



**EBA REPORT ON THE IMPACT OF
FINTECH ON PAYMENT
INSTITUTIONS' AND E-MONEY
INSTITUTIONS' BUSINESS MODELS**

JULY 2019

EBA

EUROPEAN
BANKING
AUTHORITY

Contents

Contents	1
Abbreviations	2
Executive summary	3
1. Background	5
1.1 General	5
1.2 Methodological approach	6
2. Current landscape	7
2.1 Key trends	7
2.2 Key drivers	10
3. Current approach to FinTech	14
3.1 Interaction with FinTech firms	14
3.2 Interaction with BigTech firms	16
3.3 Use of technology-based innovations	18
4. Impact on payment and e-money institutions	24
4.1 Overview	24
4.2 Specific observations on each payment service provider category	28
5. Key challenges	30
6. Conclusions	32

Abbreviations

AI	artificial intelligence
AIS	account information services
API	application programming interface
APSP	account-servicing payment service provider
B2B	business-to-business
B2P	business-to-person
DLT	distributed ledger technology
EBA	European Banking Authority
ECB	European Central Bank
EMI	electronic money institution
FinTech	financial technology
FSB	Financial Stability Board
GDPR	General Data Protection Regulation
ICT	information and communication technology
KYC	know-your-customer
NFC	near-field communication
P2P	peer-to-peer
PI	payment institution
PIS	payment initiation services
PSD2	Revised Payment Services Directive (Directive 2015/2366/EU)
PSP	payment service provider
RegTech	regulatory technology
RTS	regulatory technical standards
SMEs	small and medium-sized enterprises
TPP	third-party provider

Executive summary

This report focuses on the current trends and drivers shaping the business models of payment institutions (PIs) and electronic-money institutions (EMIs), hereinafter referred to collectively and interchangeably as 'institutions'; their different approaches to financial technology (FinTech), including their interaction with BigTech¹ firms; the level of implementation of innovative technologies; and observed changes to their strategies and business models. However, this report does not envisage or intend to model scenarios for potential future development. The report is based on information and data collected by the EBA through its engagement with the supervisory community and the industry, including the broader activities of the EBA FinTech Knowledge Hub.

The payments sector is currently undergoing an important transformation with the introduction of the Revised Payment Services Directive (Directive 2015/2366/EU, 'PSD2'), new entrants offering innovative products and services, and incumbents adapting and revamping their offerings while payment methods are reshaping and the growth of instant and mobile payment methods accelerates. A number of technology-based innovations are transforming payments, leveraging mobile devices and connectivity, with examples ranging from digital wallets to automated machine-to-machine payments. The majority of these innovations are modifying front-end processes to improve customer experience while leaving the underlying operating infrastructure unchanged.

Similarly to the key drivers identified in the EBA *thematic report² on the impact of FinTech on incumbent credit institutions' business models* (July 2018), PIs' and EMIs' business models are shaped and adjusted as a result of four key drivers, namely (i) customer expectations/behaviour, (ii) competitive pressure, (iii) technological developments and (iv) regulatory changes (section 2.2). The pace of competitive pressure is forcing institutions to become more dynamic, adapt to changes and improve customer experience, by leveraging innovative technologies, while acknowledging that customer needs can materially influence the development of business models in the future. The analysis of the findings of these two reports may suggest a relationship between the growth of the payments industry and disintermediation in banking, taking into account that incumbent credit institutions reported a negative impact on their revenues from payments business lines.

The current strategy of most institutions appears to be the expansion of their products and services and entrance to new markets by (i) leveraging cross-border services, (ii) requesting credit institution or third party provider licences and/or (iii) embracing the new services provided under PSD2.

The continuous innovation due to the nature of the industry is a key strength of established institutions in addition to their existing customer base, their customers' trust and their experience in developing and launching new innovative products and services. In general, PIs and EMIs are smaller (in terms of size and complexity) than credit institutions, so they are usually more agile and flexible to adapt to changes, which provides them with a competitive advantage in today's fast-paced business environment. To this end, these institutions were among the first to adapt and thus

¹ BCBS 'Sound Practices Implications of fintech developments for banks and bank supervisors' (February 2018), <https://www.bis.org/bcbs/publ/d431.pdf>

² <https://eba.europa.eu/-/eba-assesses-risks-and-opportunities-from-fintech-and-its-impact-on-incumbents-business-models>

some of them can be considered regulated FinTech firms. Moreover, some institutions are more technology-driven and have in place sufficient skills and adequate resources to develop innovative products internally to meet customer demands.

While there is a slight trend towards the internal development of products and services using FinTech, without necessarily involving external partners, a significant number of institutions partner with FinTech firms and technology providers for the development of innovative products (section 3.1).

A number of BigTech firms have already obtained PI/EMI licences, and existing players expect them to participate more actively in the EU payments sector. Nevertheless, many institutions currently provide payment/e-money services to BigTech firms or acquire technology services and expertise from them for the development of innovative products. With BigTech firms posing a potential threat to the sustainability of PIs' and EMIs' business models, institutions are planning to focus on strengthening customer loyalty in case of increased participation of BigTech firms in the payments sector (section 3.2).

In terms of the level of implementation of innovative technologies (section 3.3), many institutions appear to mostly leverage cloud services and the development of digital/mobile wallets, with an increasing interest in the use of artificial intelligence, big data analytics and biometrics. The rapid development of technology and use of data create new dynamics, such as the growing importance of a large customer base for network effects and big data analytics. Distributed ledger technology is still at an early stage of development, with the exception of crypto-assets applications, and appears to have potential applications in the area of money remittance and real-time payments (e.g. real-time clearing). Notably, some institutions have concluded that this technology may not necessarily fit their products and services.

The outlook of the payments and e-money sectors is quite positive in terms of revenues and profitability (section 4), with an overall expectation of an increased customer base and the introduction of new/revamped products, accompanied by an increase in internal FinTech developments and information and communication technology (ICT) spending. This may be partly due to institutions' investments in building defences to mitigate the increased security risks in an effort to minimise disruption to users, payment service providers and payment systems from the growing cyber-security and fraud challenges.

Institutions face different threats and challenges depending on their business models. The potential impact of active participation of BigTech firms, the uncertain impact of Brexit and the key dependencies on banks and card processors (for some PIs and EMIs) are observed to be the key threats to the sustainability of institutions' business models (section 5). In addition, a number of key challenges will need to be addressed relating to operation resilience and ICT security, operational capacity, regulatory changes, customer education, and acquisition and retention of skills and talent.

In the context of its ongoing monitoring of financial innovation, the EBA will continue monitoring the impact of FinTech on institutions' business models.

1. Background

1.1 General

Article 1(5) of the Regulation establishing the EBA (Regulation (EU) No 1093/2010) requires the EBA to contribute to promoting a sound, effective and consistent level of regulation and supervision, ensuring the integrity, transparency, efficiency and orderly functioning of financial markets, preventing regulatory arbitrage and promoting equal competition. In addition, Article 9(2) requires the EBA to monitor new and existing financial activities.

These mandates are key motivations underpinning the EBA's interest in financial innovation in general and more specifically financial technology (FinTech), which is defined by the Financial Stability Board (FSB)³ as 'technologically enabled financial innovation that could result in new business models, applications, processes or products with an associated material effect on financial markets and institutions and the provision of financial services'.

The EBA has decided to take forward work in relation to FinTech by initially publishing a discussion paper⁴ on its approach to FinTech. Following the public consultation on this discussion paper, the EBA published its FinTech Roadmap (March 2018) setting out its priorities for 2018/2019.

One of the priorities set out in the EBA FinTech Roadmap is the analysis of the impact of FinTech on institutions' business models in order to enhance knowledge sharing among regulators and supervisors. To this end, the EBA has published a *thematic report⁵ on the impact of FinTech on incumbent credit institutions' business models (July 2018)*, in line with the priorities set out in the EBA FinTech Roadmap⁶, and in a similar fashion the EBA has now conducted a thematic analysis on the impact of FinTech on payment institutions' (PIs') and electronic money institutions' (EMIs') business models. This report aims to better understand the ongoing changes in these sectors and enhance knowledge sharing among regulators, supervisors and the industry.

This analysis is based on information and data collected by the EBA through its engagement with the supervisory community and the industry, including the broader activities of the EBA FinTech Knowledge Hub. This report provides an analysis of the changes observed in the payment institutions and e-money institutions, focusing on the following:

- current key trends and key drivers shaping institutions' business models;
- interaction with FinTech firms and BigTech firms;
- level of implementation of innovative technologies;
- potential changes and outlook;
- key threats and challenges to business models' sustainability.

³ <http://www.fsb.org/wp-content/uploads/R270617.pdf>

⁴ <https://eba.europa.eu/documents/10180/1919160/EBA+Discussion+Paper+on+Fintech+%28EBA-DP-2017-02%29.pdf>

⁵

<https://eba.europa.eu/documents/10180/2270909/Report+on+the+impact+of+Fintech+on+incumbent+credit+institutions%27%20business+models.pdf>

⁶ <https://eba.europa.eu/documents/10180/1919160/EBA+FinTech+Roadmap.pdf>

The aim of this report is twofold:

- to provide an overview of the current FinTech landscape and the observed changes in PIS' and EMIs' business models, as observed by the EBA in the context of its continuous monitoring of financial innovation;
- to raise awareness and share knowledge of the main trends affecting business models, and provide support to supervisors and other stakeholders to identify and understand the potential challenges to the sustainability of institutions' business models.

1.2 Methodological approach

A number of different sources of information were used in the preparation of this report, namely:

- **Industry feedback on the EBA's Discussion Paper on FinTech:** feedback was received from the public consultation on the EBA's Discussion Paper on FinTech (August 2017).
- **Telephone interviews with a sample of payment institutions and e-money institutions:** bilateral telephone interviews were conducted with 13 EU payment institutions and e-money institutions between November 2018 and January 2019, having a broad representation with respect to geography, business models and levels of FinTech activity. These were structured discussions/interviews covering all aspects of the analysis.
- **EBA online survey:** for the purposes of this report, the EBA conducted an online survey among EU payment institutions and e-money institutions in March 2019. Overall, 65 institutions submitted their answers and the summary of the responses are presented in this report. The results are presented in an aggregated form and most figures are rounded. Any potential difference between the sum of shown responses and 100% is due to respondents answering 'N/A' (not applicable) or giving no response at all. It is noted that the survey did not cover UK institutions.
- **Discussions with competent authorities:** round-table discussions with competent authorities focused on supervisory knowledge of emerging technologies/products affecting institutions and their business models.
- **Desk research:** background research was carried out into the overall FinTech developments and activities.

For the purpose of this report, 'institutions' refers to PIs and EMIs, unless otherwise stated.

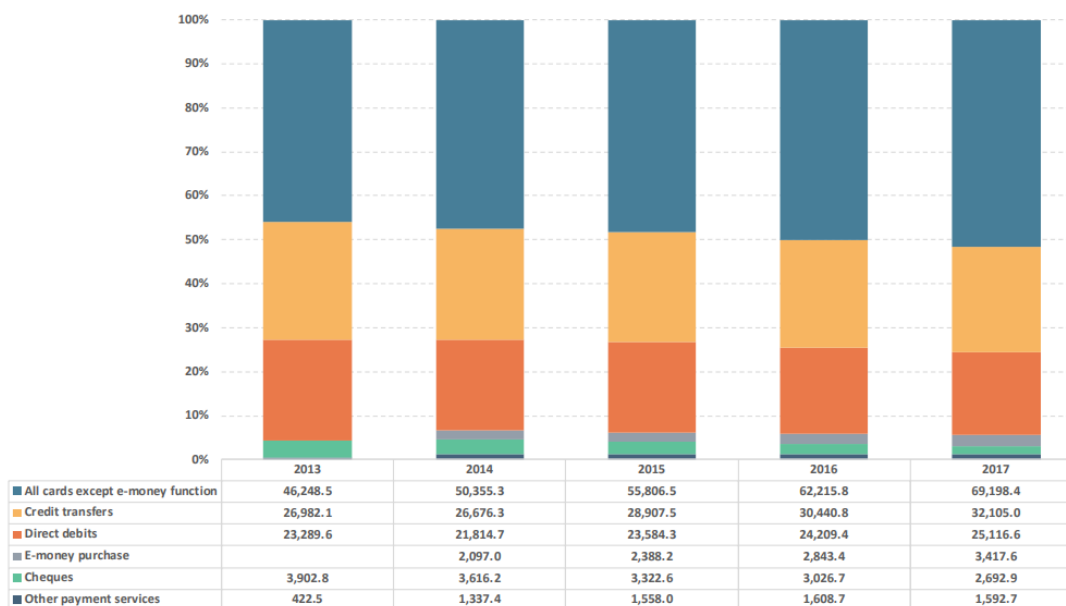
2. Current landscape

2.1 Key trends

The global payments business has been significantly growing in the last few years, with 11% increased global payments revenues from 2016 to 2017⁷, partially stimulated by the accelerating transition from cash to electronic and mobile payments. The use of cash as a percentage of total transactions has continued to fall (ECB Economic Bulletin⁸ Issue 6/2018), with a few EU jurisdictions already striving towards a cashless society.

Digital networks and devices continue to transform the way consumers communicate, work and transact. According to the Digital Economy and Society Index Report 2018⁹, EU citizens engage in a range of online activities. It notes a growth in the use of online services and an upward trend in e-commerce, with about 68% of EU internet users shopping online in 2017. Nevertheless, e-commerce intensity varies greatly across EU Member States. Privacy and security aspects when paying online are the most important concern for online shoppers.

Figure 1. Total number of payments per type of payment service (millions), 2013-2017



Sources: ECB Data Warehouse; EBA consumers trend report 2018/19

According to the EBA Consumers trend report 2018/19, there is a steady growth in the use of e-money in the EU. In terms of payment methods, there is a significant growth in contactless payments using cards or smartphone apps, with the use of 'proximity' technology – such as near-field communication (NFC), quick response (QR) codes or Bluetooth – and contactless-enabled point-of-sale terminals. According to research from Mastercard in 2018, there is an increased adoption of contactless technology in Europe, with almost one in two in-store card transactions

⁷ McKinsey Global Payments Map, Global payments 2018.

⁸ <https://www.ecb.europa.eu/pub/pdf/ecbu/eb201806.en.pdf?f0f55f1b4f767b3ac0030de809c181c3c>

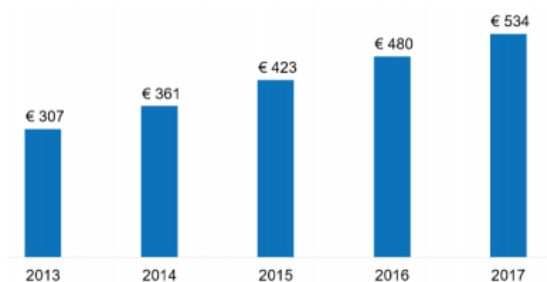
⁹ <https://ec.europa.eu/digital-single-market/en/desi>

now being contactless. However, the rate of uptake of contactless payments differs across the EU, probably because some EU countries started promoting contactless payments from an early stage while others did not. In relation to online payment methods, a wide range was observed across the EU, from the use of digital wallets or PayPal to domestic bank transfer systems and direct debit payments.

The wider growth of FinTech brought a significant rise in the use of digital and mobile wallets, which are currently positioned as one of the fastest-growing technology markets. Digital wallets are estimated to have added approximately USD 40 billion to global payments revenues in 2017¹⁰. Recent surveys¹¹ show that online consumers are becoming mobile consumers, with a clear preference for smartphones.

The increasing growth pace of internet penetration in Europe, which created mature e-commerce consumer bases in some EU jurisdictions, had a positive impact in the European e-commerce industry, with increased cross-border e-commerce revenues of 13.2% in 2018¹².

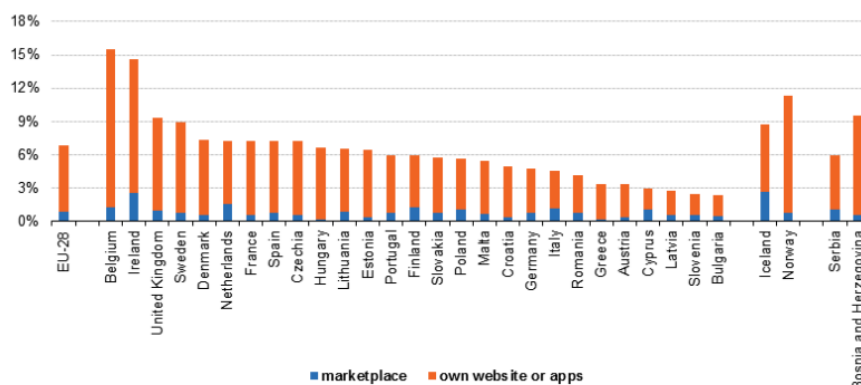
Figure 2. Business-to-consumer e-commerce turnover (billions)



Source: European E-commerce Report 2018¹³

Marketplaces are now an embedded feature of the e-commerce world. In Europe, Amazon and eBay appear to be the most visited marketplaces.

Figure 3. Turnover from web sales broken down by own website or apps and marketplace, 2017 (% total turnover)



Source: Eurostat

¹⁰ McKinsey & Company, Global payments 2018,

¹¹ <https://www.pwc.com/us/en/financial-services/publications/assets/pwc-fsi-whitepaper-digital-banking-consumer-survey.pdf>

¹² <https://www.cbcommerce.eu/news/press-release-top-500-cross-border-retail-europe/>

¹³ https://www.eurocommerce.eu/media/159952/2018.07.02%20-%20Ecommerce%20report_annex.pdf

In the EU, instant payments and the Revised Payment Services Directive (PSD2) are creating new opportunities, with new players entering the payments sector, using technology to redesign traditional networks and business models across retail and wholesale payments. According to the EBA *Register of payment and electronic money institutions*¹⁴, 961 PIs and 297 EMIs were authorised or registered within the EU (as at 25 May 2019). New licences were obtained/re-authorised following PSD2, including entities operating outside the regulatory perimeter, such as technology and telecommunication companies, that decided to enter the payments and e-money area and obtained a PI or EMI licence. It is noted that some of the new licences were as a consequence of Brexit, as institutions were seeking to maintain passporting benefits.

In addition, customers' expectations of 'seamless' payments, ongoing consolidation and the redesign of payment platforms and market infrastructures contribute to a transformation in payments. Business models across the financial services sector are evolving along with the digital transition, with the development of digital ecosystems and increasing cooperation of key players through services chains or partnerships/other structures.

Moreover, according to the Bank for International Settlements¹⁵, the financial services activities of BigTech firms appear to be growing, specifically in some jurisdictions, particularly in payments, lending to small and medium-sized enterprises (SMEs), and other specific market segments. It was also noted that, while most BigTech firms start in payments, often to facilitate their core business (e.g. e-commerce or advertising), there is considerable diversity in the sequencing of business areas and how they conduct payment services. In Europe, where the incumbent bank-based payment infrastructure is dominant, innovations in payment services from BigTech firms (Google Pay, Amazon Pay, Apple Pay, Samsung Pay and payments on Facebook Messenger) all rely on existing payment rails.

Current activity of the EU institutions

In general, institutions appear to reconsider their business models in line with customer needs and preferences, and to this end they leverage FinTech to improve internal processes and customer experience. A significant number of institutions consider themselves FinTech firms, as they are able to develop continuously by using technology-enabled financial innovation. Notably, some newly licensed institutions are already equipped with significant technology skills and expertise and inherent digital characteristics.

Currently, some PIs and EMIs offer a wide range of payment and e-money services, while a few have also obtained credit institution licences and are engaging with FinTech in all possible ways. Institutions appear to focus their investments overall on (i) business expansion and (ii) internal development (please refer to section 3 for further details) when it comes to FinTech. A few institutions employ new FinTech applications across their businesses and operations, taking advantage of data analysis and insights, as well as new emerging payment methods, to understand their customers and improve the quality of their services. Similarly, a small fraction of institutions

¹⁴ <https://eba.europa.eu/risk-analysis-and-data/register-of-payment-and-e-money-institutions-under-psd2>

¹⁵ <https://www.bis.org/publ/work779.pdf>

appear to invest in research and development on technology-based innovation such as artificial intelligence (AI).

In the last few years, more customers seem to have switched to PIs and EMIs for money transfers utilising online tools and new offerings. Corporate and SME customers seem to use PIs and EMIs as an alternative to banks for payment accounts and other services with the use of digital accounts. Some institutions have witnessed significant growth in the provision of payment solutions to businesses, while a few institutions are offering their payment solutions in the form of open-source software, as PIs and EMIs aim to make it easier for businesses to transact online and support them throughout this journey.

In addition to the provision of payment and e-money services, a number of authorised PIs and EMIs are offering their customers unregulated services (at EU level) such as services related to crypto-assets, peer-to-peer (P2P) lending/social lending services, data analytics services, information and communication technology (ICT)-related services, consultancy services, in-game payments and payment-processing services. Based on the EBA survey, 13% of PIs and EMIs perform crypto-asset activities or offer services related to crypto-assets such as acquiring services for crypto-related firms, opening payment accounts for and/or performing payments to crypto-related firms and exchanges, allowing customers to connect their crypto-wallets to their accounts. According to the *EBA Report on crypto-assets*¹⁶, crypto-asset-related activity in the EU is regarded as relatively limited, with some of these activities appearing to fall outside the scope of the current EU financial services law.

2.2 Key drivers

The key drivers for the transformation of the European payments landscape, which induce changes and adjustments to institutions' business models and are similar to the key drivers identified in the *EBA report*¹⁷ *on the impact of FinTech on incumbent credit institutions' business models (July 2018)*, are:

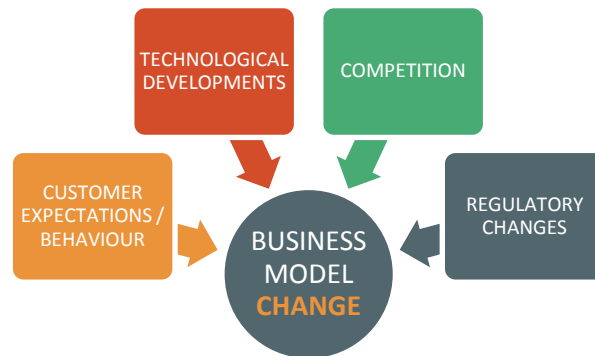
- customer expectations/behaviour;
- competition;
- technological developments;
- regulatory changes.

¹⁶ <https://eba.europa.eu/documents/10180/2545547/EBA+Report+on+crypto+assets.pdf>

¹⁷

<https://eba.europa.eu/documents/10180/2270909/Report+on+the+impact+of+Fintech+on+incumbent+credit+institutions%27%20business+models.pdf>

Figure 4. Key drivers of business model change



Customer expectations/behaviour

Customer expectations and behaviour with regard to payment services have changed dramatically, as customers now demand fast, cheap, easy, smooth and secure payments at any time and from anywhere, and seek more options and choices. Business customers, such as merchants, are continuously seeking innovative services and have certain expectations (e.g. time sensitivity on money transfers), which usually drive the business models and operations of partnered PIs and EMIs.

The speed of adapting to and meeting customer needs is an important driver of business models, with many institutions moving towards a more 'customer-centric' strategy. Therefore, customer intelligence is becoming of utmost importance to institutions as a way to make better business decisions, improve customer acquisition, retention and satisfaction, and improve revenue, profitability and value-added services provided to customers. Institutions that employ a 'customer-centric' approach aim to understand customer needs through leveraging data analytics, bilateral, personal meetings and discussions, research groups, consumer panels, telephone surveys, questionnaires, ongoing engagement and personal support, with feedback channelled to the business development team throughout the organisation.

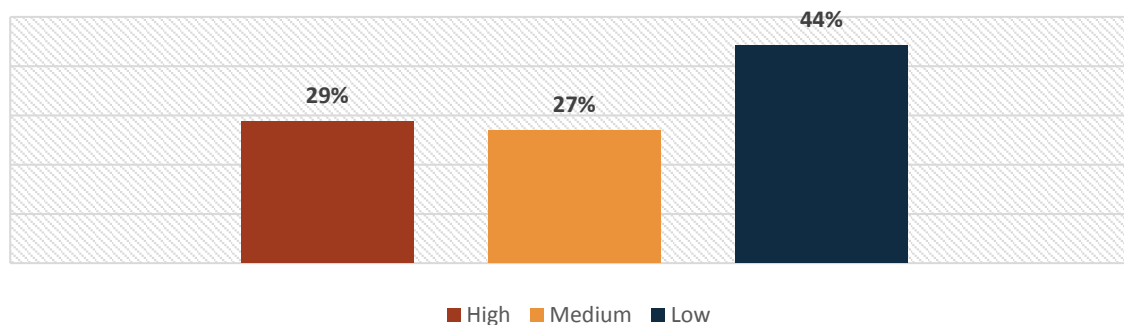
Competition

With a number of new players entering the market, competition is heightened and amplifies the importance of meeting customer demands for fast, reliable, easy and secure payments. Telecommunication companies, technology companies, FinTech firms and newly authorised institutions are seeking to expand their existing services as well as to move up the value chain, targeting both individual consumers and SMEs.

Institutions do not seem to consider unregulated FinTech firms¹⁸ to present much competitive pressure compared with the newly authorised institutions which seem to disrupt the payments business.

¹⁸ 'Unregulated FinTech firms' in the meaning of the EBA FinTech Roadmap (March 2018) means entities that are not authorised or registered under either national or EU law and are using FinTech.

Figure 5. Level of competitive pressure from unregulated FinTech firms



Source: EBA survey of PIs and EMLs (March 2019)

Technological developments

The development of the financial technology infrastructure enabled by the technological breakthroughs in the last decade has contributed to today's fast-paced technology-driven environment.

The growth in mobile payments due to the increase in the mobile use of the internet across Europe, where around 60% of individuals in the EU use a mobile device to access the internet, increases the opportunity to access online services (Digital Economy and Society Index Report 2018¹⁹). Institutions are leveraging technological developments more and more to integrate different payment methods in their systems and offer more innovative choices to their customers.

According to the EBA consumer trends report 2018/19²⁰, internet banking is particularly popular among young consumers, with payment accounts becoming a crucial product for consumers, as digital payments are increasingly replacing cash payments. This development allows consumers to open payment accounts through digital channels (online and mobile) and to make use of more sophisticated financial products and services.

Regulatory changes

The current regulatory landscape, following the recent implementation of the General Data Protection Regulation (GDPR) and PSD2, includes data protection, secure data sharing, security of payments and customer consent as key requirements to be complied with by all institutions. PSD2 (applicable from 13 January 2018) provides the legal foundation and aims to further develop a more integrated internal market for electronic payments within the EU, including for the first time EU security requirements, with the goal of making payments (within the EU), including cross-border and, in particular, electronic payments, as easy, efficient and secure as possible. It seeks to open up payment markets to new entrants, leading to more competition, greater choice and better prices for consumers, by bringing new types of providers within the sphere of regulation and by requiring account-servicing payment service providers (ASPSPs) to share customer data with those new

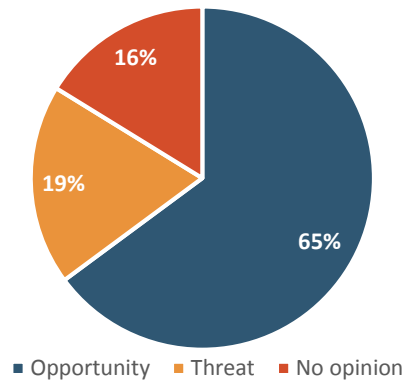
¹⁹ <https://ec.europa.eu/digital-single-market/en/desi>

²⁰ <https://eba.europa.eu/documents/10180/2551996/Consumer+Trends+Report+2018-19.pdf>

providers. The requirements are defined in a business-model- and technology-neutral manner to ensure that innovation and future developments can take place within the legislation.

PSD2 is complemented by Regulation (EU) 2015/751, which puts a cap on interchange fees charged between banks for card-based transactions. This is expected to drive down the costs for merchants of accepting consumer debit and credit cards. PSD2 is perceived as an opportunity for firms to scale up and integrate more technology features into their operations and services as well as to allow FinTech firms to grow and provide consumers with access to more tailored products and services.

Figure 6. PSD2 – threat or opportunity?



Source: EBA survey of PIs and EMIs (March 2019)

The GDPR (which came into force on 25 May 2018) aims to harmonise data privacy laws across Europe, to protect and empower all EU citizens' data privacy and to reshape the way organisations approach data privacy across the region. These pose another multi-dimensional challenge for institutions from the technology, operational and strategy perspectives.

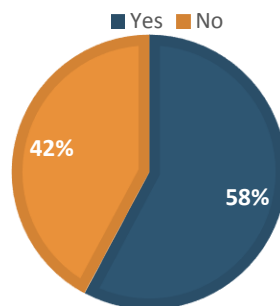
3. Current approach to FinTech

As part of this analysis, the EBA has analysed how institutions generally approach and relate to FinTech, including their interaction with FinTech firms and BigTech firms, as well as their current use of technology-based financial innovations.

3.1 Interaction with FinTech firms

At this stage, institutions predominantly develop their products and services using FinTech internally, without necessarily involving external partners. Many institutions have the necessary resources and in-house skills to develop their new/revamped products and services internally, as this approach is considered to provide more agility and flexibility in terms of business development than partnerships, which may be more time-consuming.

Figure 7. Internal development of products/services using FinTech, without the involvement of any external providers



Source: EBA survey of PIs and EMIs (March 2019)

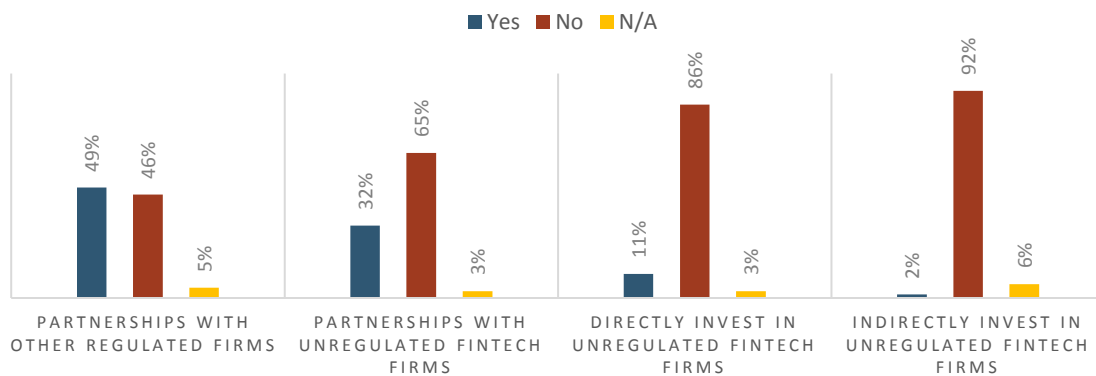
Some institutions have set up small cross-functional teams, to explore different FinTech applications and solutions focusing on (i) customer interfaces and (ii) back-office processes. Evaluation standards and conditions (e.g. ability to fit into and adapt to institutions' systems and platforms) are in place during this 'test and learn' phase, whereas external FinTech firms and technology companies may be involved in the development phase. Nevertheless, it is noted that most institutions may partner with external providers for other specific purposes such as enhancing ICT security.

At the same time, a number of institutions prefer to partner with FinTech firms, depending on their needs and operations, with no plans to become self-reliant in the development of innovative products and services. In this way, they are able to connect with external providers and leverage the providers' technological knowledge and expertise. In a number of cases, institutions are partnering with FinTech firms to develop new technology-based innovative products and services such as digital/mobile wallets and the use of video identification. This approach allows sharing of resources and risks during the development of such solutions. Typically, this partnership takes place in the institution's premises, where external providers work together with the institution's staff teams to test and develop a new product/service.

Furthermore, institutions noted that partnering with FinTech start-ups may increase the possibility of a successful outcome, accelerate development and result in a less costly approach than maintaining an in-house development team. Larger PIs, EMIs and credit institutions acting as payment service providers (PSPs) usually appear to be keen to partner with unregulated FinTech firms. Examples of partnerships with unregulated FinTech firms were noted in the provision of regulatory technology (RegTech) solutions, data aggregation services, tools for monitoring customer behaviour etc.

Some institutions strategically choose to partner with both regulated and unregulated FinTech firms to actively engage with the entire ecosystem and embrace all potential opportunities that may arise through cooperation.

Figure 8. Relationship with FinTech firms



Source: EBA survey of PIs and EMIs (March 2019)

Based on the EBA survey, investment in unregulated FinTech firms is limited, as it can be afforded mostly by larger institutions with a strong financial rationale that are utilising their venture capital funds to monitor FinTech developments and identify potential targets. Most of the time, partnership with such firms is the starting point of the relationship, which is then followed by indirect investments. These may eventually end up in direct acquisitions. Only a few institutions acquire unregulated FinTech firms, usually to obtain access to new markets and services or to expand their technological intelligence and innovation capacity. How the acquired firms are integrated within the institution’s organisation structure depends on its business objectives and strategy. However, in general terms, institutions have no intention of to acquire FinTech start-ups and integrate them into their existing businesses.

It should be noted that large institutions engage with FinTech in all possible ways (i.e. invest, acquire, partner, develop in-house) to strategically position themselves as key players in the ecosystem and improve customer experience.

3.2 Interaction with BigTech firms

According to the FSB report on FinTech and market structure in financial services²¹ (February 2019), there has been some expansion of BigTech firms into mobile payments, although, at present, mainly as overlays onto existing payment infrastructures. Nevertheless, this can affect existing institutions both by BigTech firms levying fees on them for access to the technology the firms provide, and by altering the customer relationships.

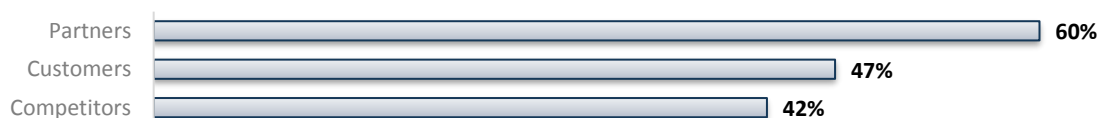
Table 1. Payment activities of selected BigTech firms

Google	Amazon	Facebook	Apple	Samsung	Microsoft
Google Pay – layers over existing card network	Amazon Pay – layers over existing card network	Messenger Pay – layers over existing card network	Apple Pay – layers over existing card network	Samsung Pay – layers over existing card network	Microsoft Pay – layers over existing card network

Source: FSB, *FinTech and market structure in financial services: Market developments and potential financial stability implications* (February 2019)

Many institutions already have productive relationships with some BigTech firms, especially if these firms operate in an open environment, usually taking the form of external vendor and/or customer relationship. A notable number of institutions consider BigTech firms direct competitors and a current threat to their business. Large institutions appear to monitor the activity of BigTech firms closely, as their actions can significantly drive FinTech development and customer relationships. Nevertheless, it is unknown how these changes would affect the back-office processes and payments infrastructure.

Figure 9. Current relationship with BigTech firms



Source: EBA survey of PIs and EMIs (March 2019)

BigTech firms can become competitors in different parts of the payments value chain. For example, a sub-group of BigTech firms may target the clearing and settlement processes. While there is increased interest from BigTech firms to explore opportunities in the payments market, it appears they are currently willing to collaborate with institutions as they cannot yet provide the full value chain.

Based on the EBA survey, more than 85% of institutions expect BigTech firms to participate more actively in the EU payments and e-money sector in the near future by introducing and integrating payment services on their platforms and apps. This follows the recent authorisations granted to some BigTech firms to operate as payment and e-money institutions in the EU. Some institutions

²¹ <http://www.fsb.org/wp-content/uploads/P140219.pdf>

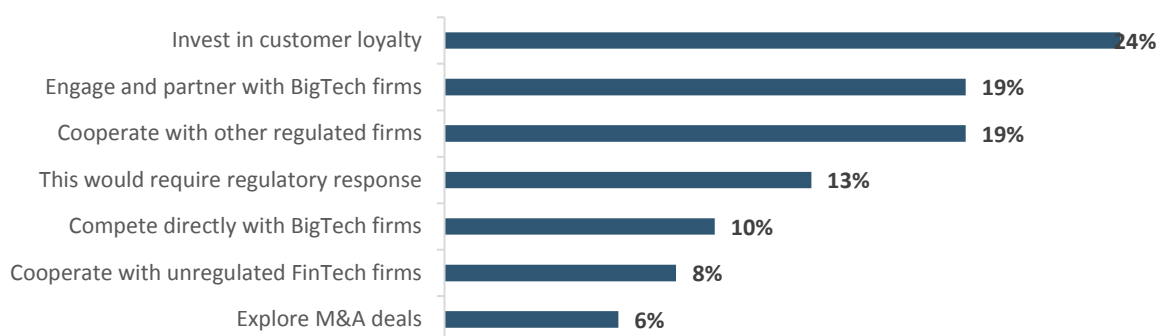
noted PSD2 and data sharing through application programming interfaces (APIs) as the starting point for BigTech firms to enter the payment market given their existing customer base, scaling experience and available technology tools.

Based on the same survey, the top five changes expected from a potential increase of participation of BigTech firms in the EU payments and e-money sector are:

1. increased customer turnover;
2. improved customer experience;
3. increased competitive pressure;
4. concerns about consumer protection;
5. lower pricing.

While the expectation is, overall, positive from a customer perspective, with more options, convenience and cheaper services for consumers, institutions expressed concern about heightened competitive pressure, which may affect the sustainability of their business models, and consumer protection issues, which may relate to aspects of data privacy and fairness.

Figure 10. Potential response to increased participation of BigTech firms



Source: EBA survey of PIs and EMIs (March 2019)

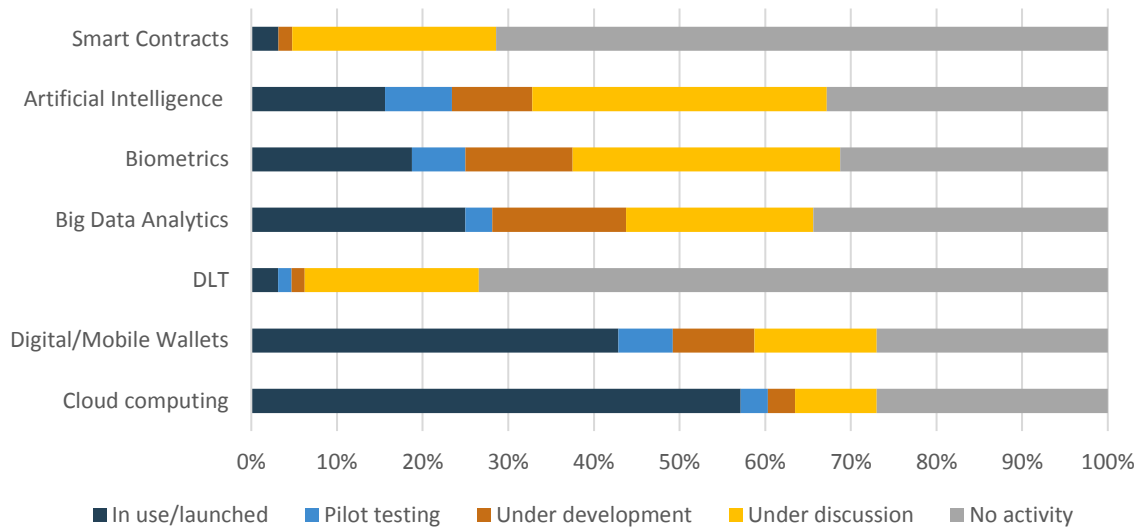
In the event of increased participation of BigTech firms in the payments sector, institutions do not appear to have a specific response that stands out. However, they expect to focus more on customer retention and loyalty, seek further engagement with BigTech firms, which may possibly lead to mergers and acquisitions ('M&A') activity, and enhance their cooperation with other regulated firms. Moreover, some institutions foresee the need for regulatory response as a possible way to limit concentration risk and maintain market competition.

BigTech firms can pose a material risk to the sustainability of existing institutions' business models, as they have significant investment capacity, technological knowledge and expertise, as well as scaling experience to provide services at lower costs in large volumes. It is not yet known how actively BigTech firms will participate in the payments industry.

3.3 Use of technology-based innovations

In general, observations consistent with the EBA report²² on the impact of FinTech on incumbent credit institutions' business models (July 2018) were noted as regards the use of technology-based innovations. Current technological changes adopted by PIs and EMIs relate to cloud computing and the development of digital/mobile wallets, followed by the use of big data analytics and biometrics.

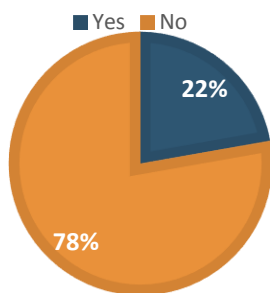
Figure 11. Level of application of technology-based solutions



Source: EBA survey of PIs and EMIs (March 2019)

Institutions invest equally in customer-facing and back-office operations (including infrastructure) when it comes to technology-based innovations, while limited activity was observed in the establishment of internal FinTech labs/incubators compared with credit institutions (Figure 12).

Figure 12. Set up internal FinTech lab/incubator



Source: EBA survey of PIs and EMIs (March 2019)

22

<https://eba.europa.eu/documents/10180/2270909/Report+on+the+impact+of+Fintech+on+incumbent+credit+institutions%27%20business+models.pdf>

A driving force to explore new technology-based innovative solutions comes from customers' demands and the overall competitive pressure, described in section 2.2. Many institutions leverage their interactions with customers to identify new areas to invest and transform through innovation. Integrating new technologies is expected to reduce costs and provide the foundation for new operating models.

Overall, institutions were observed to be active in the development and use of the following FinTech applications:

- use of APIs for product integration and information exchange;
- use of facial/video recognition for know-your-customer (KYC) purposes, which combines computer vision with knowledge of human physiology and behaviour;
- use of robotic process automation for automation of repetitive manual tasks and execution of workflows;
- use of machine learning for prescriptive analytics, for strategic planning, operational and tactical activities, and predictive analytics to automate support for decision-making;
- use of natural-language processing for automated processing of structured text, including information extraction and document verification;
- use of cloud electronic identification and signatures with mobile authentication.

It was also observed that few institutions utilise open-source code for the development of their platforms and solutions and offer it to customers to allow further improvements.

This section provides a high-level overview of the activity status of some technology-enabled financial innovations.

a. Use of APIs

An API²³ is a set of rules and specifications followed by programmes to communicate with each other, and an interface between different programmes that facilitates their interaction.

A number of institutions that offer their services through their own platforms have already developed and used APIs for some time now and noted that with the development of data sharing, as prescribed by PSD2, the ecosystem could be improved and allow them to develop innovative products and services for customers. For example, customer information could be improved through APIs (e.g. insight into customer behaviour at the point of sale), resulting in more tailored products and services. Another example is newly licensed institutions, with a technology background, that fully utilise APIs within the organisation, allowing all employees to view any type and form of information on their dashboard. In other cases, institutions offer API-oriented services and solutions to empower connectivity with customers and partners. Overall, institutions expect positive outcomes from the use of APIs, as they can improve the product development process, including the speed of launching new products and services onto the market.

²³ <http://www.fsb.org/wp-content/uploads/P140219.pdf>

In addition, a number of API initiatives have recently emerged across the EU (and continue to emerge) in the context of the implementation of the EBA regulatory technical standards (RTS) on strong customer authentication and common and secure communication²⁴. The RTS require ASPSPs, i.e. customer accounts holders, to develop a dedicated interface or adapt the existing customer interface to share payment account data with authorised third parties. Many ASPSPs would seem to have developed a dedicated interface using an API.

Most institutions noted the importance of a single standard for the development of APIs and their potential benefits to the industry.

b. Artificial intelligence and big data analytics

Machine learning is a sub-category of AI, whereby a certain function is developed or improved by computer systems rather than directly by human intelligence. For example, machine learning can be used to analyse massive data sets, spot anomalies in real time and generate compliance reports automatically. Some institutions are already using or planning to use AI tools/machine learning methods in both customer-facing and back-office operations, particularly in the area of RegTech, for example:

- transaction monitoring for fraud prevention and detection purposes;
- risk profiling and other anti-money laundering functions;
- strong customer authentication;
- on-boarding process for merchants;
- credit scoring;
- monitoring customer behaviour for customer segmentation and churn prevention;
- identification and automated remittance of specific payments;
- documentation analysis.

In some cases, institutions offer their customers machine-learning-based tools, such as monitoring and acting on pending invoices, in an effort to provide them with further support and enhance customer loyalty. Institutions noted potential improvement in access to credit and analytical services for consumers and SMEs through the use of such applications. Moreover, the introduction of new data elements to traditional underwriting metrics may open up new potential for innovative services at low cost (e.g. provide improved liquidity in the form of cash advances to SMEs).

Big data analytics are used by some institutions for business development purposes such as customer intelligence and insights as well as improving internal processes (e.g. management information system reporting and risk management).

The use of optical character recognition, a functional AI application²⁵, in online boarding processes was also reported by institutions. Nevertheless, when it comes to the use of video

²⁴ <https://eba.europa.eu/regulation-and-policy/payment-services-and-electronic-money/regulatory-technical-standards-on-strong-customer-authentication-and-secure-communication-under-psd2>

²⁵ <https://www.wipo.int/publications/en/details.jsp?id=4386>

recognition/remote identification or robotic process automation for KYC processes, a few institutions noted that the current regulatory framework in some jurisdictions could further facilitate the use of such tools to improve customer experience and embrace innovation.

c. Biometrics

Numerous solutions based on biometrics, such as fingerprint and voice recognition, have been reported by institutions, with investments focusing on mobile applications aiming to improve customer experience. Institutions reported using biometrics for improving customer on-boarding procedures and other AML processes as well as for foreign exchange services. Other institutions prefer to maintain the physical interaction during the customer on-boarding process to enhance customer relationships.

The use of biometrics is also considered a way to enhance security, allowing the delivery of more secure and convenient solutions to customers, e.g. easy access to mobile applications and use of fingerprint and facial recognition payment technology. Institutions are already using, or are in the process of implementing, biometrics for strong customer authentication purposes.

d. Digital/mobile wallets

Digital wallets, electronic devices emulating a traditional debit or credit card, have witnessed significant growth in recent years. Device-based mobile wallets can use different types of communication technologies (e.g. NFC) for transmitting payment data from the mobile payment device to the merchant's point of sale or online payment gateway. The development of digital wallet services aims to improve user experience and facilitate customer needs.

With the development of smartphones and tablets, a growing number of institutions have launched, or are in the process of launching, wallet services to offer convenient payment solutions to their customers. Institutions can develop digital wallets in-house or outsource to (or partner with) a third-party provider (TPP), with many institutions integrating mobile wallets of BigTech firms (e.g. Apple Pay and Google Pay) in their product offerings and using them as a platform to build new products, and possibly shift or redesign their business model in the direction of wallet services.

e. Distributed ledger technology/blockchain

The proposition of having no intermediaries in a distributed ledger technology (DLT) solution has attracted the interest of some institutions to explore and test potential DLT applications. Apart from use in crypto-asset applications, most institutions noted that DLT solutions in payments may still need time for implementation.

Possible DLT applications were explored for the improvement of back-office operations (e.g. sharing verification of customer identity or cross-border KYC) and infrastructure (e.g. development of more efficient trading platforms and payment systems and improvement of instant payments when used in the clearing and settlement layers). However, the lack of interoperable infrastructure for payment providers, the need for collaboration with other market players at international level

and the low level of maturity of the technology keep its development mostly at proof of concept level. Those institutions currently using DLT applications reported that many parties use smart contracts in blockchains, as it is perceived as a more convenient solution, reducing paperwork. Moreover, institutions noted the need to set in place the necessary and appropriate internal processes to allow adoption of DLT solutions from a back-office/infrastructure perspective.

A limited number of institutions have explored possible blockchain applications with crypto-asset payments; however, because of the state of their implementation and legal uncertainties (e.g. uncertainty about the identity of each party in each transaction) they decided not to proceed further. Others are active in tokenisation and considering whether or not to proceed with the issue of tokens as they seek to explore the potential opportunities of this DLT application. Notably, a few institutions reported the use of blockchain forensic tools to assess anti-money laundering/countering the financing of terrorism (AML/CFT) risks of crypto-asset transactions.

Other institutions have already experimented with possible DLT solutions; however, they concluded that this technology may not necessarily fit with their services and product portfolio, noting also the lack of trust among all the participants in the ledger. In addition, concerns were expressed on performance and governance of DLT solutions currently in testing phases.

A limited number of institutions noted that a potential regulatory framework on DLT could enable the use of DLT/blockchain technology, as the legal and regulatory uncertainty about its implementation may hinder its use.

f. Cloud services

A number of institutions, usually newer entrants, operate entirely in the cloud with no in-house servers, while others usually use cloud services for ICT infrastructure, data storage, hosting systems and processes, and communication services. Some institutions consider cloud sourcing an important enabling technology, which facilitates the development of innovative products, while others are assessing the possibility of moving into the cloud and are monitoring the market developments in this regard.

Institutions recognised the importance of the EBA *Recommendations on outsourcing to cloud service providers*²⁶, and the need to address the regulatory risk arising from cloud outsourcing. Furthermore, some institutions noted a few impediments to the adoption of cloud computing, such as uncertainty about the selection of global cloud service providers. Specifically, small to medium-sized institutions appear to have weak bargaining power to successfully negotiate unrestricted audit and access rights with a global cloud service provider.

A few institutions proposed the introduction of certifications or white-listing of cloud service providers or the development of more lenient requirements about standardised cloud services

²⁶ <https://eba.europa.eu/regulation-and-policy/internal-governance/recommendations-on-outsourcing-to-cloud-service-providers>

(thus relying on providers' standardised terms and conditions) as a possible way to address some of the existing impediments to the adoption of cloud computing.

It was further noted that when new entrants obtain their licences they may not always be familiar with the existing regulatory framework on cloud outsourcing, but they are already in the cloud. The need to educate them and enhance their understanding in this area was urged by some institutions.

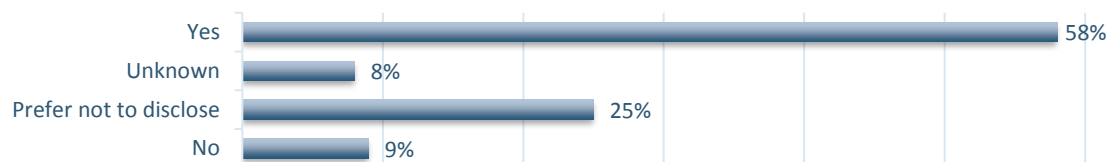
4. Impact on payment and e-money institutions

4.1 Overview

New players outside the financial services sector seem to seize the opportunities in the payments area and enter the market, either as licensed payment institutions or as e-money institutions, in an effort to extend the range of their products and services and leverage their existing customer base to create or enlarge their digital ecosystems. Existing institutions are exploring new propositions (e.g. new PSD2 services) to complement their business model and, at the same time, match customer needs.

While some institutions focus their business on P2P, business-to-person (B2P) or business-to-business (B2B) payment solutions only (e.g. billing, invoicing), the current developments appear to motivate an expansion into new businesses, for example expansion of a current B2P business into the P2P payment market, targeting retail customers by offering mobile wallet and other services. Another observed trend is the progression of some instant payment and mobile payment schemes from P2P to P2B and B2B, in order to improve merchant cash flows.

Figure 13. Do you expect an overall increase in profitability in the next 6-12 months?



Source: EBA survey of PIs and EMIs (March 2019)

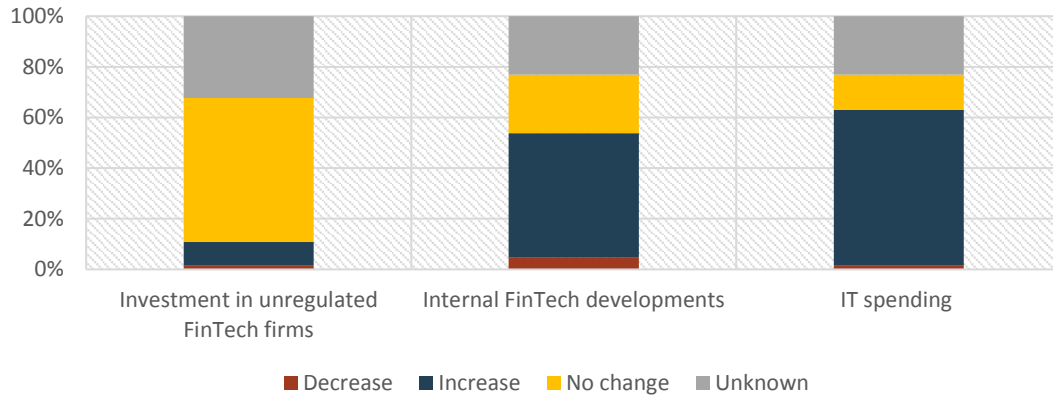
Based on the EBA survey (March 2019), fewer than 10% of institutions do not expect an overall increase in their profitability in the next 6-12 months, which may be perceived as a positive outlook for the payments business. Institutions are expecting an increase in customers, the introduction of new and/or revamped products and services, and an increase in investments in digitalisation (see Figure 17). Overall, revenues are expected to increase with no change or reduction in costs and pricing.

Most institutions are investing in their payments infrastructure and technological developments, in both front and back ends. Moreover, they appear to have invested (directly or indirectly) on average an amount equal to 7% of their 2018 revenues in unregulated FinTech firms. In terms of spending, institutions engaged with internal FinTech developments have spent on average an amount equal to 13% of their 2018 revenues on such developments, while an amount corresponding to 16% has been spent for ICT purposes (e.g. upgrade/maintenance).

Most institutions foresee increased ICT spending, probably in an effort to build and maintain ICT systems able to cope with the technological developments and support institutions' digital

transformation strategies. The significant majority of institutions do not expect any change in investments in unregulated FinTech firms, while almost one in two institutions expect an increase in spending on internal FinTech developments.

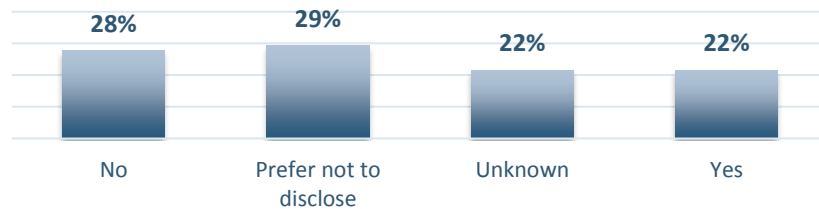
Figure 14. Estimated changes in FinTech investment and spending



Source: EBA survey of PIs and EMIs (March 2019)

More than 25% of institutions reported no intention to change their business model, noting however that regulatory changes might force adjustments in order to comply with regulation and at the same time remain profitable and competitive.

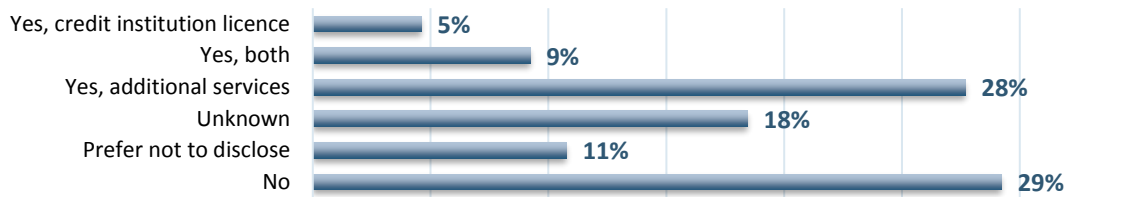
Figure 15. Expected material changes to business model



Source: EBA survey of PIs and EMIs (March 2019)

One out of three PIs and EMIs are seeking to add new services to their existing business models to extend their offerings to customers and enlarge their customer base. Only a few institutions seem to be keen to obtain a credit institution licence, aiming to get access to payment systems and reduce operational dependency on banks and/or convert themselves into specialised banks and enhance customer engagement, changing their business models materially.

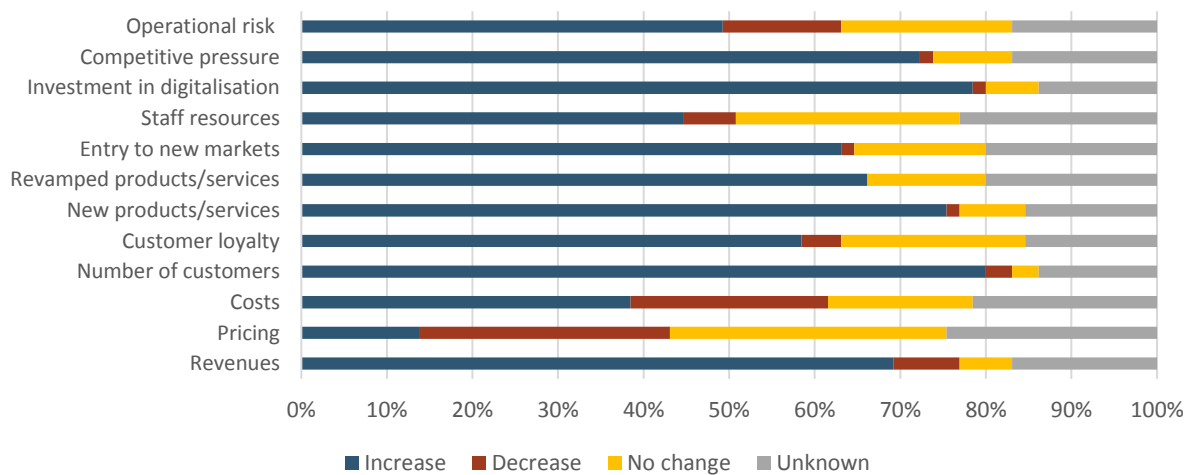
Figure 16. Potential request for a credit institution licence or authorisation for additional services within the next 2 years



Source: EBA survey of PIs and EMIs (March 2019)

There is a significant expectation of an increased number of customers, probably due to the growing benefits of FinTech solutions including lower pricing, enhanced convenience and simplified experience. Some institutions expect overall costs to decrease or remain unchanged, possibly because of the potential of FinTech solutions to target more automation and efficiency in internal processes, such as RegTech tools, which may result in reduced costs.

Figure 17. Expected changes due to FinTech developments

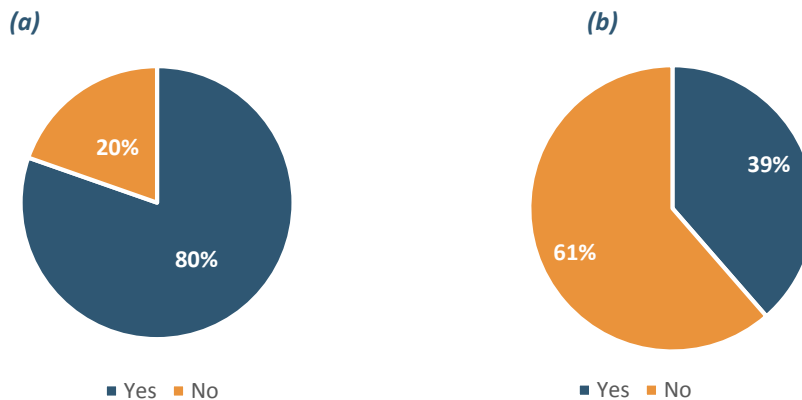


Source: EBA survey of PIs and EMIs (March 2019)

Outsourcing

Based on the EBA survey (March 2019), more than 80% of institutions outsource activities to TPPs. Most institutions mainly outsource (including intra-group outsourcing) operational and back-office activities, both critical and non-critical, ranging from ICT infrastructure and core payment systems to accounting platforms and card processing. Non-operational activities were also noted to be outsourced, such as internal audit, debtor management and customer support activities. Almost half of the institutions that currently outsource activities to TPPs, have reported an increase in outsourcing in the last 2 years, noting an increasing dependency on external providers.

Figure 18. Institutions with (a) outsourced activities and (b) increase in outsourcing in the last 2 years



Source: EBA survey of PIs and EMIs (March 2019)

A few institutions strategically aim to limit outsourcing to only non-significant processes and activities, in an effort to prevent vendor lock-in.

New PSD2 services

A number of existing and newly authorised institutions have already embraced or are actively looking at embracing the new services provided under PSD2, account information services (AIS) and payment initiation services (PIS), and are looking at expanding their service offerings to customers. These appear to potentially add value to institutions’ business in a number of ways, such as:

- allowing customers to have an aggregate view of their account services data;
- allowing the use of alternative payment channels in e-commerce;
- enhancing KYC procedures, and customer eligibility and credit assessments;
- providing opportunities to share services across borders;
- being useful in consolidating legacy services into technology-based innovative products.

Based on the EBA survey (March 2019), most institutions (77%) are not yet providing the new services under PSD2, with currently 12% of institutions providing both AIS and PIS, 8% only AIS and 3% only PIS. However, it was noted that institutions perceived positively the fact that AIS and PIS were within the scope of the regulation and many of them aim to engage with and provide these new services in the short to medium term. A significant number of institutions indicated they had already applied to provide one or both of these new services under PSD2.

Figure 19. Provision of new services under PSD2 (AIS and PIS)



Source: EBA survey of PIs and EMIs (March 2019)

Institutions can act as both ASPSPs, meaning PSPs providing and maintaining payment accounts for customers, and TPPs, providing AIS and/or PIS. The survey results show that 8% of institutions currently embrace both options, while 26% act as ASPSPs or TPPs. As also discussed above, PIs and EMIs noted that they aim to embrace the option of acting as both TPP and ASPSP.

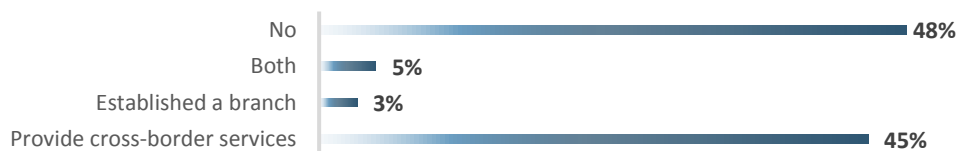
Figure 20. PIs and EMIs acting as ASPSP and TPP



Source: EBA survey of PIs and EMIs (March 2019)

Many authorised institutions in the EU (45%) are using or planning to use the EU passporting system to provide cross-border services, while a few believe it is important to have a local presence in each jurisdiction, through the establishment of a branch, to better understand customer needs and culture. This is mainly because of the growing interest among customers in cross-border business, so institutions are looking to adapt and meet customer needs. Some institutions indicated a number of obstacles when they provide cross-border services, such as difficulties in opening bank accounts and AML/KYC requirements that are not harmonised across the EU.

Figure 21. Established a branch in another EU Member State or providing cross-border services



Source: EBA survey of PIs and EMIs (March 2019)

4.2 Specific observations on each payment service provider category

In addition to the overall observations presented above, some specificities within each category of PSP have been observed as follows.

Payment institutions

Payment institutions generally see PSD2 as an opportunity, specifically in terms of the security and transparency provisions, as well as regarding the new regulated services, AIS and PIS. Most PIs indicated that they intend to apply for additional payment services in the next 2 years, including the new services under PSD2 (24% of PIs currently provide AIS and/or PIS), while only 13% reported engagement with crypto-asset activities. One in two PIs provide cross-border services, and only

10% of those have also established a branch. These figures are similar to e-money institutions' responses apart from the establishment of branches, which appears to be limited for EMIs.

Significant challenges to small and medium-sized PIs providing money remittance services were observed due to the increasing competition from larger players utilising FinTech to expand in this growing and attractive area. One in four PIs envisage making changes in their business models in future, while a slightly higher number of PIs (28%) reported no intention of changing their business model. Regarding the expectations of a potential increase in profitability in the next 6 months, more than 62% of PIs responded positively.

E-money institutions

Similarly to PIs, most e-money institutions reported a positive outlook on the opportunities opened by PSD2 and indicated that they intend to apply for additional payment services in the next 2 years, including the new services under PSD2 (26% of EMIs currently provide AIS and/or PIS), while around 22% of EMIs intend to apply for a credit institution licence.

One in two EMIs provide cross-border services, but only two have established branches for this purpose. In terms of changes to business models, only 17% said that they envisage making changes in their business models. Regarding the expectations of a potential increase in profitability in the next 6 months, only 9% of EMIs responded negatively, with the majority (57%) of EMIs expecting a positive outlook.

Credit institutions in their capacity as PSPs

While the focus of this report was PIs and EMIs, credit institutions are also PSPs pursuant to PSD2, and as such they can provide payment services and e-money services in their capacity as PSPs.

The three credit institutions that replied to the EBA survey appear to embrace the opportunities opened by PSD2 and indicated that they intend to add extra payment services in the next 2 years. None of them yet provides the new services under PSD2 (PIS and AIS), nor do they perform any crypto-asset activities.

Credit institutions appear to have different views on the level of competitive pressure they are facing from unregulated FinTech firms, as one each rated it low, medium and high.

Two credit institutions reported no intention to make changes in their business models, while the third one preferred not to disclose that information. Regarding the expectations of a potential increase in profitability in the next 6 months, one credit institution reported negatively while the other two preferred not to disclose this information.

5. Key challenges

Many institutions are adapting their strategy and business models, on an ongoing basis, to the key driving forces listed in section 2.2. These reactions and changes should aim to safeguard the viability and sustainability of their business models in the context of the new technological landscape. Based on the analysis performed, the EBA has identified the key threats and challenges that might significantly affect PIs' and EMIs' business models from a sustainability perspective.

Key threats

- 1. Impact of active participation of BigTech firms** in payment and e-money services and how their active involvement can affect institutions' businesses and customer behaviour, especially taking into account the changing customer needs and demand for value-added services. The potential use of consumer data, currently held by BigTech firms, for payment services raises concerns, as it can give a strong competitive advantage to BigTech firms.
- 2. Impact of Brexit** on some institutions' ability to provide cross-border services after losing EU passport. This is an important factor for these institutions, given that large volumes of payments business are offered by UK-based institutions through their cross-border passporting activities. As noted in the EBA *opinion on institutions' preparedness for Brexit*²⁷ and EBA *risk assessment report (December 2018)*²⁸, contingency planning, including relocation, where appropriate, is needed and may require significant investment in time and resources. Effective communication with customers ex ante to prepare for any disruption is also vital. Such contingency planning to address the loss of passporting may also lead to institutions changing their business models by scaling back their cross-border operations or focusing on some core markets.
- 3. Key dependency of some PIs and EMIs on banks and credit/debit card schemes** (e.g. Visa and Mastercard) for payment processing, issue of cards and access to payment systems. In particular, some institutions reported dependency on banks in providing their services to business customers (e.g. opening accounts, payment initiation). In some cases, PIs' and EMIs' business models rely solely on such dependencies, with usually no immediate alternative.

Key challenges

- **Operational resilience and ICT security.** This is an important area, which continues to be a primary concern for institutions. The growing trend towards non-cash payments and digitalisation, along with increasing interconnectedness through telecommunication channels (internet, mobile and wireless lines), other financial institutions and third parties, raises the need of strong cyber-security defences to mitigate the inevitable proliferation of cyber-risk in the payments industry. This renders institutions' operations vulnerable to cyber-attacks; a

²⁷ <https://eba.europa.eu/documents/10180/2137845/EBA+Opinion+on+Brexit+preparations+%28EBA-Op-2018-05%29.pdf>

²⁸ https://eba.europa.eu/documents/10180/2518651/Risk_Assessment_Report_December_2018.pdf

targeted attack on a significant participant in the payment chain could pose a material risk to the economy. This makes it all the more important for all participants to appropriately prepare and build strong cyber-resilience (please refer to the EBA *guidelines on ICT and security risk management*²⁹).

It was also reported that unregulated FinTech firms may not have sufficient intelligence on aspects of cyber-security because they have no shared mechanism for cyber-incident reporting. Moreover, the reliance on third parties in some parts of the value chain is by default a source of operational risk, which needs to be properly managed.

- **Operational capacity.** The ability to meet and adapt to changing customer needs requires agility, flexibility, appropriate infrastructure and sufficient staff. This may take the form of continual delivery of new/revamped products, services and solutions as well as strategic decisions on whether or not to expand into new services and markets.

Currently, this also includes the development of APIs, which entails a performance risk; e.g. more than one internal system could be receiving requests from multiple APIs, with a potential adverse impact on customer experience. Moreover, in API implementation, transparency is also important when seeking customer approval and allowing third parties access to customer data.

- **Regulatory framework.** Newly licensed and small and medium-sized institutions consider compliance with existing and upcoming regulation a significant challenge, noting the importance of proportionality. In addition, data protection legislation remains a challenge for some institutions, and sometimes may lead to them deciding not to adopt technology-based financial innovation. Ongoing compliance poses multi-dimensional challenges to institutions from technological, operational and strategic perspectives.
- **Customer education.** Some institutions reported that customers lack education on digitalisation and financial services, so the institutions may sometimes need to have both physical and digital presence, or the customers can even end up being excluded from digital services. A benefit of growing financial literacy is emerging, as consumers respond best when they are aware of and understand their needs.
- **Acquiring and retaining talent.** The ongoing development of technology is shifting the focus and need towards ICT and digital skills. A skilful and talented workforce is a key component for the development and provision of innovative solutions on a continuous basis. Intense competition in hiring and maintaining an expert workforce (e.g. data scientists, software developers) was reported by most PIs and EMIs, with larger institutions usually having an advantage in terms of size and reputation.

²⁹ <https://eba.europa.eu/regulation-and-policy/internal-governance/guidelines-on-ict-and-security-risk-management>

6. Conclusions

Overall, the payments landscape in the EU is undergoing significant transformation due to the introduction of PSD2 and the ongoing FinTech developments. Most institutions are adapting their business models to cope with the competitive pressure and embrace PSD2 changes, while some of them may in parallel embrace the positive impact of FinTech. In the medium to long term, a number of factors will define the transformation of institutions' business models: (i) the progress of Open Banking and APIs, facilitated partially by PSD2, (ii) the level of implementation of innovative technologies and (iii) the activity of BigTech firms in the financial service sectors.

All institutions may need to consider near-term transformation to secure their positions in the value chain, which keeps changing, partly because of FinTech developments. Customers' behaviour and needs keep changing and cannot be easily predicted, forcing institutions to be flexible and agile to adapt easily rather than to employ long-term strategies. Other, more technologically advanced, industries may be a source of inspiration as well as anticipation of customer expectations.

As innovation usually flourishes under competitive pressure, some institutions aim to scale their business and offerings by cooperating with FinTech firms and other external providers and actively deploying FinTech solutions to meet customer demands. Technology-oriented institutions with sufficient workforce and in-house expertise, allowing them to be self-reliant in terms of product development, may be better placed to cope with the technological changes and thus manage to maintain a sustainable business model. The current landscape may lead to more technology-oriented institutions in the payment market offering innovative solutions to customers.

In terms of implementation of innovative technologies, relevant institutions appear to be investing significantly in the development of APIs in the light of the September 2019 'live' date, and in digital/mobile wallets as they foresee potential opportunities to offer augmented services to their customers. Growing opportunities also appear in RegTech, where institutions are investing in technologically advanced solutions in the areas of risk management and AML/CFT, including potential transformation of their workforce.

Some traditional PIs appear to be shifting into 'consumer data analytics' business models (e.g. for customer profiling, marketing or fraud prevention purposes), which may pose privacy concerns that need to be understood and addressed in order to prevent detriment to consumer protection. Data access and customer consent are becoming prominent, placing customer trust as one of the cornerstones of the upcoming data-driven environment.

While the ongoing FinTech changes may provide promising opportunities to both market players and customers, they also bring new risks for the financial services sector, which need to be carefully assessed and managed. The risk landscape is evolving as a result of the growing shift towards digitalisation, political uncertainties and the regulatory framework. The implications of data sharing, including corresponding contractual assurances, may change further the current competitive landscape while the interaction between PSD2 and GDPR may produce further challenges that need to be addressed.

A possible active participation of BigTech firms in the payments sector, alongside the growing interconnectedness, will turn attention to rising concentration risks that need to be closely monitored and managed to safeguard financial stability and consumer protection. This may also further increase the current competitive pressure and threaten the sustainability of existing institutions' business models, raising the importance of maintaining customer relationships.

Institutions should carefully identify, assess and manage the key threats and challenges that may affect the sustainability of their business models, by appropriately and adequately leveraging their capabilities and resources. They could focus on building strong operational resilience and capacity to secure and support their operations and expansion while adequately monitoring and complying with regulatory changes, as well as educating their customers and workforce.

From a regulatory perspective, the EBA will continue working towards a balanced regulated approach that protects financial stability and consumers while embracing innovation and being sufficiently flexible for future developments. In the context of its ongoing monitoring of financial innovation, the EBA will continue monitoring the impact of FinTech on institutions' business models, engaging with the wider FinTech ecosystem and leveraging its FinTech Knowledge Hub, as well as conducting similar work on a regular basis to further understand the evolution of these developments over time.



EUROPEAN BANKING AUTHORITY

Floor 46 One Canada Square, London E14 5AA

Tel. +44 (0)207 382 1776

Fax: +44 (0)207 382 1771

E-mail: info@eba.europa.eu

<http://www.eba.europa.eu>