, central banks and regulators. In June 2016, the European Securities and Markets Authority announced that it was consulting on whether distributed ledger technologies should be used in the securities markets.

Paul Brody, Global Innovation – Blockchain Leader at EY, says: “Regulatory approval is going to be required for any major implementation of blockchain in company accounts and reporting, which means that we won’t see a rapid adoption of the technology.

“Blockchain is spreading quickly in non-regulated areas,” he continues, “both as a general-purpose information technology and as a tool for integrating financial services with operating technologies. Companies will use these unregulated use cases to build confidence as they gradually implement blockchain in their core financial operations.”

Viewpoint



Blockchain and the CFO

Jeanne Boillet, Global Assurance Innovation Leader, EY

Blockchain has the potential to transform our world. By removing duplication of effort and unnecessary processes, and guaranteeing greater integrity of data, it is going to bring us a more efficient and more secure way of doing business than ever before.

Yet we need to overcome several challenges before companies can take full advantage of blockchain’s potential. These challenges include technology and organizational processes that are not mature enough to work with blockchain, integration with legacy systems and the investment required to achieve that, and unclear legal and regulatory frameworks.

In the long term, the finance function can look forward to more real-time audit and real-time reporting and less time spent on the onerous tasks that consume so much finance resource today. This will open up exciting possibilities for CFOs and their teams. Freed from some of the remaining routine activities that haven’t already been outsourced to shared service centers, and with part of their regulatory obligations potentially automated, they can play a more strategic role in creating new opportunities for their organizations by identifying trends from the vast swathes of data that are churned out.

Yet the challenge for CFOs is getting the right people – and the right technology systems – in place to take advantage of those opportunities as they arise. EY’s 2016 report, *The DNA of the CFO*, found that nearly half (47%) of CFOs do not think their current finance function has the right mix of capabilities to meet the demands of forthcoming strategic priorities.

CFOs need to be ready for the many disruptions that blockchain could create. This means helping to shape the organization’s strategy so that it is innovation-ready, with the right technology platform in place. It also means understanding what blockchain can do for every department and how finance can innovate, using blockchain to drive the organization’s future success.

We are still in the early days of understanding what blockchain can do, but the long-term potential of the technology is undoubtedly huge. “In future, every single company is going to need a blockchain strategy,” Tapscott predicts. “It will need to rethink its whole organization and what it does.” ■

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