

Intelligent by design

Richard Windsor points out how much banks would have to gain from taking the plunge into the early application of artificial intelligence systems, but doubts that many incumbents will move that fast, or that boldly, in their corporate evolution

Of the many industries that are unprepared for full digitisation, banking is a stand-out. Its requirements for security and identity verification, combined with the danger of liability for failing to stop electronic theft, fraud and money-laundering, have made banks extremely cautious. The end result is that systems have to be considered bombproof before deployment, which means that technology development – at least at the incumbents – moves at a glacial pace.

Unfortunately for those incumbents, start-ups do not have to grapple with cumbersome legacy IT. Though the challengers are still very small and banking benefits from economies of scale – particularly when people expect to have “free” current accounts – newbies can be nimble. Further, the UK regulator would like to see more competition; digital delivery of bank services is much cheaper than running a branch network; and many of the challengers are gaining ground. Perhaps more importantly, from January 2018, the incumbents have to make customer data available to their competitors. What can the incumbents do to save themselves? Artificial intelligence (AI) may give them a chance to push back against the upstarts.

AI has been around for over 50 years but it is only in the last ten that it has started to have a real impact. Investments that once looked esoteric, such as a machine that can play “Go”, are now reasonably simple to justify.

What could AI do for banking? The banking system generates vast quantities of crucial financial information, but spotting anomalous transactions is becoming increasingly difficult. At the same time, regulators levy stiff fines on those banks that fail to comply with the rules. That is one of the reasons why many banks are abandoning correspondent banking relationships.

Given the amount and complexity of information that has to be sifted through to meet AML regulation alone, AI could have obvious benefits in “teaching” systems to pick out non-compliant transactions. But solving existing problems is only part of what AI can bring. There is clearly far more potential in new and value-added services.

Unfortunately, developing something novel is more easily said than done. AI is still at a very early stage. The first step in

developing AI is to understand the data fully that the system is generating, which is a very difficult problem in its own right. This is because most of the data generated across the world is unstructured (video, e-mail, images etc.) meaning that there are no labels or metadata to identify it or its contents. For the banks this is a slightly easier problem as most of their data is either transactional, meaning that it fits in a series of predefined fields, or specific data that has been requested from customers. This structure means that the banks will already know what the different pieces of data are and to

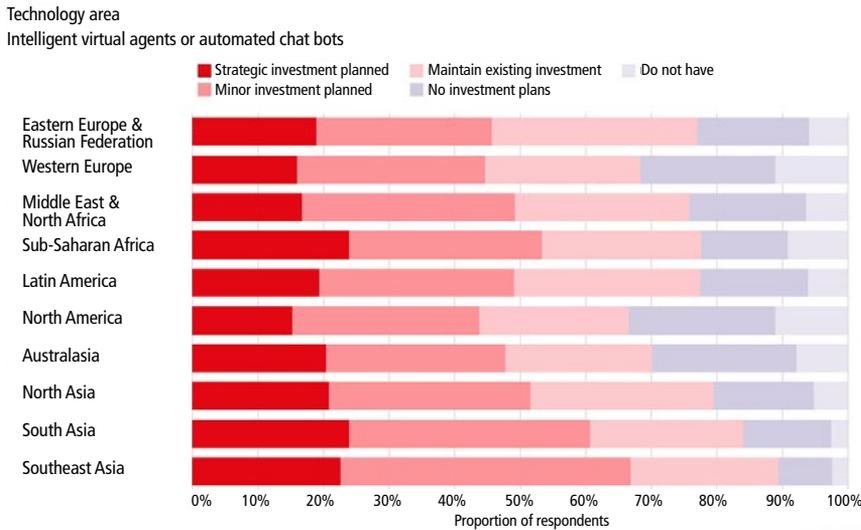
“*Developing and training algorithms is an expensive and time-consuming task*”

what they refer, which should make it easier to begin training their algorithms. However, developing and training algorithms is an expensive and time-consuming task even when data is structured. Three problems in particular stand out:

Large data requirement. Today, vast amounts of data are required to train AI models. That has a huge impact on the amount of time that it takes to get good results as well as the speed at which a system can adapt to changing circumstances. To master simple tasks that small children can complete with a very small number of data points, AI models require both millions of data points and extensive manual training. As things stand, large banks, with large data sets, have an in-built advantage. However, given that the largest banks tend to be the slowest to move, only time will tell whether they are really able to use this advantage to good effect.

Transfer learning. This refers to the ability to learn to solve a problem in one domain and then apply that learning to solving another task. Currently, a separate AI application needs to be built for every single task and none of the learning is transferable. For example, the AlphaGo machine (built by DeepMind, which is owned by Alphabet, the Google holding company) is probably the best Go player in the world but it cannot play chess even though some of the principles behind

Ovum ICT Enterprise Insights (retail banks)



Sample size: 5,215

Question: What are your investment plans for the above during the next 18 months?

Vertical: All. Country: All. Enterprise size: All.

Source: Ovum

these games are the same. This would remain true even if the AlphaGo machine were taught the rules of chess.

Transfer learning remains one of the major goals of creating advanced AI. In the case of the banks, this means that, as things stand, they will have to train an algorithm for every single task they wish to perform. Faced with the constantly evolving landscape of financial crime, that is a severe

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limitation. However, there is still a lot of scope to add value to the day-to-day customer experience with intelligent and intuitive services.

Automated models. Currently, AI systems are built, trained and maintained by humans, which is very expensive, time consuming and requires a lot of skill. The ideal situation is one where the system is given a problem and can then build and train the models itself. This would greatly reduce both the time required and the expense of creating and maintaining intelligent machines.

The benefits of such a development to the banking sector are clear. A self-learning AI system could train itself to look for signs of crime, or other problems, while at the same time

improving and updating customer services without any human intervention. This most important step forward of all three stages would also, in all likelihood, be the most difficult. It is this kind of intelligence that would bring mankind closer to the dystopian futures envisioned by *Terminator* and *The Matrix*. Practitioners are already designing fail-safes and kill switches to prevent the sort of events where robots could “go rogue” from coming to pass.

Is it worth it?

Even though AI is still at a very early stage of development, there are already significant gains to be made by the banks that deploy AI today. First and foremost is the detection and avoidance of financial crime for which banks bear both regulatory and financial liability. Properly trained AI should, at the very least, be

able accurately to highlight suspicious transactions, accounts and relationships, which can then be flagged for human investigation. That would have the benefit of both detecting misconduct more effectively as well as reducing the costs of doing so.

A second application is in customer service through the use of intelligent chat bots. It has been well documented that instant chat is a highly effective customer service tool. It also lends itself to automation because the vast majority of customers make the same inquiries or requests. A certain level of AI is required to understand the fact that users ask the same question in different ways. Once that is dealt with, however, humans can focus on the unusual inquiries. The upshot should be both lower costs and better customer service.

In principle, AI has the potential to transform the banking industry, making it more efficient and able to offer better services to customers. The question is: which banks will be brave enough to be first movers and evolve? ■



Richard Windsor, CFA, was a technology analyst at Nomura Securities for 11 years. He became an industry leader in analysing handset software companies and is regularly consulted by small companies, start-ups and VCs for strategic input. He is now an independent research analyst and industry consultant. His blog, *Radio Free Mobile*, is at: www.radiofreemobile.com