

Implications of digitalisation for the EU financial sector



Levin Holle

Director General, Financial Markets Policy,
Federal Ministry of Finance, Germany

Digitalisation of financial markets – a key priority

Digitalisation can be a driving force for prosperity in Europe. It strengthens the European financial sector through helping to create a digital single market for financial services and supporting the capital markets union – all with the goal of creating a European digital single market.

Digitalisation creates innovation, reduces costs for customers and firms, and can promote greater competitiveness and choice for businesses and households. An example of this is the area of payments. As e-commerce is growing customers increasingly buy and sell goods and services online. And more e-retail payments are made using mobile phones.

Online and mobile payments can accelerate the speed of transactions, boost transparency and reduce costs. Europe has laid the groundwork for supporting innovations in retail e-payments through fully harmonised payment regulation, including the payment services directive PSD2 and the single euro market area (SEPA) regulation. This helps to provide customers across Europe with access to payments that are safe, efficient and easy to use. However, promoting a sustainable and competitive EU payments market requires a strategic approach towards a pan-European payment scheme. Instant payments as a new payment infrastructure within the Single Euro Payments Area (SEPA) can play a major role here. In my view, the Commission, the ECB and co-legislators should get together and develop a genuinely European approach.

Beyond payments finance is being transformed throughout by the availability of ever more data and new technologies, such as blockchain or artificial intelligence. These trends create new dynamics in the provision of finance and bring new players into the financial services landscape. Technology firms can reach vast user networks at scale in an instant. For European companies to be able to leverage these developments they have to be able to offer their digital products across borders and gain access to the single market as a whole rapidly.

Last year, the Commission took an important first step in addressing the challenges this presents for policy makers through its FinTech Action Plan. It set out steps towards a more innovative and competitive financial industry in three key areas. The first seeks to encourage innovative business models through aligning regulatory standards and supervisory practices. The Fintech Lab convening supervisors, technology providers and financial institutions as well as the European Network of Innovation Facilitators are just two examples of ongoing efforts in this space. The second is to ensure greater uptake of new technologies through promoting trust in the ability of regulatory authorities >>>>

>>> to preserve financial stability and protect customers. Global initiatives such as Facebook's Libra coin demonstrate the need for a renewed commitment to developing common European and international approaches to regulating innovation. Finally, while digitalisation provides enormous benefits to customers and businesses it also poses new risks. Promoting operational resilience and dealing with cybercrime therefore form a key part of Europe's policy agenda. Regulators and policy makers will have to ensure we remain at the forefront of combatting threats.

The FinTech Action Plan provides a stepping stone in our efforts to create a strong and safe pan-European financial services industry that is competitive in the world and creates prosperity for Europe's citizens. The new legislative cycle should be used to take decisive steps towards the goal of creating a fully-fledged Digital Financial Market Union (DFMU). Beyond payments and AI we should focus on developing our approach to crypto assets and building a comprehensive digital ecosystem that will allow customers and businesses to benefit from the highest quality products and services everywhere in Europe. ●



Claire Bury

Deputy Director-General, DG Communications Networks,
Content and Technology, European Commission

EU leadership in digital technologies. Can blockchain and FinTech be the EU's game changers?

Banks, other traditional financial market participants and FinTech startups are all facing an uncertain, and perhaps, turbulent political and economic landscape, with many uncertainties on the horizon. However, there are several developments of which we can be sure. Firstly, that digital technologies are gaining an ever stronger foothold in finance, and in the economy as a whole. Blockchain applications are particularly promising, especially when thinking about their use in connection with other digital technologies like artificial intelligence (AI), Big Data and Internet of Things (IOT).

Blockchain (or more broadly Distributed Ledger Technologies) will become one of the key drivers of the internet of the future with the potential of decentralising digital applications and the management of data in the interests of citizens and consumers. New economic opportunities will emerge for startups in the field of decentralised finance but also for traditional financial sector firms that aim to innovate.

The second certainty is that 'Big Tech' is entering into finance and payments. Long expected and discussed, the recent announcement of Libra shows that blockchain technology is moving into another stage in its development and a further order of magnitude. This will unquestionably be a great challenge for European and international banks, as well as for FinTech and decentralised finance startups in Europe and beyond.

What does this mean for the European and international financial sector? Firstly, that the European Commission will be vigilant in ensuring respect for Single Market and Digital Single Market (DSM) rules. Since the publication of the FinTech Action Plan in March 2018, the Commission has been looking closely at the issues raised by crypto-assets, including crypto-currencies. Furthermore, Commission services are also monitoring broader legal aspects of blockchains in general, including tokenisation and non-financial instrument (utility) tokens and have commissioned a study on it. Both sets of assessments should soon be ready to prepare the ground for action by the next Commission. >>>

>>> Secondly, the positive agenda is one of EU Digital Leadership and your sector is very welcome to get involved. The European Commission President, Ursula von der Leyen, stated in her political guidelines “To lead the way on next-generation hyperscalers, we will invest in blockchain, high-performance computing, quantum computing, algorithms and tools to allow data sharing and data usage. We will jointly define standards for this new generation of technologies that will become the global norm.” Several aspects of the EU’s Blockchain strategy deserve emphasis because they demonstrate how a dynamic innovation ecosystem can benefit both financial sector incumbents and startups:

- The European Blockchain Services Infrastructure is uniting 29 European countries (from the EU and European Economic Area) in rolling out cross-border public services on blockchain - a global first! - and is to be further supported by the new Digital Europe Programme. In its declaration The European Blockchain Partnership foresees public private partnership possibilities.
- The International Association of Trusted Blockchain Applications, a global stakeholders association for the governance of blockchain, was founded and is based in Brussels. It offers developers and users of DLT a global forum to interact with regulators and policy makers and bring blockchain technology to the next stage. If your institution has not yet joined, now is the time to do so. The Convergence Global Blockchain Congress in Malaga 11-13 November will feature regulatory dialogues between INATBA membership and financial and data regulators. It will be an essential event for blockchain in finance and decentralised finance, underlining the future links to AI, IoT and Big Data. ●



Pål Erik Sjøtil

Managing Partner, Europe,
McKinsey & Company

Digital innovation in Europe: narrowing the gap

Innovation is essential for Europe’s prosperity, given the continent’s relatively high wage costs and low reliance on natural resources, and for decades, Europe has been an important driver of worldwide innovation. European companies still account for one-quarter of the global total of industrial R&D. Yet Europe’s embrace of the digital technology revolution—one of the largest change factors in the world over the past 15 years and most likely also the next 15—is less forceful than it could be. Today, the continent is increasingly challenged by the new generation of disruptive technologies, including artificial intelligence (AI), where it risks falling behind both the United States and China.

Already in 2016, research by the McKinsey Global Institute found that European countries were capturing only 12 percent of their full digital potential (defined as weighted deployment of digital assets, labor, and practices across all sectors, compared with the most digitized sector). That was just two-thirds of the captured potential in the United States, which itself has considerable room to grow.

Large Western European companies are continuing to expand their use of early digital technologies. In banking and financial services, for example, European customers are among the most digitally connected in the world, in terms of mobile banking adoption and mobile banking usage. Nordic banks in particular are leading the way in moving to a cashless society. And the “open banking” movement started in the United Kingdom, under which third-party developers are able to build applications and services around a financial institution, is now copied across the globe.

At an aggregate level across all sectors, however, the share of fully digitized companies in Europe increased by less than 10 percent a year between 2010 and 2016. Moreover, in a digital-first world, in which new “superstar” companies are coming to the fore, Europe lacks the global platform companies that have propelled Chinese and American firms to dominance.

Europe’s disadvantage in digital diffusion seems likely to spill over into AI. Early digital companies have been the first to develop strong positions in AI, yet only two European companies are in the worldwide digital top 30, and Europe is home to only 10 percent of the world’s digital unicorns. Less than half of European firms have adopted one AI technology, with a majority of those still in the pilot stage.

Europe is taking some good steps

Europe can still narrow the digital and AI gap. It has a wealth of talent, with close to six million software developers—over one million more than in the United States. Its public-sector research >>>

>>> remains a powerhouse. The number of AI startups has tripled in the past three years and is now relatively comparable to the figure for the United States on a per GDP basis. Early-stage startups are better financed than ever before. Investment in European tech is at a record high, with \$23 billion invested last year, a five-year increase of 360 percent and an increase of 21 percent compared to 2017.

Investments need to increase—everywhere

To sustain its growth model over the long term, Europe will need to switch into a higher digital gear. Europe invests less than the United States in intangibles like software and databases, intellectual property, and economic competencies like organizational capital and training, which represent major factors for innovation capacity. It also must contend with a fragmentation challenge: Europe's ability to innovate is widely distributed among its member states. In the past decade, EU countries performing at lower levels and those performing at higher levels have

not converged; innovation performance has even decreased in 10 out of the 28 EU members.

If Europe is able to develop and diffuse AI according to its current assets and digital position relative to the world, we have estimated that it could add some €2.7 trillion, or 20 percent, to its economic output, resulting in 1.4 percent compound annual growth through 2030. Such an impact would be roughly double that of other general-purpose technologies adopted by developed countries in the past.

To address the digital challenge and reap the potential benefits, Europe will need to focus on six priorities:

- Scale up. Overcoming fragmentation is only part of the scaling challenge. Europe will need to put an emphasis on finding and supporting managers able to take exciting potential and scale it up to world-beating business;
- Continue developing a vibrant ecosystem of deep tech and AI startup firms that will use AI to create new business models;

- Raise the pace on the digital transformations within companies, which will need to embrace AI innovation;
- Accelerate progress on the Digital Single Market, which remains incomplete;
- Build the right talent and skills that will be needed to capture the opportunity presented by digital and frontier technologies, including with a renewed focus on education and mid-career training;
- Think boldly about how to guide societies through the potential disruption to work that will likely accompany AI and other frontier technologies, including a fresh look at impediments to worker mobility and adapting welfare systems to the digital age.

Europe has risen to challenges in the past and there is no reason why it cannot do so again in this era of technological ferment. But it will not happen on its own: policy makers and business leaders have critical roles to play in creating the right conditions, ensuring scale, and leading the charge. ●



Leena Mörntinen

Director General, Financial Markets
Department, Ministry of Finance, Finland

New technology and trust

New technology will potentially have huge consequences for the financial industry. It may improve our everyday lives by creating trust between unknown parties, enabling payments with no time delays and with minimal transaction fees, allowing us to access financing from multiple sources

and enabling us to lend to peers when we have excess funds to invest. The list seems endless and benefits are potentially huge.

The issue may however not be that simple. The potentially large change in financial services will come at a cost. Mostly we think of this cost in the form of losing control over our data and privacy. In the real time economy the discussion on our right to our data seems already a familiar one. All the answers may not be there but at least we are beginning to know the questions. However, the impact may be more complicated than this. For example, we can only speculate about the effect of the changing financial services on our economic and social structures.

The changes may hit Europe particularly hard since we rely heavily on traditional banks in payments as well as overall financing of the economy. Although in the light of the previous and past financial crises we can disagree on the stability and hence successfulness of the bank-based system, nonetheless banks are part of the critical infrastructure that we rely on and still mostly trust. Unfortunately, the slow reaction of European banks to cleaning their balance sheets has rendered them vulnerable. They are hit by new technology, low interest rates and tough competition from both big tech and financial institutions from third countries.

It is often argued that existing laws and regulations prevent banks from

improving their business models and getting ahead of the competition. However, irrespective of how fast technology advances it will not replace the need for regulation to create trust in the society nor to ensure a level playing field. The latest financial crisis and big-tech scandals point to the same conclusion: markets, if left unchecked, will not be able to compete fairly nor take into account systemic externalities or security needs of countries and individuals.

Consequently, when seeking the right balance between the financial service benefits that new technology brings with it and the needs of stable societies, there is list of issues that need to be covered. These include improving the stability of money creation and finance, promoting healthy competition while ensuring consumer protection, preventing terrorist financing and money laundering, and preventing cybercrime and enhancing national security. This may not be a fully exhaustive list but it includes the “must-haves” for any stable nation.

Any technological improvement or new business model providing crucial financial services has to be analyzed from these perspectives. Creating trust through technology is not enough. In a developed society, trust requires accountability of government officials and democratically elected decision makers. It cannot be outsourced to multinational companies. ●



Santiago Fernández de Lis

Head of Regulation, Banco Bilbao Vizcaya Argentaria (BBVA)

How to maintain European regulatory leadership for digital financial services

The digital era is one of opportunities. New technologies have created entirely new possibilities spanning across all sectors of the economy. In finance, this transformation enables a more efficient provision of better priced, more convenient

financial products and services to EU citizens, irrespective of their location within the region. Besides contributing to make the Single Market a reality, new technologies enable the banking sector to live up to the task of financing an economy that is undergoing the capital-intensive process of embracing digitisation and transitioning towards a low carbon economy.

However, these new possibilities have brought the challenge of maximizing innovation while containing new sources of risks in the financial sector or for society in general, such as those related with market concentration, data protection or AI ethics. Digitisation also makes more evident the deficiencies of the Single Market absent a truly harmonized regulation and supervision across the EU.

An EU response is therefore needed to ensure that growth-enhancing digitisation is promoted and that it rests on the foundations of our rights and values. Fortunately, EU authorities and lawmakers have already made significant advances: PSD2 has significantly enhanced security and contributed to foster competition in European payments, while the framework on use, access and protection of data - of which GDPR is cornerstone - has reinforced privacy as an individual right. Following the European Commission Action Plan on Fintech significant work has also been undertaken to mitigate regulatory obstacles to the use of cloud computing, to introduce some harmonization in regulatory sandboxes and to foster collaboration in the fight against cybersecurity.

However, more work is needed to ensure European leadership for digital

financial services. For instance, by creating a comprehensive framework to enable effective cross-sector user data sharing, data-driven innovation can be catalysed and EU competitiveness and growth boosted. On the other hand, as new business models emerge and the traditional notion of sectors becomes obsolete, European authorities should reflect on how to evolve from an entity- to an activity- and risk-based financial regulatory framework, to protect financial stability and guarantee an effective and equal competition in the benefit of final consumers and the development of the economy. The latter becomes increasingly important at a time in which incumbents from other sectors - for instance, large, established technology companies that have created successful digital ecosystems - appear willing to expand their activities in the financial sphere. If these companies are able to leverage the competitive advantage that comes from a large user and data base, it could lead to an increased concentration in the provision of critical inputs or by the appearance of new systemic financial service providers or infrastructures.

Against this background, authorities could prove to be ill-equipped with tools unable to tackle risks outside the traditional prudential framework. Therefore, only by ensuring risk-based regulation and supervision can we be certain that EU citizens are able to fully reap the benefits of innovation by all players while ensuring that the risks inherent to financial services are captured regardless the provider. There is no time for complacency, as the pace of change is fast: we must embark in this work with urgency and ambition. ●

Ksenia Duxfield-Karyakina, PhD

Government Affairs & Public Policy Manager, Google Cloud, EMEA

A path to trust and innovation

The use of cloud services has become mainstream for financial institutions of every type and size across the globe. Cost savings, enhanced collaboration, business agility, artificial intelligence (AI) and advanced data analytics are key benefits that can be realized through

cloud adoption. Organizations can also take advantage of the first-in-class security capabilities of hyperscale providers like Google.

Given the complexity of the regulatory landscape, financial organizations were initially slow to migrate to the public cloud. Recently though, financial institutions and regulators have better understood the benefits of making the shift. Their initial concerns have been eased by cloud service providers' (CSPs) strong compliance posture.

As the global regulatory and compliance landscape evolves, organizations have turned to cloud service providers for risk mitigation. CSPs' infrastructure also provides higher availability and better security along with data integrity, portability and confidentiality. For their part, >>>



>>> financial supervisors deepened their understanding of the cloud. Regulators such as the European Banking Authority have issued guidance on outsourcing.

Adoption of cloud technology in finance requires thorough risk assessment and dialogue between financial institutions, CSPs and regulatory authorities. We believe that these factors should be part of that discussion:

- **Trust and addressing skills gap.** Further efforts are required to educate industry leaders and decision makers to increase trust and enhance cloud uptake. A common misconception is that cloud solutions are less secure. Actually, the security capabilities of cloud platforms have surpassed those available on prem;
- **Openness of the ecosystem.** Open cloud, relying on open source, open APIs, and common standards, promotes interoperability and innovation. Google is committed to an open ecosystem and supporting customer choice;
- **Multi-cloud and hybrid-cloud** to address concerns over concentration risk and vendor lock-in. As an example, Anthos¹ enables Google Cloud customers to build and manage modern hybrid applications on-prem or in different public cloud environments;
- **Portability.** The migration and portability solutions available should be an essential criteria in choosing a CSP, as they are fundamental building blocks of any multi- and hybrid-cloud strategy;
- **Environmental sustainability** must be a key concern. It certainly is for Google - we were the first organization of our size to achieve 100% renewable energy two years running since 2017;
- **Shared responsibility.** In the cloud environment, customers and service providers operate on the basis of shared responsibility. Regulatory and policy guidance need to cater for it;
- **A value-based assessment of potential solutions** based on tools to monitor cost savings and other non price-based gains.

The regulatory and compliance approach to cloud outsourcing must develop and evolve. In an era of rapid change, one-size-fits-all solutions are unlikely to work. Instead, it is important to focus on a specific problem and seek well-tailored solutions, assessing the benefits and the potential unintended side-effects. We are committed to continuing that conversation with financial services institutions and regulators over the years to come. ●



Ulku Rowe

Technical Director,
Google Cloud

Five habits of highly effective capital markets firms who run in the cloud

Every time I meet with our customers in the capital markets, they share new ways they are reinventing their businesses. Recently, I met with a CIO from a large investment bank looking to take the next step in the bank's cloud adoption journey and create a culture of innovation. What would it take to achieve this evolutionary transformation?

IT leaders in capital markets are asking the same question. Google Cloud recently contracted Aite Group to survey 19 capital markets firms on their public cloud adoption journeys. Here are insights into what these firms do to bring metamorphic change:

1. They learn from the tech industry

Technology is becoming more and more vital to non-tech companies, but innovation can stall if you don't fundamentally change how you build software. Successful capital markets firms have taken cues from traditional tech companies, adopting their software operations methodologies. Most importantly, innovative capital markets firms adopt a "lifelong learning" attitude, emphasizing "training first" to respond

in a fast-changing capital markets environment. They recognize that every employee can be a cloud worker, connected 24/7; security and workplace policies support this reality.

2. They foster a front-office culture of "everyone is a programmer" and bring AI to the middle and back office

By democratizing the ability to build solutions across the business rather than isolating those capabilities in innovation labs, firms can build better products for their clients. The front office may finally be less wedded to management via spreadsheet, if the tools are more fit for purpose. In the middle and back office, machine learning (ML) and artificial intelligence (AI) may bring much needed relief in areas such as trade surveillance, where sophisticated malicious attacks make identifying breaches increasingly challenging.

3. They use data openly with strong controls and security

One CIO at a tier-1 global bank predicts that in the future, regulations will require data access to be granted by the end client. Storing data in a manner where access can be granted or revoked by users easily across service providers will be essential to retaining business. Cloud-based services that incorporate tools for data loss prevention, obfuscation, tokenization, encryption and logging can help firms meet security, privacy and data lineage requirements.

4. They adopt production ML systems

There's more to ML than implementing an algorithm. Production ML systems equipped for multiple functions enable firms to improve monitoring, prediction scaling, error diagnosis, reporting and other tasks that support trading operations. For example, a proprietary trading firm in Singapore uses TensorFlow, an open-source ML library for numerical computation, with the Google Cloud Bigtable NoSQL database service, to "listen" to live market data and make trading decisions.

5. They commit to open-source code with serverless applications

Using open-source code rather than starting all software projects from scratch also speeds up innovation, provides tighter security and offers freedom from vendor lock-in. Numerous capital markets firms have begun to champion open-source development and participate in related industry groups, such as the Fintech Open Source Foundation (FINOS). ●

1. <https://cloud.google.com/anthos/>