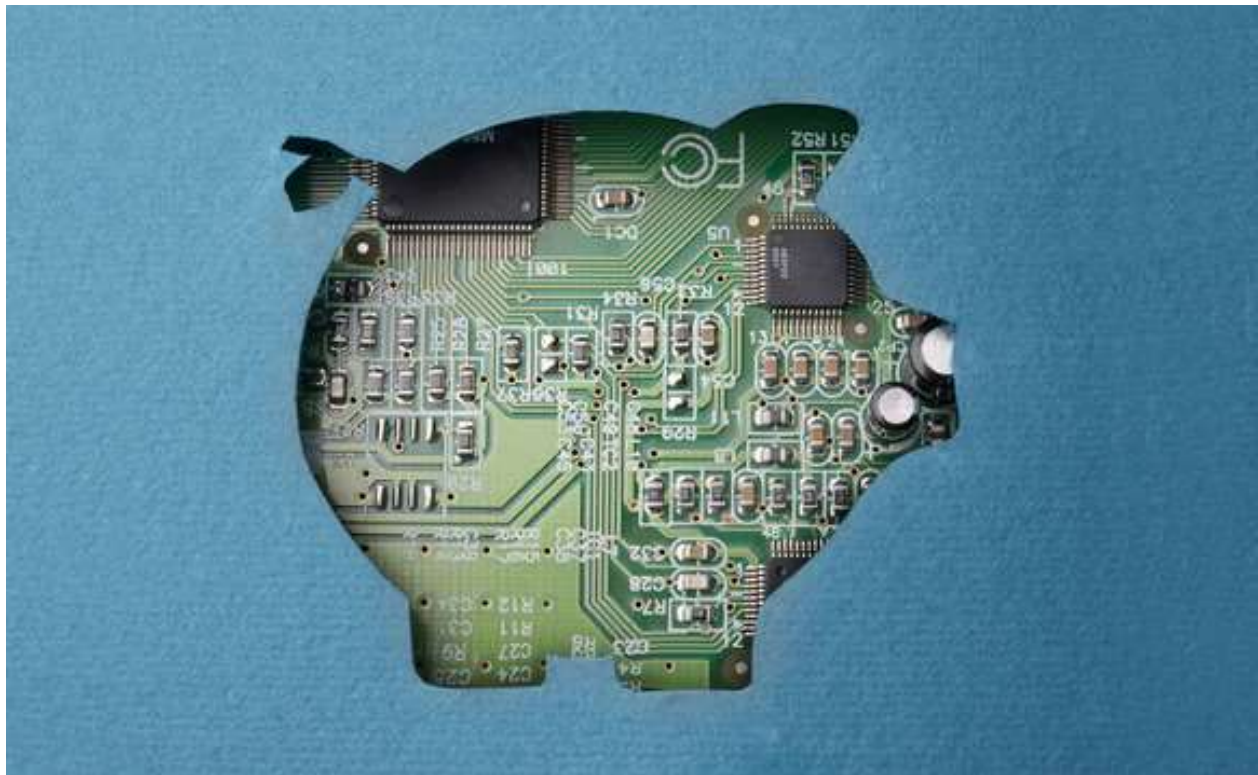


# Banks must embrace their digital destiny

Alexander Lipton believes the time is right for advanced digital banks to take the industry forward, and quants can lead the charge



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To understand why banks are unloved and feared by customers, regulators and investors, and what can be done to rectify this unfortunate situation, we need to recognise the nature of the banking business. It is easier said than done, since banks are in the business of buying and selling money, and there is little consensus on what money is, and

how it is created. For example, nobody knows if bitcoin is a form of money or not.

It is universally accepted that money has several important functions, such as a store of value, means of payment for goods, services and taxes, and a unit of account. Currently, there are three schools of thought on how money is created: via credit creation; via fractional reserve lending; and via financial intermediation.

While the academic establishment positioned itself squarely behind financial intermediation, there is no doubt in my mind that credit creation is the correct mechanism of money creation. In short, money is created by banks "out of thin air".<sup>1</sup>


In view of the above, the art of banking is one of skilful record keeping in the general ledger, which reflects flows of money and credit. By its very nature, record keeping is a mathematical and technological activity. Once this fact is recognised, the root causes of banking malaise become obvious: incumbent banks have a poor quantitative handle of the credit risks on their books, and are far behind the latest technological breakthroughs.

In the last 30 years, major industries such as retail, travel, communications, and mass media underwent revolutionary changes in their business models, while banking remained stagnant, living on its past accomplishments and oblivious to the winds of change.

The current state of banking is deeply unsatisfactory, because it is neither efficient, nor competitive. Moreover, customers are exposed to the risk of losing their deposits that are above the regulatory guaranteed minimum in the case of their bank's default, since they are mere junior creditors in a bank default waterfall.

Indeed, English common law established in the early nineteenth century that "money paid into a banker's [sic] becomes immediately a part of his general assets; and he is merely a debtor for the amount".<sup>2</sup>

This situation is not a pure coincidence, nor is about to change any time soon. Even the great financial crisis of 2008 didn't alter the banks' *modus operandi*. In essence, it made the situation even worse because "stronger" banks absorbed failed ones, thus becoming too-big-to-manage, in addition to too-big-to-fail.



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## **This situation opens a unique opportunity for building a digital bank from scratch by utilising the most advanced technologies**

Recently, incumbents started paying lip service to the digital challenges facing them. Not surprisingly, they have chosen the path of least resistance by backing the creation of digital apps, instead of dramatically revamping their technology framework.

While this strategy of "putting lipstick on a pig"<sup>3</sup> is understandable given the enormous costs and complexity of retrofitting existing technologies to the demands of the internet economy, it's clearly inadequate for rising to the challenges facing the sector. As the *Harvard Business Review* [said recently](#), "it's an economy of limitless opportunities for some and disruption and displacement for others".

This situation opens a unique opportunity for building a digital bank from scratch by utilising the most advanced technologies: cryptography and distributed ledger techniques, artificial intelligence, big data, and deep learning.

This bank will naturally achieve a high degree of efficiency, profitability and agility based on balance sheet optimisation, deployment of digital distributed ledger-inspired infrastructure, and essential automation and digitisation of the treasury function and back office. It can also benefit from enhanced security employing the most advanced cryptographic techniques throughout the entire organisation.

Its infrastructure will be flexible enough to handle both private digital currencies such as bitcoin, and future government issued currencies such as 'britcoin', a centralised digital currency which is currently contemplated by the Bank of England. It will also be capable of issuing its own digital currency.

The bank will be able to deploy artificial intelligence and big data analytics for enhancing the customer experience, facilitate automated personal and small to medium-sized enterprise credit issuance, and improve risk management, which will be appreciated by investors, customers and regulators alike.<sup>4</sup>

It is clear that quants of the future will spend much more time creating flexible and versatile infrastructures for digital banking than on pricing exotic derivatives. Provided that

they learn economics and improve their communication skills, they have a fighting chance to lead the digital banking revolution.

<sup>1</sup> A. Lipton, "[Modern monetary circuit theory](#)". International Journal of Theoretical and Applied Finance, 2016.

<sup>2</sup> *Devaynes v. Noble (1816)*.

<sup>3</sup> Mark Mullen, chief executive officer of UK startup Atom Bank.

<sup>4</sup> Lipton, Shrier and Pentland, "*Digital banking manifesto: the end of banks*". Massachusetts Institute of Technology Connection Science, 2016.