



Edge use cases for financial services

Financial services is a highly digitally mature industry, driven by FinTech start-ups. Edge computing, a new form of distributed cloud, offers a range of opportunities for new and old players to increase profitability. Edge computing solutions could allow both the retail banking and alternative investment sectors to reduce costs and maximise revenue generation, producing significant ROI in a fiercely competitive market.

Tilly Gilbert, Edge Practice lead

Edge computing use cases for the financial services industry

The disruption of the financial services industry by FinTech companies in the aftermath of the 2008 financial crisis has rendered ineffectual long-held business practices and customer engagement channels. Now, banks and funds of all types are looking for ways to innovate, retain customers and increase profits within a more saturated and sophisticated market.

Digital banking transformation through edge computing

Edge computing represents an opportunity for banks – particularly traditional retail banking firms – to accelerate their digital transformation. While some transformation can be achieved through the use of cloud computing, there are some specific digital use cases where edge computing will also play a role. This tends to be in digital use cases where latency and / or data compliancy regulations may impede the use of cloud.

Alongside this, algorithmic trading firms can benefit from edge computing's low latency to gain a competitive advantage in high-speed order execution. As customers become more complex in their financial needs, and speed of data transfer becomes a key differentiator, edge computing could become an important enabler for banks and funds seeking to maintain and grow their market share.

Edge use case 1: Hyper-personalisation of customer engagement

Traditional customer engagement programmes in retail banking are often extremely inefficient. Within a bank's physical locations, static advertisements for mortgages, loans, etc are displayed without targeting of customers beyond basic analysis of customer segments using that location. Even the move to digital banking has resulted in minimal customer segmentation for advertising purposes. Banks will want to leverage the flexibility of cloud (e.g. rapid and flexible updates to advertising materials) while also retaining benefits of more local compute (e.g. real-time changes to personalise the advertising). This is where edge solutions can help.

By using edge capabilities, retail banks can provide highly personalised customer engagement down to the individual level, through advertising of relevant financial products and services. HSBC provides one example of the types of services edge can enable in their recent deployment of SoftBank's Robotic Pepper robot in several of its US branches¹. Pepper uses natural language processing to interpret and comply with customer information requests, and can even perceive basic human emotions and adjust its behaviour accordingly. This requires real-time, low-latency analysis of large quantities of data: something an edge computing solution is designed to provide. While flagship branches in major cities may have the space and resources to run servers onsite, most branches will prefer to offload this requirement to an edge location where possible.

Edge use case 2: Advanced data analytics for real-time cybersecurity

Globally, payment fraud represents a significant loss of revenue, with over USD\$32 billion stolen by fraudsters in 2020². Alongside the direct effect of taken funds, fraud prevalence also erodes customer trust: 28% of customers had either changed or were thinking about changing provider after being defrauded, according to a recent survey³. While banks have increased their own cybersecurity significantly, criminals are still able to take advantage of individuals through Authorised Push Payment (APP) scams, in which con artists trick victims into

¹ <https://thefinancialbrand.com/84245/hsbc-banks-branch-robot-pepper-digital-transformation-phygital/>

² The Nilson Report – figures quoted by Merchant Savvy <https://www.merchantsavvy.co.uk/payment-fraud-statistics/>

³ <https://www.comparethemarket.com/credit-cards/content/latest-credit-card-fraud-scam-figures/>

revealing sensitive information in order to gain access to their account. As banks roll out more digital services and applications, the avenues open to this type of scam only increase. Banks therefore need robust fraud detection and prevention processes in place.

Currently, detection of fraudulent behaviour often occurs post-event: banks detect suspicious transactions and take steps to prevent further losses by freezing cards and accounts. While customers are often refunded or otherwise protected from financial loss, the resulting burden on customer service teams dealing with victims of fraud is considerable. A lack of real-time analytics reduces the ability of banks to catch perpetrators in the act, meaning banks have to refund stolen funds, either because of internal policies or due to voluntary adherence to regulations such as the APP Scam Code⁴. This creates a significant financial incentive for banks to detect and prevent fraud as quickly as possible.

Running AI-enabled analytics at the edge to detect fraudulent patterns will enable banks to take even more measures to be proactive in preventing fraud. We believe as a highly regulated and compliant industry, financial services are unlikely to embrace the centralised cloud for this type of use case, since different countries have different laws around data access and control. Instead, edge computing can be used to deliver low-latency analytics in a way that guarantees data sovereignty and security.

Edge use case 3: Real-time facial recognition for fraud detection and prevention

Digital banking is not the only opportunity for fraudulent and criminal activities. Edge computing can also help banks to protect customers against issues at the transaction site – e.g. at ATMs. ATMs already fitted with CCTV can use facial recognition software in real-time to detect potential fraud, lockdown ATMs, and alert the customer, bank, and police on the prevented crime. For data security purposes, and to ensure sensitive customer information does not leave the premises, banks would be likely to leverage an on-premise edge solution to filter, analyse and alert systems about suspicious behaviours.

Edge use case 4: High-frequency algorithmic trading (HFT)

HFT began in the 1930s, when traders would buy and sell positions on the physical exchange floor and use high-speed telegraphs to communicate with other exchanges. However, rapid technological advancement has removed the human input by allowing full automation, greatly increasing the speed and therefore the profit-making capability of HFT. Modern HFT is performed by computer algorithms with order execution capabilities, often on servers located in the same building as the exchange to minimise latency between order and purchase.

While this co-location of servers with the relevant exchanges provides a greater latency reduction than any other solution, many forms of HFT require communication between locations, meaning co-location alone is not enough to remain competitive. For example, many HFT arbitrage strategies rely on disparities in price between the same asset on different exchanges. A HFT firm's order execution speed is minimised by co-location, but the information outlining the disparity still has to be sent from one exchange to another in order to take advantage of the arbitrage opportunity. This is where edge computing can add significant value.

Edge computing greatly reduces this "last mile" latency by processing data locally to reduce bottlenecks, allowing for quicker data distribution. This is particularly useful for HFT firms trading on the currency market, where – unlike equities – trading is completely decentralised. Information sharing at high speed is therefore critical in identifying and exploiting arbitrage opportunities between different currency brokers.

⁴ <https://appcrmsteeringgroup.uk/wp-content/uploads/2019/05/CRM-code-LSB-final-280519.pdf>

Edge use case 5: Data sovereignty for compliance

Finance is one of the most highly regulated industries in the world, and this regulatory burden has only increased in recent years. EU legislation such as the CRD and CRR governs minimum standards on capital requirements, liquidity buffers and leverage ratios within the single market, while the Dodd-Frank Act 2010 introduced various compliance requirements for US banks. Alongside this, sensitive information of customers collected by banks is subject to GDPR within the EU, which has requirements around the security and portability of, as well as access to, personal data.

While cloud computing offers unparalleled opportunities to scale and analyse large datasets, it often requires large amounts of sensitive data travelling across borders, creating the need for sophisticated regulations and the increases the potential for breaches. Alongside this, large amounts of data being sent to centralised locations can increase backhaul costs for the banks seeking to reap the benefits of the cloud, reducing the potential ROI. Edge computing can bridge the divide: facilitating the processing of sensitive data within national borders, while significantly reducing the amount of data being sent to the cloud. Alongside this, edge computing solutions allow for real-time monitoring of the bank's financial health and compliance to the various capital and leverage ratios required by law.

Type of edge computing: what servers will be used for financial services

The above five digital use cases for financial service will not necessarily all leverage the same types of edge servers. For instance, a use case like high-frequency algorithmic trading is highly likely to leverage on-premise edge servers that will be placed as close to the trading floor as possible (to minimise latency even further). In comparison, a use case like advanced data analytics for real-time cybersecurity is more likely to leverage network edge servers. This is because the individual could be anywhere (at home, at work, on the move etc.) when they are completing their transaction. This therefore requires wide area coverage best suited to servers placed locally at multi-tenant sites owned and managed by telecoms operators.

Future trends of edge computing in finance

In an era of increasing digitisation, speed has become paramount to securing a competitive advantage within the financial services industry. The increasing demands on employees has also rendered their time increasingly valuable. Through using edge technology, banks can provide hyper-personalized services to customers while ensuring fraud prevention and regulatory compliance. In addition to the retail banking sector, alternative investment institutions such as HFT firms and hedge funds employing HFT strategies are constantly looking to further reduce latency. In particular, these firms can harness the power of edge solutions to minimise last mile data delays between servers collocated at different exchanges, maximising profits on their high-volume, low-margin trades.

Tilly Gilbert is a Director at STL Partners. She has more than five years of experience leading growth projects for technology and telecoms firms, and she heads up our research and consulting practice focused on edge and cloud computing.

Get in touch with the author to learn more.

edge@stlpartners.com

Or visit STL Partners' Edge Hub

www.stlpartners.com/edge-computing