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A new innovative framework in the banking sector: a business case analysis

Relatore

firma del relatore (dei relatori)
prof. Carlo Cambini

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Giannella Federica
firma del candidato

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Introduction

Nowadays, the rapid spread of smartphones combined with the growing convenience in using internet-banking services is drastically changing consumer payment habits. Nine out of ten bank customers use online banking and financial transactions are carried out around the clock via mobile platforms. As customer behavior change, banks may have to re-think how they can attract and retain customers. Technology is one of the main drivers of change that somehow pushed banks to reinvent the ways of providing banking services. However, big business opportunities also result in great risks and the regulator had to find a way to regulate the new payment scenario by balancing security, the need for innovation and protection for the consumer.

In this context, on 23 December 2015 the Payment Service Directive 2 (PSD2) was published in the official gazette of the EU, which, in line with the other European provisions, aims to develop an integrated single payment market characterized by an increasing complexity in terms of digital innovations and enabled market players. Member States have had time until 13 January 2018 to transpose the directive into their national legislation. The directive is the update of the first Payment Service Directive, adopted in 2010 and applied to payment transactions with the aim of creating a more integrated, competitive and secure market, supporting technological innovation and increasing the security of services of payment. The PSD2 poses new challenges for banks in terms of compliance and aims to increase competition in the sector with a consequent threat to traditional operators. At the same time, however, it offers business opportunities to all operators in the sector and it introduces

significant changes in terms of roles and responsibilities, actors involved and technological solutions.

The present work aims to analyze the PSD2 impacts on the payments industry and the possible scenarios that the banks will face, trying to identify possible practicable ways in order to avoid losing the leadership that currently banks have for the payment services.

In the first part of this work, it is analyzed the reference context that led the legislator to regulate some aspects that, from a regulatory point of view, still were an undefined gray area. In particular, the first chapter describes the changes that have affected the modern consumer and the related needs thanks to the new technologies developed in the payment sector. The attention is focused also on the responsiveness of the various European countries by providing an overview of the preliminary reactions that the new directive has had in the different countries.

The second chapter explains how digitalization has changed the way banks provide their services: from the bank of the "past" that obtained market shares by opening new branches closer and closer to its customers, to the bank of the "future" that dematerializes itself leaving space for services available online. The topics addressed in this part underline how the innovations introduced by the PSD2 can represent disruptive phenomenon for the banking sector: the regulation of new providers that, even if they are not banking entities, can disintermediate contact between bank and client, has led to lower barriers to entry. Consequently, the banks are witnessing an invasion of the sector by competitors never considered before.

To cope with these changes, the third chapter analyzed in detail the opportunities that PSD2 offers banks to remain competitive and above all to revolutionize their business model by focusing on "non core" activities, since the core activities no longer guarantee the margins of the past. In particular, it will be illustrated a business case for a leading bank that will show the quantitative impacts resulting from the implementation of the AISP models contemplated in the new regulatory framework.

Chapter 1

PSD2: a push towards the digital transformation of banks

1.1. PSD2 and XS2A like an accelerator for technology-driven disruption by non – bank fintech providers

The PSD was the first intervention of the Community regulator with the aim to adapt the regulatory environment of payment systems to the technological progress the world has witnessed in recent years, in particular with regard to the marked acceleration of commercial transactions and the increase in the dematerialization of money transfers. European regulators have identified the dominance of banks and their limited capabilities in applying innovation to the payments' arena. Moreover, in this situation the main institutions involved in payments innovation are primarily non-banks (e.g. tech giants, fintech, retailers, and Mobile Network Operators)[1]. New European regulation has relevant impact on the front-end payment services and on the back-end processing infrastructures. For this purpose, European regulators have introduced a number of breakthrough European payments regulations and directives[2]. The first Payment Services Directive (PSD) which came into force in 2007, provided for the framework of an integrated European payments market. With its enactment, PSD also introduced a specific category of non-

[1] CORTET M., RIJKS T., NIJLAND S., PSD2: the digital transformation accelerator for banks, Journal of Payments Strategy & Systems Volume 10 Number 1, 2017 p. 13 e ss.
[2] SANTAMARIA J., The emergence of new payment service providers and their impact on the regulatory and market environment, Journal of Payments Strategy & Systems Volume 8 Number 4, 2017 p. 407 e ss.

bank payment service providers, i.e. payment institutions[3]. According to the European Commission, the PSD aims, among other things, to establish a modern and comprehensive set of rules applicable to all payment services in the EU, and to make cross-border payments as easy, efficient and secure as national payments within a member state[4]. From the introduction of the directive, technology has evolved further and new payment services have developed. To date, many innovative payment products and services do not fall within the scope of the PSD, or even if they are regulated, this happens in an overly "ambiguous" and "generic" approach. Consequently, the Community legislator considered it appropriate to lay down new rules in order to fill the gaps in the PSD, to ensure greater legal clarity and a uniform application of the legislative framework in the Union.

With the introduction of the PSD2, an important element of novelty with respect to the previous directive was certainly the inclusion within the scope of mobile payments. The legislator's effort has been to circumscribe gray areas of the old legislation and place them inside or outside the activities adjacent to payment services. The four cases excluded from the scope of the most significant applicability are commercial transactions through agents, Limited networks, Telecommunications operators, independent ATMs.

The PSD2 clarifies also the key elements of the exemption applicable for payment services in order to improve the customer experience:

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[3] VITOLO D., Contact center: guida al viaggio del cliente nella multicanalità., MK- La rivista ABI di marketing e comunicazione in banca., [online], n. 1 / 2016, p. 2 – 10, 2016, http://www.bancariaeditrice.it/media/images/file/Articoli%20MK/2016-01. pdf

[4] SANTAMARIA J., The emergence of new payment service providers and their impact on the regulatory and market environment, Journal of Payments Strategy & Systems Volume 8 Number 4, 2017 p. 407 e ss.

- on a qualitative level, the transaction must have as its object "digital assets", which are sold as accessory services to electronic communications services by an operator performing main electronic communication services
- on the quantitative level, the exclusion is applicable provided that certain value thresholds are not exceeded for each transaction (equal to fifty euros) or for monthly transit (equal to three hundred euros)[5]. This exemption also includes mobile payments to make donations and mobile ticketing.

It follows that the development of PSD2 is directly attributable to technological evolution and the phenomenon called "digital convergence" with multiple services concentrated in a single instrument, namely the smartphone. The smartphone makes payments possible and increases the amount due to the ease that characterizes the instrument itself[6]. This topic has a fundamental importance if we think that payments are an important revenue generator for European banks, with estimates for retail payments amounting to €128 billion in revenues (from interest, transaction, and product fees) in 2015, a quarter of total European retail banking revenues[7]. The term "retail payments" refers to all payments made by private persons, companies, for example to buy goods and services or to transfer money. Next to being an important revenue stream

[5] SANTAMARIA J., The emergence of new payment service providers and their impact on the regulatory and market environment, Journal of Payments Strategy & Systems Volume 8 Number 4, 2017 p. 407 e ss.
[6] KARFAKIS A., What is the value of a bank's brand?, ABA Bank Marketing and sales, 2015 available on: http://ababankmarketing.com/insights/what-is-the-value-of-abanks-brand/
[7] PORTALE V., ASARO I., 2015. Overwiev del Mobile Payment e Commerce in Italia: engage your customer, Mimeo, Osservatorio PoliMi, 2015, II, 789 e ss.

for banks, payments are strategically important as they are key to interaction and anchoring client relationships and for cross-selling a portfolio of other financial service products, such as credit cards, loans, mortgages, savings accounts, insurance, and wealth management[8]. One of the most important service is certainly the purchase on the internet, which operates through software that connects a merchant's website with the payer's online banking platform. There is therefore the involvement of a third party, mentioned in the previous paragraph, who stands between the payer and his online payment account, and implements the payment to the beneficiary.

The revolutionary element introduced by the directive is the obligation for who holds the payer's account to guarantee the third party provider full access to the payer's online account, prior consent of the user. This is the PSD2 concept of "access to account" (XS2A) that add to the ongoing technology-driven disruption of incumbent banks by non-bank providers that target not only the payments value chain, but ultimately every single "piece" of the universal banking model[9]. As shown in Figure 1, the model associated with the payment service changes quite radically, shifting the attention from banks to new third party providers[10].

[8] CORTET M., RIJKS T., NIJLAND S., PSD2: the digital transformation accelerator for banks, Journal of Payments Strategy & Systems Volume 10 Number 1, p. 13 e ss.
[9] CORTET M., RIJKS T., NIJLAND S., PSD2: the digital transformation accelerator for banks, Journal of Payments Strategy & Systems Volume 10 Number 1, p. 13 e ss.
[10] https://www.nordea.com/Images/33-236881/Nordea_PSD2_webinar_for_vendors_29112017.pdf

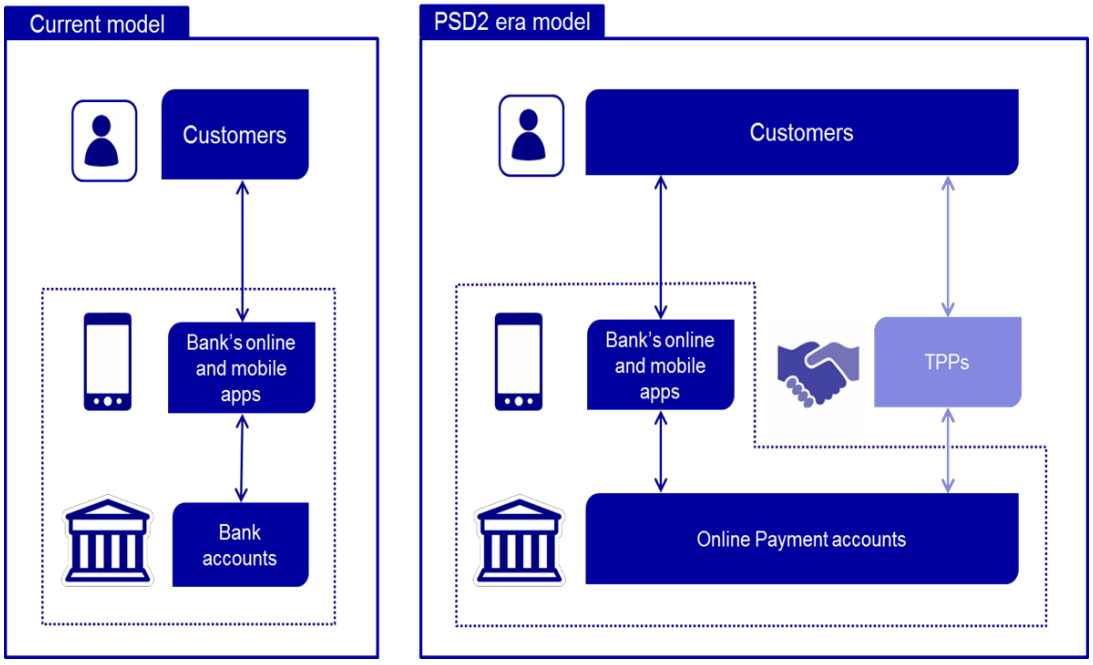

Figure 1 Comparison of the payment model before and after PSD2

XS2A is not only about payments, but also account information is in scope, enabling big data business models for banks and TPPs, lending could become integrated in real time commerce transactions offering a whole array of opportunities due to better risk assessment and management. This is why PSD2 XS2A has impact across traditional banking silos, making it a top management priority for decision makers in both retail and commercial banks. It is not just another regulation requiring only an operational and compliance approach. Top management in banking is strongly challenged on vision, decision-making and execution capabilities for the coming years. As a result, XS2A is accelerating the trend of digital transformation in banking that is driving further unbundling of the universal banking model.

The adoption of the XS2A protocol required by the directive is a very important simplification, which will make access to the account much easier and faster. This will have important consequences on the dynamics of

payments. In fact, the new standard allows easier use of the current account and therefore new uses can be allowed. However, not all banks have the necessary resources and / or strategic interest to deal with this change in an autonomous way. The monitoring of this market can in fact materialize through different approaches, each of which involves more or less involvement important for the bank in terms of investments, organizational models and activation of processes operating. The new standard guarantees new services compared to the past and in particular recognizes three new payment service providers, which are linked to payment accounts held at the PSP where the payer's account is rooted (Account Servicing Payment Service Provider - ASPSP). These are the AISP (Account Information Service Provider), the PISP (Payment Initiation Service Provider) and the CBPII (Card Based Payment Instrument Issuer).

The service offered by the AISPs allows aggregation of the information related to the balance and payment transactions at the customer's accounts held at different banks / payment institutions through a single view; the process is represented in the figure below (Figure 2). Thanks to the Account Information Service (AISP), payers can obtain on the online platform a complete information of all their payment accounts. The AISP can in turn use the data of the customer, prior customer agreement, for purposes related to those provided by the service.

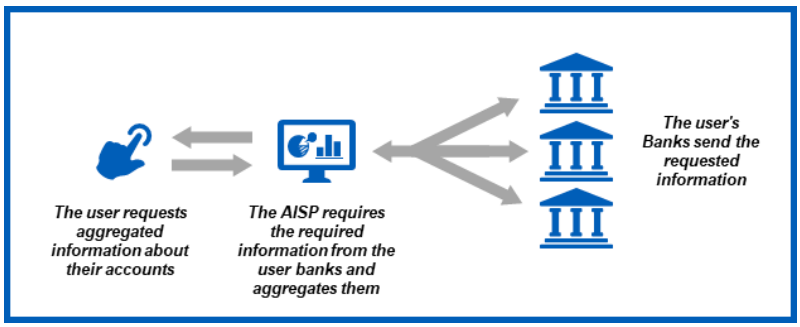

Figure 2 AISP process

The PISP has the possibility, upon request of the payer, to activate a payment from payer Bank to that of the beneficiary bypassing the traditional circuits, as the Figure 3 underlines.

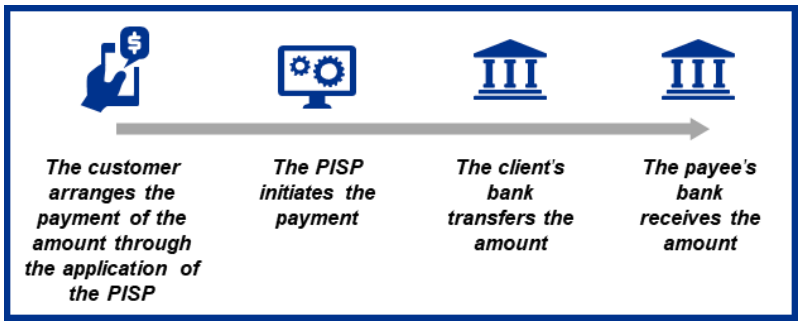

Figure 3 PISP process

The CBPII is an operator that can issue payment cards even without managing payment accounts / current accounts by linking cards to one or more payer accounts. At the time of the transaction, the CBPII requires confirmation of the availability of funds to the ASPSP with which the payer holds the account linked to the card. The ASPSP responds to the request giving information on the availability of funds requested by the CBPII.

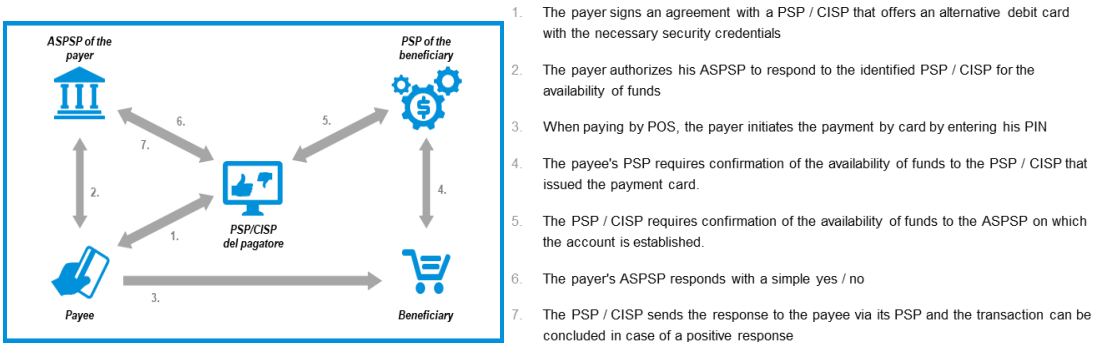

Figure 4 CBPII process

PSD2 XS2A is mandating account servicing payment service providers (i.e. banks) to grant appropriately licensed to TPPs "open and non-discriminatory" access to a consumer's payment accounts, when the consumer has provided the TPP explicit consent. The stringent PSD2 requirements for strong customer authentication will make authentication a key strategic focus for banks, payment initiation and account information service providers, and indirectly also for merchants and consumers in Europe.

If on the one hand the PSD2 allows access to consumer accounts by third party providers, on the other hand one of the objective that the legislation wants to pursue is to reduce fraud in online transactions with strong customer authentication, or, alternatively, a risk-based approach to authentication as long as this is effective in managing fraud. Put differently, a fine balance should be found between security and fraud prevention and the convenience of payment initiation and account information services. The focus should be on providing innovative, safe, simple and consistent consumer experiences in the digital context by balancing these needs taking into account the specific use case (i.e. payment initiation or account information). Due to the opening-up of access to payment initiation services, a bank is at risk of losing direct relationship with the customer and becoming a utility-type service used by

new TPPs.

Access to customer account data enables a scenario whereby customers could fulfil their typical banking needs such as viewing transaction histories, account balances and initiating payments, all from a third party online portal with no meaningful engagement with, or even visibility of the bank. A further evolution of this threat is the potential break-up or "atomization" of banking services, as customers exercise their ability to use multiple digital banking products provided by different financial and non-financial institutions.

New digital competition in the form of FinTech entrants, technology giants such as Apple and Google and traditional financial services companies begin to see the emergence of enhanced products and user experiences tailored to niche customer needs. A TPP already acting as a PISP and AISP under PSD2 could theoretically aggregate and integrate these new services through extended API integration.

This scenario would present a significant threat to incumbent banks by acting as a virtual consolidation of the FinTech industry. Via a single platform, the customer could access multiple standalone financial services products, all integrated with their existing account and transactional data. In addition to removing the opportunity for banks to cross-sell and engage their customers, this would also represent a loss of customer insight and data for banks. With less customer data, the banks would enter a negative feedback loop in which their ability to compete would steadily decline, eroding a key competitive advantage that banks currently enjoy through their wealth of customer data and insight.

1.2. The motivations behind the changes contained in the PSD2 Directive: changing the needs of modern customers and the impact of technological evolution

The first industrial revolution began in the late 1700s, it has focused mainly on the textile and metallurgical industries with the introduction of the flying shuttle and the steam engine; later there was the second revolution in the mid-1800s with the use of electricity, chemicals and petroleum[11]. In the last 70 years thanks to the explosion of ICT (Information and Communication Technology) the third industrial revolution came [12]. These three have caused permanent and profound changes in society: starting from the production system involved and with a significant social impact on the economic environment[13]. Today with the introduction of the "Internet of Things and Services" concept, we are getting closer to what will be considered the fourth industrial revolution. In the future, companies will manage global networks that incorporate machines, storage systems, and manufacturing facilities in the form of Cyber-Physical Systems (CPS). The payment service market has not remained free from these radical changes. Technology has stimulated both the demand for new payment services and the provision of solutions to meet these needs[14]. On the

[11] CORTET M., RIJKS T., NIJLAND S., PSD2: the digital transformation accelerator for banks, Journal of Payments Strategy & Systems Volume 10 Number 1, 2017 p. 13 e ss.

[12] MARCIN KOTARBA, 2016. New factors inducing changes in the retail banking customer relationship management (CRM) and their exploration by the Fintech industry, Open Paper, p. 196 e ss.

[13] SUNG J.M., MYUNG C.M., HYEON-KYUNG L., JONG BAE K., A study on service architeture for secure authentication, International Journal of Security and Its Applications Vol.9, No.9 (2015), pp.9-20

[14] KOKERT,J. AND HELD, M. (2014) 'Payment Services Directive II: Risks and Serious Consequences for Users and Banks', BaFin — Federal Financial Supervisory Authority, section for IT infrastructure o f banks, 16th June, available at http://www.bafin.de/SharedDocs/ Veroeffentlichungen/EN/Fachartikel/ 2014/fa_bj_1406_zahlungsdienstericht linie_II_en.html

demand side, technological innovation has generated new needs - mainly in the e-commerce area[15]- that are not adequately met. The customers desire payment instruments that are efficient, easy to use, fast and less expensive than the more traditional payment cards. Mobile payments – defined as payments initialized via mobile phone - represent a particular sector in ferment[16]. Those types of payments can be considered as a link between the physical world and the digital world. One of the main challenge is on the physical channel innovation: mobile payment services still need a change in the provision by users, in the sense that consumers should perceive the proximity payment as equally convenient and secure compared to traditional payments[17].

Consumer expectations have changed considerably, driven by the prominent influence of digital technology in daily life over the last two decades[18]. As the Internet has become a dominant force in the average retail shopping transactions, consumers expect to have seamless and personalized shopping and payment experience wherever they buy (online, offline, mobile)[19]. With the continuous evolution and increasing adoption of digitized living, consumers expect greater speed and convenience not only in their payments

(accessed 15th January, 2015).

[15] RACONTEUR, 2016. Future of payments, scaricabile a http://www.raconteur.net/future-of-payments-2016

[16] DAROLLES S., 2016. The rise of Fintechs and their regulation, in Financial stability rewiev, n20, p. 156 e ss.

[17] BAJETTA, L. 2016. L'evoluzione della relazione banca-cliente nel nuovo scenario digitale, Mimeo, ABI, 2016,II, p. 789 e ss.

[18] CORTET M., RIJKS T., NIJLAND S., PSD2: the digital transformation accelerator for banks, Journal of Payments Strategy & Systems Volume 10 Number 1, p. 13 e ss.

[19] CORTET M., RIJKS T., NIJLAND S., PSD2: the digital transformation accelerator for banks, Journal of Payments Strategy & Systems Volume 10 Number 1, p. 13 e ss.

experience, but also in the way they interact and consume other financial services. Consumer preferences are changing, for example, driven by the convenience offered by contactless cards and online and mobile payments. A contactless card, for instance, can be used without removing it from the wallet. Contactless in transit venues allows lines of people to flow quickly through the cash desk and it is embedded with multiple layers of security to protect users against fraud: so they are convenient for both consumers and retailers. These benefits are just the tip of the iceberg: new retail payment services emerging from changing consumer behavior are expected to deliver a higher value added to the final user, also by accelerating the shift from cash to non-cash payments[20]. According to the research carried out by Margeaux Girardin - Product Marketing Manager at iQmetrix - there are seven main benefits[21] introduced by new payment services that are synthetized in the table below.

7 Benefits of having a modern payment system

Complete Payment Flexibility	The multiple payment systems that users can use allow greater flexibility in the transactions carried out by them, being able to choose between PIN debit, EMV chip, contactless transactions such as credit / debit tap, Apple Pay, Samsung Pay, Satispay.	
Revolutionary Pricing	Modern payment systems do not compete on processing rates. Instead, they are focused on passing through best pricing to guarantee the lowest per transaction rates on the market.	
Get Paid Faster	Modern payment systems run on electronic transactions, which are much quicker to reconcile, batch, and collect upon over cash based systems. In addition, they allow merchants to add-on a next day funding option. Merchants can increase their cash flow by being paid within 24 hours after batching.	
Secure Payment and POS integration	Integrated payments saves consumers' time and money by pushing the transaction directly to the payment terminal instead of having to enter the amount manually. Integration	

[20] PWC, 2016. PSD2: Contesto di mercato e timeline di recepimento, http://www.pwc.com/it/psd2

[21] http://www.iqmetrix.com/blog/7-benefits-of-having-a-modern-payment-system-in-your-corner

	automatically updates the invoice when a payment is tendered, allowing more accuracy.	
Remote terminal management	Advanced payment systems offer impressive terminal management software that helps merchants manage all aspects of their payment devices from the comfort of their own office. With a real-time list of terminal inventory available online, merchants can ensure compliance standard and monitor device transactions.	
Lower Operational Costs	Another benefit to integrated payments and advanced terminal management is the system's ability to communicate seamlessly with multiple payment devices and work stations at once, avoiding the purchasing of new terminals	
Access to Premium Payment Services	Significant time and cost savings as well as advanced functionality such as increased security measures and premium payment services all help to provide a superior payment experience for customers and merchants.	

1.1.1. Security measures introduced by the PSD2 for consumer protection: the regulatory framework and the introduction of Strong Customer Authentication and dynamic linking

At the very beginning, the solutions emerged in Europe were characterized by a scope of use essentially limited to national contexts. The underlying logical scheme provides that a banking operator offer its service both to the payer and to the consumer [22]. Only a few solutions implemented were interoperable with those provided by other intermediaries and usable on a pan-European basis. Solutions that are more recent provide agreements between banking operators in order to benefit jointly from a shared payment scheme and to extend the potential pool of service users[23]. Thanks to the adoption of common standards and the possibility of joining the scheme regardless of considerations about location of users or operators, it is easy to hypothesize a rapid affirmation of those schemes that arise from a European perspective. The European and national regulatory framework for payment services also applies to mobile

[22] BAJETTA, L. 2016. L'evoluzione della relazione banca-cliente nel nuovo scenario digitale, Mimeo, ABI, 2016,II, p. 789 e ss.

[23] KPMG, 2016. The pulse of Fintech. Global analysis of Fintech venture funding, https://assets.kpmg.com/content/dam/kpmg/xx/pdf/2016/08/the-pulse-of-Fintech-q2-report.pdf

payments, since, regardless of the technological solution used, they generally imply traditional services and payment instruments[24].

The regulatory framework is made up at European level by Directive 2007/64/ EC (so-called PSD: Payment Services Directive), by Directive 2009/110 / EC on electronic money (so-called EMD2: Electronic Money Directive), by SEPA Regulation n.260/2012 laying down the technical and commercial requirements for bon and direct debits in euros and, in the near future, by Regulation n. 751/2015 related to inter-bank commissions on card payment transactions[25]. The proposal to revise the PSD directive on payment services in the internal market gave rise to the directive called PSD2 stemming from the need to create a regulatory framework to regulate the increasing use of card payments by consumers and the spread of devices furniture, used as new means of payment[26]. The objective pursued by the Community legislator is to speed up the dissemination of payment instruments by exploiting three elements: the competition between payment instruments, the regulatory harmonization and the issue of security.
In the first case, the use of more "traditional" instruments, such as bank transfer or direct debit, takes on renewed importance in the new Payment Initiation Services, for making payments via internet or mobile[27]. The second and third leverage are used to increase and spread confidence in the use of a payment instrument; as we will see in this work the PSD2 places a relevant emphasis on "Strong Customer Authentication"[28].
The current plant of PSD2, while remaining consistent with the provisions of the PSD, introduces new and important aspects from a competitive viewpoint

[24] CORTET M., RIJKS T., NIJLAND S., PSD2: the digital transformation accelerator for banks, Journal of Payments Strategy & Systems Volume 10 Number 1, p. 13 e ss.
[25] ACCENTURE, 2016. Fintech and the evolving landscape: landing points for the industry, a http://www.Fintechinnovationlablondon.co.uk/pdf/Fintech_Evolving_Landscape_2016.pdf
[26] DI LUCCHIO M., Fintech City, a Londra c'è un grattacielo pieno di startup, Wired, 2014, p. 147 e ss.
[27] FERRARI R., L'era del Fintech. La rivoluzione digitale nei servizi finanziari. Franco Angeli, Milano, 2016, p. 65 e ss.
[28] MONETI S., Mobile payments: gli sviluppi del mercato e l'inquadramento normativo, Analisi giuridica dell'economia, 2015,II, 789 e ss.

aimed at improving market conditions, both for companies providing payment services and for consumers. In order to preserve an open competition, the legislative framework envisages interoperability and net neutrality as key ingredients in the development of a competitive level playing field, and particular attention has been paid by the legislator to avoiding the development of market barriers focused on technologically non-neutral standards. For this reason, the technical documents RTS (Regulatory Technical Standards), included in the regulatory body, do not define technological standards which operators and providers of payment services must adopt, but provide guidelines so that the security of end users is guaranteed regardless of the solution developed. So in order to encourage technological innovation, the RTS does not provide technical specifications for the implementation of communication and security interfaces between new third party providers (TPPs) and banks. However, what has emerged so far in the overall scenario suggests that, even though there is not provided by law, it will be helpful to define a unique standard in order to ensure compatibility between systems through which data and information are exchanged. Even in the presence of this uncertainty among the financial institutions and the fintech active in the sector, it is clear that the predominant technology that probably will be adopted is the APIs (Application Programming Interface). The growing recognition of APIs' monetization potential has led to the emergence of the so-called API Economy, which promotes the creation of an ecosystem of services. The APIs act as a "digital glue" able to relate services, applications and systems, both from the Bank and not, from a Customer-centric perspective.

The regulation of new providers and the expansion of payment services has led to an increasing exchange area that entails greater exposure to the risk of all the entities involved and procedures used. For this reason, the PSD2 placed particular emphasis on the issue of security, as it mandated the EBA to draw up - in close cooperation with the ECB - guidelines for the definition,

implementation and monitoring of security measures[29]. These guidelines also introduce relevant security measures that must be developed for mobile payments. Particularly the RTS makes mandatory the concept of Strong Customer Authentication (SCA) that was recommended in the PSD. The SCA involves the use of two or more factors (**Error! Reference source not found.**) whose application mode may differ depending on the level of security required and the relative exemptions.

Figure 5 Examples of factors used for SCA

Another relevant security measure introduced for remote payment in order to shield customers is the dynamic linking: in this case, the strong customer authentication involves the generation and insertion of a dynamic authentication code linked to the payment amount, the payee and the beneficiary of the transaction. As shown in Figure 6, the dynamic linking is mandatory only for remote payments, which are by definition "those initiated via the internet or remote communication devices". Online payments are a

[29] MONETI S., Mobile payments: gli sviluppi del mercato e l'inquadramento normativo, Analisi giuridica dell'economia, 2015,II, 789 e ss.

clear example of "remote payment" and include both the application of SCA and dynamic linking, an additional security measure.

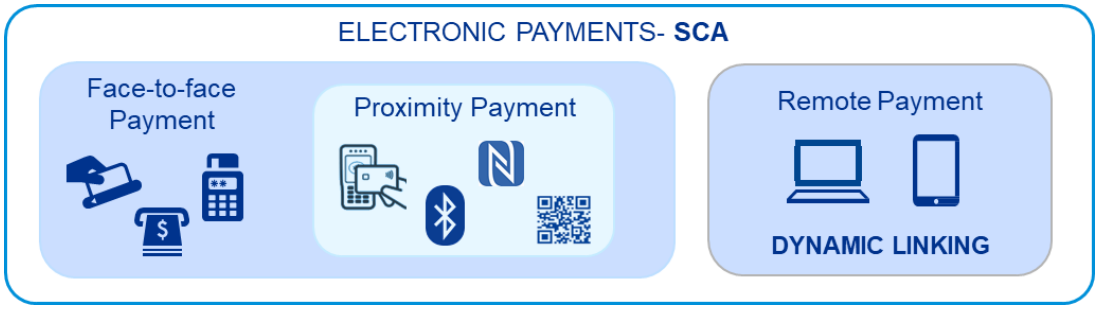

Figure 6 Payment categories and the use of dynamic linking

The variety of mobile payment services offered to users may also be influenced by the regulation of so-called third party service providers (TPP - third party provider) introduced by the directive. These are providers "that intend to favor the use of payment instruments alternative to payment cards in e-commerce transactions, offering, among other things, to operators and consumers an initiation service for transactions. TPPs are limited to intermediary the relationship between the user of the payment instrument and the PSP that holds the payment account of the payer, not entering into possession of the funds to be transferred"[30].

[30] MONETI S., Mobile payments: gli sviluppi del mercato e l'inquadramento normativo, Analisi giuridica dell'economia, 2015,II, 789 e ss.

1.1.2. The changes introduced by the directive on fees charged to consumers

The coordination of tariffs is regulated by the PSD2 and the "MIR" Regulations, which together constitute the "Payments package". The action of this point ensures an increase in transparency and competitiveness thanks to the regulation of inter-bank commissions and the provision of specific limits. The interesting aspect introduced by the directive in this field, that influences indirectly consumers' behavior, concerns the scope of application of the "Share" principle. This is the tariff principle for which the payer and the payee each support the costs applied by their payment service provider also for transactions in non-EU currencies, as well as in transactions arranged in EU currencies that provide for conversion[31]. The directive prohibits the application of surcharges to digital payments with credit or debit cards. The surcharge ban under PSD2 aims to protect consumers across Europe by prohibiting merchants from charging consumers additional fees for making payments by certain payment methods. The surcharge is generally applied to ticket purchases (air tickets, rail tickets), hotel bookings and other several services. For example, merchants, including ticketing, travel and food delivery websites, are no longer allowed to charge consumers additional fees for paying by debit or credit card[32].

[31] SCOTT, A., Open Banking Working Group: Roster d Forthcoming Report Announced, Open Data Institute, available at: http://theodi.org/news/open- banking-working-group-roster-report-announced (accessed 21st December, 2015), p. 136 e ss.

[32] Scope of the surcharge ban under PSD2 for B2C and B2B payments

The surcharge ban will cover 95% of payments (national and European) made with cards, with a cumulative savings for consumers estimated at around € 550 million a year. The possibility of increasing the range of services offered improves the shopping experience and allows the operator to manage the end-to-end relationship with consumers. This type of activity should be managed in a structured way from the Banks, otherwise banking and payment risk operators being disintermediate in the relationship with the customer and nullify part of the investments in marketing and technology. Their ability to respond to the PSD2 context depends on the willingness to play a key role in the payments market and the ability to invest in new business and technology solutions.

Banks are facing this challenge with different strategies. On the one hand, there are more avant-garde banks that are boldly picking up this new challenge by overcoming the goal of "client ownership"; they are proposing themselves as real hubs of financial and payment services to which the new fintechs can engage to offer services to customers. On the other hand, there are the more traditionalist banks that remain perched above their guardian treasure to observe the moves of the big players and worry about defending the marginality of the single service, not realizing that the risk is much bigger than the simple marginality. In most cases, banks are positioning themselves in the middle, without pursuing one of the two strategies firmly, but adapting service by service to the changing context[33].

[33]https://www.agendadigitale.eu/mercati-digitali/banche-e-terremoto-digitale-quali-strategie-dopo-la-psd2/report-announced (accessed 21st December, 2015), p. 136 e ss.

1.3. The application of the PSD2 in the Italian landscape

As is well known, Italy is a country often sceptical in the adoption of new technologies because of its conservative attitude that tends to familiarise to European innovations one-step after the others. This behaviour is mainly due to the prevalence of small and medium enterprises that tend to survive rather than move towards radical innovations that could jeopardize their business. Italian firms develop an incremental innovation, rather than disruptive, which allows them to achieve excellence in its own business but far from the changes taking place in the international landscape.

With the introduction of the PSD2, Italy could not choose the moment to enter the field, given that member states had time until January 2018 to implement the directive in their national legislation. In this regard, the Italian government has implemented the directive by legislative decree n. 218/2017 published in the Official Journal on 13 January 2018. The PSD2 is probably the most important element of the Italian financial sector in recent years. The application of the new directive is potentially able to create a new context within which bank operators will be able to play on par with new entrants. Moreover, the Italian scenario is constantly evolving: mobile devices are gradually becoming the reference devices for web browsing and new forms of payment, for convenience and immediacy. Since 2014, the value of mobile transactions has more than doubled and it is expected to increase continuously[34], as shown in Figure 7.

[34] KPMG elaboration on Euromonitor data

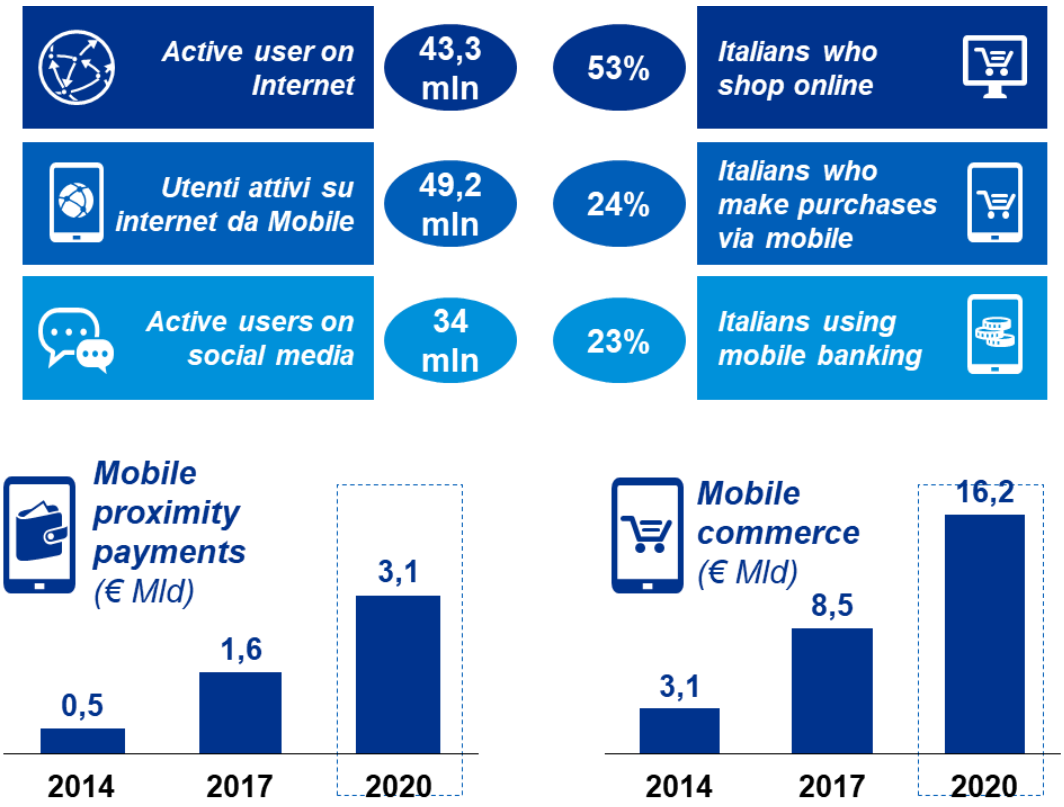

Figure 7 Statistics on the digital in Italy

Data show that the Italian population, more and more digital and social, is ready for radical changes and that is what Italians expect in the next future. Certainly, we do not expect a competition at the level of new entrants in the payment service sector such as Paypal, Visa or Mastercard or even the same Google or Microsoft, but the ability to capture the new business opportunities made available thanks to the directive. In fact, the possibility of expanding its own business and promoting new services to customers is offered to both banks and non-banks. The huge amount of information potentially available to third parties could not only be the key element for a bank in offering a customized service, but this can also be an opportunity for airlines, for example, to provide targeted offers knowing the consumption habits. This is

to highlight that not only banks must pay attention to the new changes, but also every enterprise can build new business model starting from what is offered by PSD2.

After almost one year from the transposition of the PSD2, even though landscape may still seem immature, some Italian companies start to investigate the opportunities they could have and launch on the markets new products and services which are PSD2 compliant.

NTT DATA, a multinational company that deals with system integration and professional services, has designed Demetra. Demetra wants to stimulate an in-depth and up-to-date customer knowledge to the real financial and commercial habits of consumers[35]. That information are collected during daily operation and information provided by the customer such as his purchase preferences, investments made, objectives and wishes expressed. Demetra intends to leverage this customer knowledge to offer him as much service as possible built around his needs and able to meet those that are priority for him at that time. Demetra bases its offer on three thematic areas:

- Commerce area dedicated to services for banks and other commercial partners who take advantage of the features offered to allocate their products according to methods in line with the real needs of customers;
- Banking area in which individuals, SMEs and financial institutions integrate the basic offer with other value-added services that help to manage better the financial operations of customers with products comparison tools, advanced reporting;

[35] https://psd2.nttdataitalia.it/

- Coaching area, aimed exclusively at private customers or SMEs, based on artificial intelligence technologies that offers suggestions on financial and commercial services with the analysis of the customer's spending habits, the needs of the moment and the preferences expressed in phase of adhesion to the platform.

Mobysign, an Italian star-up made up by a team of engineers and sales, creates the innovative application PSD2 compliant for payments, login and security. Mobysign, together with Oracle, offer a solution with the highest levels of security and compliance to PSD2. At the same time it guarantees a simple user experience: the user does not have to copy any code received via SMS or calculated through app or physical token , but simply use the smartphone and the fingerprint or choose a single PIN to type for all transactions[36]. The patented Mobysign technology guarantees banks that the secret authentication codes do not pass through third-party providers, which will enable new instant payments. This solution is innovative as it not only fulfils all regulatory obligations, but also guarantees a high user experience, a strength for which consumers may prefer it to other applications available.

On 26th September 2018 SIA, a European leader in the design, construction and management of infrastructures and technological services, launches "Open Banking" platform to develop new digital payment services for banks, fintech, corporates and public sector. The new platform offers a series of functions to create innovative applications, while minimizing development costs, technological investments and organizational impacts, and accelerating time-

[36] http://mobysign.com/
https://www.pagamentidigitali.it/digital-banking/payment-oracle-punta-sulla-strong-authentication-mobysign/

to-market[37]. For instance, develop for the retail customer, always with a view to "account aggregation", a single payment card that allows charging the charges on different current accounts. For corporate, however, there are great potential for cash management and cash pooling services, integrated with instant payments, which open up new possibilities for payments along the supply chain. SIA's goal is to create an ecosystem in which the various actors can collaborate and, knowing the customer's information, cross-sell financial services and, in this competitive scenario, the consumer will be in a privileged position.

The solutions illustrated above show that Italian companies are becoming aware of this new phenomenon, moving in the right direction. Surely, this new beginning can guarantee economic advantages at any level of company positioning: from the smallest that can resell their sectoral knowledge by forming partnerships with multinationals, up to companies leaders in their sector, which have to adapt their business to the ongoing changes.

[37] https://www.sia.eu/en/media-events/news-press-releases/psd2-sia-launches-open-banking-platform-to-develop-new-digital-payment-services-for-banks-fintechs-corporates-and-public-sector

1.4. The implementation of the PSD2 Directive in the Member States: the main differences

Member States adopts PSD2 directive without too many changes with respect to the original text. The PSD2 intervenes in the Member States in a historical moment characterized by a strong change in the payment methods, which are increasingly oriented towards digital payment instruments: the greater propensity of users to use mobile devices, the change in the habits of consumers who increasingly prefer payments characterized by a simplified and personalized user experience.

For example, in countries like France the market response to the impulses provided by technological change factors has resulted in a variety of payment services offered, the result of the different combination of technological solutions and payment instruments underlying the payment transaction. In France, the innovation consists essentially in combining consolidated payment instruments (whether payment cards, Sepa Credit Transfer, e-wallet but also telephone credit) to new ways of accessing them, in an attempt to find the right balance between efficiency, speed, safety and ease of use.

In more developed markets, a process of substitution between various payment instruments is taking place; the consumer becomes the protagonist, as it is given the possibility to choose which instrument to use in the various spending scenario. Instead of payment service, users have to provide payment data and personal security credentials each time they buy something online, they could complete a transaction with few clicks, while the TPP actually initiates the payment "behind the scenes". At European level, however, the conviction that the PSD2 has brought about an irrepressible change, which

translates not only into new business areas, but also into greater technological complexities. The latter are connected to various themes such as SCA and the ways in which PSPs will be required to implement mechanisms capable of preventing, detecting and blocking fraudulent transactions in real time before their authorization.

In this direction, Capgemini, a global leader in technology and outsourcing services, has developed a market-ready solution enables banks and PSPs to achieve PSD2 and Competition and Markets Authority (CMA) compliance in a structured, controlled, and accelerated manner while turning the regulation into a digital opportunity to unlock new business models. Capgemini's API platform enables rapid release of APIs, lowering out of pocket costs for API build[38].

As anticipate, in Europe PSD2 searches focus attention not only on new developments for strong customer authentication and standards for interfaces between banks and third parties, but also try to figure out new solutions to detect frauds and monitor accurately transactions. This is because the directive values fundamental issues such as credit monitoring and management (eg early warning), use information on balances and handling to speed up fraud detection processes, analysis of behavioral habits of customers in order to profile him and recognize if the payment is authentic.

For instance, FICO has developed an integrated approach to managing fraud for PSD2, incorporating rules and profiles based on PSD2-specific parameters with innovative machine learning techniques. This allows fraud operations rapidly to adapt to emerging fraud trends. Information is fed back into the

[38] https://www.capgemini.com/service/capgeminis-psd2-open-banking-solution/

models so they are constantly developing, this can, in turn, be used to enhance fraud detection. Models can be further enhanced with data shared with other PSPs so that fraud detection system is enhanced with data that are more relevant.

Another solution that allows conveying artificial intelligence in development of fraud detection solutions is Feedzai's Fraud Management product, which combines advanced machine learning technology with purpose-built risk management tools. Feedzai's intelligent platform provides a complete solution to detect and prevent fraud and it is built for the needs of specific users including data scientists, fraud managers, analysts and business users[39].

[39] https://feedzai.com/products/fraud/

Chapter 2

The creation of a new way of delivering payment services: the impact on regulation, the market environment and the business model of financial intermediaries

2.1. The necessary change in the business model of banks after recent regulatory and technological changes

The change that is springing from the joint action of new legislation and technological change raises the question of innovation in the way banks operate in the market, which is of course different from the past.

Speaking of bank branches and their evolution leads to a direct investigation of the internal organizational characteristics of banks and therefore reflect on the strategic choices of growth or evolution. In particular, up until a decade ago a growth policy by a particular bank could be implemented only through a territorial extension of the branches. Currently, the virtualization of banking allows expanding not only through opening new branches, but also by innovating the way banks are organized and by building up new business model. Business models can change completely thanks to new possibilities generated by innovative ways of communication based on internet and on the continuous evolution of web. The consequence is that decisions to open new branches must be based on a correct cost / benefit analysis and on concrete economic return prospects of the new operating points. Moreover, in recent years the organizational logic underlying the management of physical and human resources have progressively oriented towards new paradigms. In fact, in order to overcome the barriers of operating costs of its subsidiaries, banks

have tried to develop new distribution channels. The latter allow greater flexibility of the structure and a convenient economic return. For example, banks are trying to structure and implement Lean Banking programs, changing principles and practices of lean management typical of manufacturing companies. Consequently, bank managers are facing the tough challenge of completely redesigning the organizations, removing the hierarchical functions and applying the principles of a "Systemic Management", a management mode that considers the company as a vital system. It should be emphasized that the introduction of these production approaches is not always successful. Some companies find these approaches too complicated to implement and they are convinced that these methodologies will generate new inefficiencies. While contributing to productivity gains, the application of new production approaches can generate far-reaching structural effects on the plant and on employees. The turbulence of the market cannot be managed by applying the principles of Taylor's Scientific Management, as this involves a weighting of the organizational structure, deriving from the belief that success is the result of the application of both a set of tools and coded operations. Although the analysis of organizational studies is complex within the banking context and its reorganization, it is certain that from a regulatory and organizational point of view, change in banks is now inevitable. The adjustment of regulations can be considered as a sort of cause and at the same time the effect of this reorganization. In fact, the objective pursued by the Community legislator with the PSD2 was to regulate the organizational and "productive"

innovations that have invested the banks, but also to accelerate the diffusion of innovative payment instruments[40].

The streamlining of the organization is also interpretable because of the new ways of doing bank based on the web and its applications. The regulatory evolution introduced by the PSD2 is a quick adaptation of the legislation to the new needs of banks and customers. The change pursued by the PSD2 has affected the credit institutions and the managerial and control logic: credit institutions have seen in technology the opportunity to speed up and make internal processes previously undefinable. In the Italian banking context, a major limitation lies in the observance of the managerial logic of command and control. The main managers 'error is to design the entire organization according to their power of command: they decide what the staff should do, dictating tasks and establishing procedures and documentation. Thus, the performances are evaluated according to the degree of realization of the managerial requirements. This organization becomes inadequate if we think that the customer is now following procedures and functions that were previously bureaucratically centralized on the bank. For this reason, the regulatory evolution has been over the years consistent with the changes that have occurred[41]. The same legislation legitimized the use of tools and practices

[40] VITOLO D., Contact center: guida al viaggio del cliente nella multicanalità., MK- La rivista ABI di marketing e comunicazione in banca., [online], n. 1 / 2016, p. 2 – 10, 2016, http://www.bancariaeditrice.it/media/images/file/Articoli%20MK/2016-01. pdf

[41] CORTER, M. ANDJANSEN,V, 'PSD2 XS2A:WhatYou Need to Know About the Discussion Paper of the European BankingAuthority',Innopay,Web blog, available at: https://innopay.com/blog/psd2-xs2a- what-you-need-to-know-about-the-discussion- paper-of-the-european-banking-authority/ (accessed 15th December, 2015).

that put the consumer, or the bank's client, at the centre of these processes; just thinking about the security measures introduced in order to shield customer from external risks related to the payment channel used. The involvement of the European Banking Authority to strengthen protection and transparency is not only envisaged in the PSD2 but also in the new regulation on the commissions of payments made with cards.

The right mix of the three levers mentioned before can contribute to a widely diffusion of electronic payment instruments in Europe. This does not mean that the internal organization of a bank should be considered superfluous. It is clear that credit institutions play a central role also because they do not only provide customers' services, but also services that are highly evolved and of great macroeconomic importance. However, they should change in a more streamlined and at the same time oriented towards the quality of services offered. Internally, for example, a manager spends a part of his time assessing counter staff in relation to the number of transactions concluded. On the other hand, it does not know that most of the factors that influence employee performance are beyond the control of employees. Manager effort is to put people in a position to provide their contribution, within an efficient system and at the same time constructed starting from the client's request. Customer demand has changed over time as demonstrated by the technology evolution and the regulatory adjustment we are referring to. The development of these new entities has enabled new players to reduce the economic barriers to the entry of the financial services market with minimal effort. The PSD2 creates the conditions to make these changes faster by defining actions within the typical logic of the bank.

For the new players, it would have been difficult to remove slices of the market from those already present and the economic return of these initiatives would have been too far in time given the huge initial costs, both in terms of structures and personnel. On the other hand, these new forms of banking make it possible to minimize investments in traditional structures (such as branches) and make it possible to better amortize variable costs linked to the amount of volumes brokered. This has shown that the changes that have taken place, because of the diffusion of information communication tools based on the constant use of the Internet, have disrupted the payment services market[42]. The PSD2, in fact, redefines the role of institutions and providers of digital payment instruments. On the basis of the new rules, banking operations and the concept of a bank, even in the most advanced omnichannel concept, can now evolve into a series of propositions and platforms able to offer clients unified experiences. It is even possible to enunciate a "bank as a platform", evoking the way services are provided and the typical flexibility of the Cloud, which enables the use of applications regardless of who provides them - often within marketplaces accessible by anyone - and contextualizing them in particular situations of use[43].

[42] SCOTT, A., 'Open Banking Working Group: Roster nd Forthcoming Report Announced', Open Data Institute, available at: http://theodi.org/news/open- banking-working-group-roster-report-announced (accessed 21st December, 2015), p. 89 e ss.

[43] CORTER, M. ANDJANSEN,V, 'PSD2 XS2A:WhatYou Need to Know About the Discussion Paper of the European BankingAuthority',Innopay,Web blog, available at: https://innopay.com/blog/psd2-xs2a- what-you-need-to-know-about-the-discussion- paper-of-the-european-banking-authority/ (accessed 15th December, 2015).

2.1.1. From the traditional banking counter to the digital and ”lean” banking counter: from home banking to phone banking

The term “phone banking” comes from the evolution of both the way of communicating and doing banking. Now smartphone totally replaces the personal computer. What was called “virtual bank” or the “home banking” service therefore becomes closely linked to the use of the smartphone.

Along with these changes, we could talk about the evolution of the web itself: a web designed, compared to the past, for the phone and its applications. Looking at the bank portals, we realize how the procedures are very simplified. Every credit institutions now have dedicated applications. It would be unthinkable to provide typical home banking services only through an internet site or with an old-generation portal. The fingerprints that through the mobile phone allow carrying out several operations have been able to eliminate passwords, tokens and other security systems that ended, however, to slow down and discourage a widespread diffusion of such actions[44].

The use of smartphone that manages to make a financial transaction through facial recognition would make it much safer and ultimately simplify all the procedures and efforts of the lenders. In front of the speed assured by phone banking, the concept of virtual bank becomes very old. The phone banking is the virtual bank in the era of the web 3.0, therefore based on a web concept different from the one within which the home banking has developed. The same concept of banking is a decidedly reductive concept. The phone banking

[44] PORTALE V., FAIELLA I., 2015. Le startup del Mobile Payment e Commerce, Mimeo, Osservatorio PoliMi, 2015, II, p.225 e ss

also includes the typical actions of trading securities on the markets. A multi-channel bank converging on a single device.

The phone banking, the multipurpose counter available on the smartphone is "lean" by definition. Therefore, if we have moved from the traditional bank to what we can define as "lean", we must say that this assumes the characteristics of a virtual counter. In its broadest sense, the phone banking is nothing more than a way to enhance the functionality of telephone communication in the banking sector and therefore the possibility to do what in the past was possible to do only in the branches.

These dynamics were considered fundamental for the European legislator. The PSD2 emphasizes and clearly understands that this way of operating simplifies the provision of services for the consumer and increases the systemic efficiency of the capital market. Just think that the PSD2 lays the basics of trade and payments even through telephone credit. Retailers will be able to accept payments by overcoming or even better by bypassing the whole world of intermediations with obvious advantages in terms of greater efficiency, lower payment costs and the activation of faster repayment procedures[45].

The possibility of operating in the financial market and as a financial intermediary by using a smartphone certainly leads banks to review, as we will see in the course of this work, its services. The possibility offered by the directive to allow third parties to enter the bank-customer relationship increases both the possibility for banks to offer different services and the risk

[45] SCOTT, A., 'Open Banking Working Group: Roster nd Forthcoming Report Announced', Open Data Institute, available at: http://theodi.org/news/open- banking-working-group-roster-report-announced (accessed 21st December, 2015), p. 89 e ss

of disintermediation. In fact, phone banking is such a direct and fast channel that it does not need to be characterized by excessive formalization.

The technological choices of Banks will have to be more and more coordinated and oriented by the strategic objectives of the business. The proactive approach requires being a first mover in a new field like that of "phone banking". The intermediaries themselves must be innovators and must activate projects with the guarantee that their software systems are truly service oriented and ready to support the growing business needs and optimize internal processes[46]. Mobile phone banking has the potential for a huge growth in Europe, because it has broad and remote areas that traditionally had limited access to banking services due to the high cost of setting up brick and mortar branches. Furthermore, as many as one in three major bank branches in rural communities have been closed[47]. Just think of the vast areas of southern Italy or the southern European countries such as Greece and Portugal. The impact of the evolution underway is therefore extraordinary in order to fill a still present digital gap. From an empirical point of view, bridging the digital gap will certainly lead to making services faster and increase market efficiency. This is also the goal of the PSD2. Looking at users' needs, it is important to clarify that mobile banking offers convenience. For banks, corporate mobile banking offers an attractive advantage compared to retail: the potential to charge fees. Retail customers have come to expect free

[46] PWC, 2016. PSD2: Contesto di mercato e timeline di recepimento, http://www.pwc.com/it/psd2

[47] VITOLO D., Contact center: guida al viaggio del cliente nella multicanalità., MK- La rivista ABI di marketing e comunicazione in banca., [online], n. 1 / 2016, p. 2 – 10, 2016, http://www.bancariaeditrice.it/media/images/file/Articoli%20MK/2016-01. pdf

online and mobile services. Basic corporate banking will likely be free as well, but research indicates corporate customers may be willing to pay for advanced functions. Now mobile banking "is mostly a retention tool". Business customers are not likely to choose a bank just because it offers mobile banking; although in a couple of years they may abandon banks that don't offer that service. As represented in the Kano model, such services initially born to satisfy "delighters needs" of customers now are becoming basic needs, so buyers take them for granted. Businesses planning to use mobile banking should choose an integrated platform in which the online and mobile components form a seamless whole. Information entered online should flow to the mobile portal automatically and vice versa.

Companies beginning to use mobile banking should set up a policy with "strong entitlements". That means deciding who can view which information and who can authorize transfers, as well as setting limits to the size and number of online transactions permitted. Mobile banking enhances executives' productivity and improves quality of life. Managers need no longer be "tethered to their desks" to deal with financial information. In the same way, mobile banking will achieve broad acceptance over the next few years[48].

[48] TREBLICOCK T., Banks roll out smart-phone banking for business, Business Journal, 2010, 26, 49, p. 8 e ss.

2.1.2. Towards a new concept of baking experience and the importance of customer satisfaction

The phone banking comes from the multiple uses allowed by modern phones, always connected and able to make access to the network available in a very simplified way. In this context, a winning managerial theory should start from the assumption that organizations are systems and should be managed taking into account relationships, links and connections that characterize each individual part. Technological advances are certainly a very important factor of change, capable of profoundly modifying the current techniques for the distribution of financial services. However, there is a big question mark about the introduction and diffusion of new communication technologies will attenuate or even eliminate the importance of being near the customers in the offer of retail services. The growth of online exchanges is changing entire sectors that until some time ago were characterized by a certain stability and able to ensure profit in the long run. Consider, for example, the tourist offer, or better, the air transport sector. Once the liberalization of the sector has taken place, Internet channel has significantly contributed to create a growing demand for transport services, literally bypassing the intermediaries based on the territory, or rather the tour operators, which boasted years of experience and specialization within this market. The latter is certainly just one of the many examples to highlight how the constant increase in electronic transactions has made necessary to set up payment instruments that are equally innovative, able to accommodate the needs of an increasing demand

and to guarantee economic transactions now dematerialized and without frontiers[49].

According to the Fintech & Digital Finance Observatory of the Politecnico di Milano, in 2017, 16% of Italians used at least one Fintech service and 56% of bank customers access their institute's services from PCs, tablets and smartphones. The bank of the future should offer for 54% of the sample analysed by the search for free basic services, 37% speed in completing operations and responding to problems, while one in three respondents would like more transparency on investments and system availability 24/7. The banks play a central role in the provision of financial services: they enjoy the Italian preferences regarding the management of savings (67%), loans (57%) and mobile payments (47%). An important indicator comes when assessing the age groups considered in the survey: for Millennials, banks perform less well in mobile payment (42%), losing ground compared to e-commerce sites (57%) and supermarkets (52%)[50]. The biggest risk is for banks that adopt a passive approach compared to the new market scenario that is opening and that requires a new players in the banking world. In short, we are at a crossroads: banks can be mere deposits of data used by third-party operators to provide their services or leading actors of innovation. In this second direction, many Italian operators are working to focus on the main opportunities offered by the PSD2. In this dynamic, it is clear that customer satisfaction and its experience as a consumer of banking services change completely. To raise the level of satisfaction and exploit the openings presented in the directive, banks

[49] PWC, 2016. PSD2: Contesto di mercato e timeline di recepimento, http://www.pwc.com/it/psd2

[50] www.osservatori.net, Industria 4.0: business scenario e case history, p. 147 e ss.

must open their business model; first of all, it is necessary that banks do not limit customers in the services proposed and therefore be in step with the changes in the market. This is the first rule to raise the level of service offered and try to intercept customers' wishes to improve the customer experience. The keyword is open innovation. The experience of banks in terms of knowledge of the market and of customers, as well as in terms of regulatory compliance, is a point of great attraction for young companies. The latter are the lifeblood for traditional organizations that are struggling to find the right driver to develop new business models or for those that have not yet developed in-house a department technology able to explore the opportunities offered by digital technologies. A strategy could be the collaboration between banks and fintech start-ups can express itself in a multitude of occasions to develop new approaches to the client through the opening of the systems and the sharing of platforms and data[51].

òàùthat will tend to support a complete relationship between the e-commerce operator and consumers that also includes the phase of payment. In this direction, we understand the interest of large technological companies that in the current phase does not appear limited to the sphere of payment services. Banks should exploit this opening to raise the type and quality of the services offered, precisely to maximize customer satisfaction and improve the customer experience[52].

[51] SCOTT, A., 'Open Banking Working Group: Roster nd Forthcoming Report Announced', Open Data Institute, available at: http://theodi.org/news/open- banking-working-group-roster-report-announced (accessed 21st December, 2015), p. 89 e ss

[52] PORTALE V., FAIELLA I., 2015. Le startup del Mobile Payment e Commerce, Mimeo, Osservatorio PoliMi, 2015, II, p.225 e ss

2.2. How the current legislative framework has led to new banking services channels and to the collapse of banking sector barriers

The threat to the banking sector is fueled by multiple factors introduced by regulatory changes in progress. Moreover, exponential technological innovation facilitates the establishment of new players benefiting from both a structure suitable for change and the removal of obstacles typical of the banking sector. In particular, the skills required to offer a banking service and meet customer expectations rely on the knowledge of new technologies rather than a well-trained staff.

In the past, in order to sell a service well, it was sufficient to convince the customer about the convenience of the service offered; now to buy and sell shares, the client searches for the platform that best meets his needs in terms of time, reliability and ease to use product. All this is possible only thanks to a continuous regulatory update that opens the doors to new actors; the latter can offer both more advanced technological solutions and provide services that monopolistically before now only the bank could handle.

2.2.1 Looking for new channels to deliver banking services to customers

The rapid growth of the World Wide Web and the consequent explosion of e-commerce led most researchers to focus on studying customers' adoption of this specific technology. However, e-commerce adoption is an instance of IT acceptance and use, since, especially in markets such as financial ones, several applications open alternative channels for banks, such as mobile, phone or interactive TV. The use of these technologies shapes the channel-mix decisions of banks and, from customer's perspective, reflects different levels of

familiarity, innovation, and complexity. At the same time, the channel itself may facilitate or hinder consumers' perceived trust[53]. Research on alternative banking channels is disparate on the variables used to explain the influence of the type of technology used. Early research on phone banking, based on the theory of innovation adoption, has suggested that the characteristics of a new technology, such as complexity, compatibility, and the possibility to try it are better predictors of adoption than personal characteristics. Phone and Internet as bank channels are still, in several markets, in their development stage. Many potential users ignore the functionalities and advantages these channels offer. Few studies have directly addressed the role of customers' level information about new channels on the acceptance of these channels. However, early work on innovation suggests that limited supply of relevant information, or possible misinformation, will discourage innovation adoption. More recently, the preliminary evidence indicates that awareness, availability and advantages of e-banking services are important factors for not using Internet banking and the amount of information about e-channels influences directly their use intention. In the case of Internet banking, the lack of information about it made bank customers feel uncertain with the channel and afraid of making mistakes in the process: it suggests that communication strategies to overcome such functional barriers should become a priority for banks[54].

[53] PUSCACIU R.M., PUSCACIU V., Risk and Competition - the Largest Virtues of the Financial-Banking Market, AUDŒ, Vol. 14, no. 3, pp. 299-311

[54] PORTALE V., FAIELLA I., 2015. Le startup del Mobile Payment e Commerce, Mimeo, Osservatorio PoliMi, 2015, II, p.225 e ss

Whereas there is a demand for simple and fast online payment processes, (customers want to receive goods and services they order over the internet immediately, merchants want instant confirmation of payment), the convenience of payment initiation and account information services has its price. Several existing operating models of third-party providers expose customers, merchants and account servicing PSPs to various risks: for example, risks related to weakened authentication (man-in-the-middle attacks, phishing) or to the abuse of sensitive payment account information. The EPC has noted that the PSD2 surprisingly provides a liability for account servicing PSPs in the event of a payer's decision to make use of a TPP for payment initiation services or, as Commission representatives have called it in several occasions, the account servicing PSP would be the "first port of call" for the payment service user[55].

2.2.1 Competitiveness in the banking market and compatibility of current legislation with changes taking place

In the Italian context, banks still have little room for maneuver to implement the required changes. The market is strongly concentrated more than in any other European country. However, the entry of third parties in the customer bank relationship has enlivened the banking system in general. In Italy, therefore, structural changes may affect the banking sector and increase the

[55] SANTAMARIA J., The emergence of new payment service providers and their impact on the regulatory and market environment, Journal of Payments Strategy & Systems Vol. 8, No. 4 2015, pp. 407-414

risk for the intermediaries themselves, linked precisely to the disintermediation that authoritative commentators[56] have found by analyzing the PSD2.

Northcott reviews the theoretical and empirical literature to examine the traditional perception that the following trade-off exists between economic efficiency and stability in the banking system: a competitive banking system is more efficient and therefore important to growth, but market power is necessary for stability in this sector. This existing trade-off is not clear. Market power can have positive implications for efficiency and the potentially negative implications of competition on stability may be manageable through prudential regulation. Berger[57] appreciates that more bank competition erodes market power, decreases profit margins and results in reduced franchise value that encourages bank risks. Under the alternative "competition-stability" view, more market power in the loan market may result in greater bank risk as the higher interest rates charged to loan customers make it more difficult to repay loans and intensify moral hazard[58].

In this perspective, the entry on the market of "financial start-ups" that offer financial services via the Internet managing them with typical start-up logic, has caused the emergence of scenarios completely new. These changes have transformed the banking activity and therefore the services of intermediation

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[56] MIRZAEI, A. & MOORE, S.M. Has the Financial Crisis had an Adverse Effect on Bank Competition? SBAWPS: 01-01/2015, p. 89 e ss.

[57] BERGER A.N., Bank Competition and Financial Stability. Policy Research Working Paper, No. 4696. Washington, DC: World Bank, 2008, p. 269 e ss.

[58] PUSCACIU R.M., PUSCACIU V., Risk and Competition - the Largest Virtues of the Financial-Banking Market, AUDŒ, Vol. 14, no. 3, pp. 299-311

related to this flow. The services offered by new start-ups called Fintech are characterized by immediacy never known until now. The same banks are therefore called to subvert the business models up to this time used to generate value and converge towards a technological change in its activity. The start-ups born within the financial market aim to bring together directly those players who need a financial or payment service. Start-ups such as "Lending Club", for example, are able to guarantee availability in lending or sum of money in a very short time without intermediation that can benefit from the service by paying a small percentage of the sum of money that transit[59]. This actual disintermediation is comparable to what happened in the public transport sector, within which start-ups like Uber were able to revolutionize the market and therefore impose sudden changes.

Despite the systemic risks should not be underestimated, the increase in competition in the banking market and the desire to maximize the satisfaction of new customers certainly leads to greater efficiency. Léon[60] has identified three reasons why competition in the financial sector is important: firstly, for efficient functioning of financial intermediaries and markets; secondly, for firms and households access to financial services and thirdly, for stability of the financial system. Alhassan[61], after analyzing the activity of 26 banks, used

[59] SCOTT, A., 'Open Banking Working Group: Roster nd Forthcoming Report Announced', Open Data Institute, available at: http://theodi.org/news/open- banking-working-group-roster-report-announced (accessed 21st December, 2015), p. 89 e ss

[60] LEON F. What do we know about the role of bank competition in Africa? Etudes et Documents, no. 16, CERDI, 2015, p. 78 e ss.

[61] ALHASSAN A.L.,OHENE-ASARE, K., Competition and bank efficiency in emerging markets: empirical evidence from Ghana. African Journal of Economic and Management Studies, June 2016, vol. 7, issue 2, 2016, pp. 268-288

them to estimate technical and cost-efficiency scores by the data envelopment analysis while the Boone indicator is employed to proxy for competition. In order to estimate the panel regression model the indicators used are controlling for bank size, lending, income diversification, tangibility, leverage and profitability, ordinary least squares, instrumental variables and fixed effects estimations. The authors also apply the growth convergence theory to examine the recommended efforts at improving competitiveness of the banking industry will translate into lower interest rate spread through improved CE. This will ultimately improve access to bank credit and impact positively on economic growth.

Some of the most important challenges are the risk and the competence; it is therefore necessary to pursue efficiency within the financial markets. The opportunities created with the PSD2 remain so if the intermediaries are able to pursue strategies related to the competence and openness of their business model. In this "universal model", banks typically offer a broad product portfolio in retail, private, commercial, investment, and transaction banking, along with wealth and asset management and insurance. In contrast, fintech players focus on designing, building, and executing specific parts of the banking value chain better, cheaper, and faster than what is currently on offer by banks. With this strategy, they are able to establish a market position for themselves in a specific niche. In essence, fintech companies "attack friction" leverage innovative technologies (mobile apps, application programming interfaces, cloud technology, crypto technology, artificial intelligence, and data analytics) to address convenience, user experience, and functionality gaps that exist with traditional banking products and services in financial

services. This technology development enables new companies to apply a "narrow finance" strategy that is assess specific part of the business model and provide a superior alternative[62].

[62] CORTET M., RIJKS T., NIJLAND S., PSD 2 the digital transformation accelerator for banks, Journal of Payments Strategy & Systems Vol.10, No. 1 2016, pp. 13-27

2.3. The greater complexity in the process chain of the payments

The success linked to the new possibilities offered by legislation and the changes taking place become for banks the need to expand their business model. In particular, if a few decades ago changes were linked to search for a secure virtual interface, currently the challenge is offering different products and services characterized by the possibility of acting in collaboration with new players in order to make transactions in unthinkable way. Security is always on top but evolution in the way we communicate and in the customization of devices has really paved the ability to accelerate exchanges and then payment transactions.[63].

The growing competitiveness of financial markets, the emergence of new intermediation forms and the development of a mass financial culture are some of the phenomena that have recently been involving the banking system. In light of the new competitive pressures coming from outside, the attention is focused on the selection and organization of distribution channels, so downstream in the value chain. This phase of banking management is one of the most important moment in the development policies of a bank, also in relation to the new and considerable strategic value they have assumed as instruments for differentiating and attracting customers.

The change in the distribution network leads to a strategic rethinking of the entire banking distribution and production chain. For banks, the disbursement system is both an interesting way to create value for customers as it

[63] SCOTT, A., 'Open Banking Working Group: Roster nd Forthcoming Report Announced', Open Data Institute, available at: http://theodi.org/news/open- banking-working-group-roster-report-announced (accessed 21st December, 2015), p. 89 e ss

differentiates its own bid strategy[64]. In fact, internal processes clearly become much faster and this could be critical when referring to the material carrying out the intermediation activity. For example, the credit process involves various players in the bank, from the staff in the central offices, to the branch office, to the back office. In order to monitor the flow of this activity, which starts from the client's request for financing and ends with the loan disbursement, the process analysis model allows highlighting any inefficiencies. Inefficiencies that hinder the work of staff have negative consequences in terms of time and therefore cost. Manager competence is to become aware of the real problems and make the appropriate diagnoses, activating processes able to connect people involved around a single purpose that justifies the very existence of the banking system set in the lean way: offering its clients the financial services they need, at competitive costs and in reasonably sustained times[65].

The incentives for the dissemination of these new ways of banking, moreover, came precisely from customers. The latter, because of their work, cannot go to the bank during the normal opening hours or that, having less and less free time available, do not intend to pass it waiting for his turn in line at the counter, perhaps for a single information on his account.

Depending on the perspective and efficiency, that the bank intends to take on the market four roles can be interpreted in light of the rules introduced by the

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[64] DELOITTE, 'Payments Disrupted — The Emerging Challenge for European Retail Banks', available at: https://www2.deloitte.com/content/dam/ Deloitte/tr/Documents/financialservices/ payments-disrupted-2015.pdf (accessed 20th December, 2015

[65] KARFAKIS A., What is the value of a bank's brand?, ABA Bank Marketing and sales, 2015 http://ababankmarketing.com/insights/what-is-the-value-of-abanks-brand

PSD2. The minimum requirement is that of regulatory compliance which in any case involves investments to be devoted to the adjustment of procedures, processes and contracts with customers to ensure access to back-end services by third parties or other institutions. Choosing to become an aggregator operator means instead to be able to integrate the information on customers to enable payment transactions also starting from the accounts activated by other operators: a role that is particularly suited to small and medium-sized banks, which can expand their services and better protect their customer package in the new competitive scenario. Becoming an aggregator bank means directing investments of a commercial nature to develop products and models of additional revenue to payment services, activating partnerships with third parties, starting from fintech startups to reduce development and innovation costs and speed up the commercial roll out of new solutions. By choosing to turn into a platform, a bank aims to revolutionize its technological core according to the logic of open API and economies of scale. In this way, it offers third parties who want to engage their services in a new environment with a safe, flexible and high-performance environment[66].

[66] PWC, 2016. PSD2: Contesto di mercato e timeline di recepimento, http://www.pwc.com/it/psd2

Chapter 3

Discovering possible scenarios for banks and analysing the impacts arising from the implementation of the AISP service

3.1 The main drivers of change in the banking sector

As anticipated in chapter 1, the digital revolution has essentially changed the way people buy products and enjoy services; in particular, consumers have high expectations on how they can dispose of goods and services thanks to the new tools available.

Addressing the PSD2 topic and taking advantage of the opportunities deriving from it means responding jointly to the three main driver of change that currently affect the banking sector. These drivers are synthetized in the figure below and explained in details in this paragraph.

Figure 8. Drivers of change in banking sector

The first driver refers to the new socio-behavioral profiles that define consumers who are increasingly digital and less attracted to services accessible "offline". The evolution of the population is radically changing the way in which customers want to interface with their bank because they are less wary about the use of innovative platforms. This is demonstrated by the data

collected and represented in the digital report, "we are social"[67], made in 2018, that shows how the population has changed its habits. Data reported in the representation below refer to the Italian population.

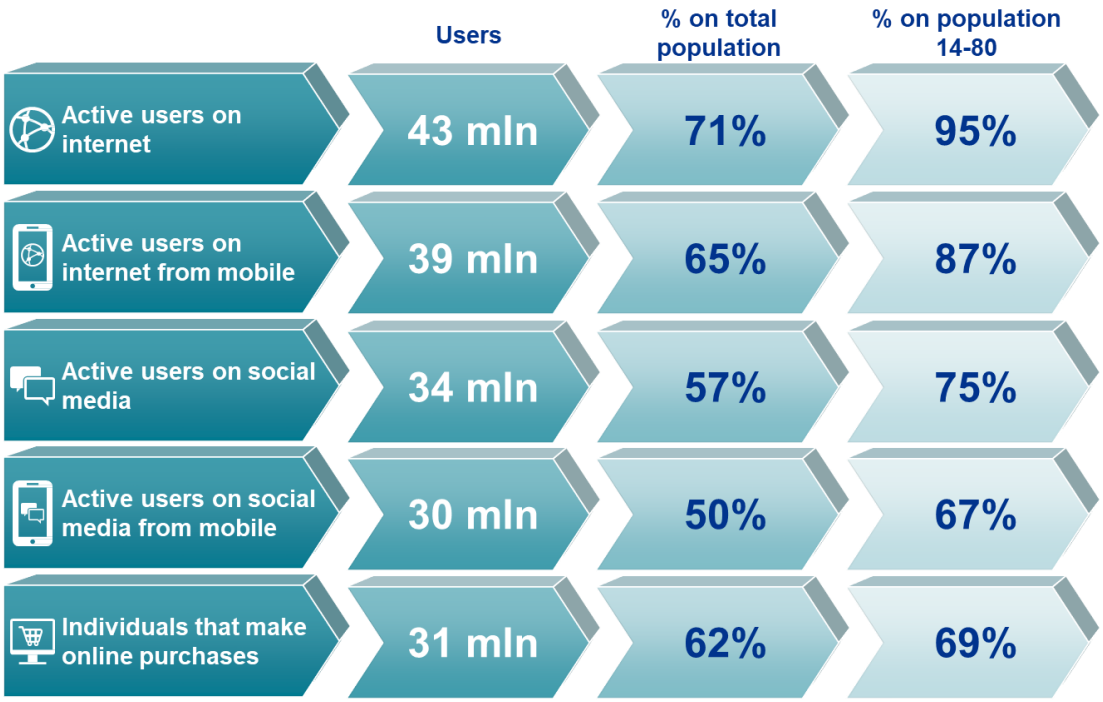
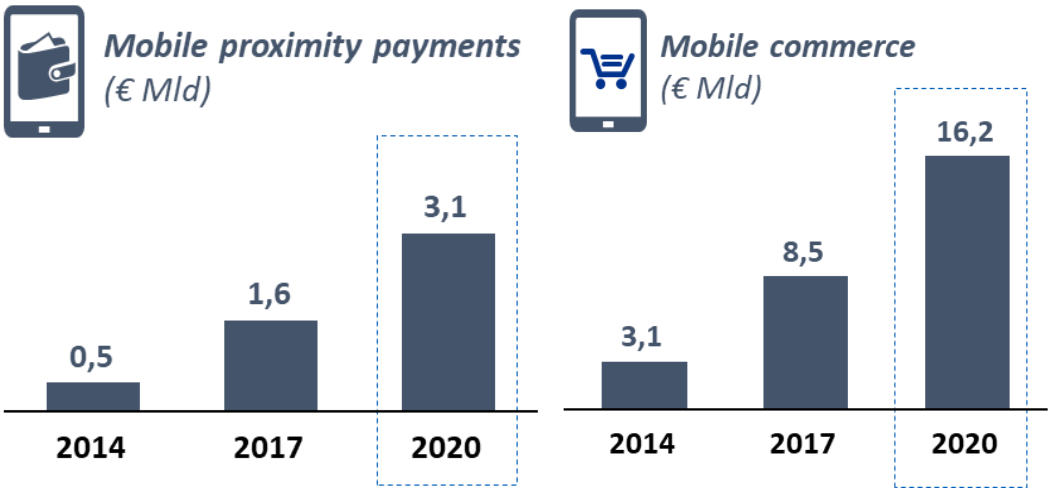


Figure 9. Aggregate data on the behavior of Italian consumers

The statics show that digital has become an integral and essential part of daily life and being always connected characterizes every activity of consumers, in particular the interaction that consumer expects with his bank. That's why banks are changing the modes of providing banking services and the scenario is constantly evolving: mobile devices are gradually becoming the reference devices for web browsing and for new forms of payment, thanks to their convenience and their smartness: since 2014, the value of mobile transactions has more than doubled and the continuous increase is expected[68].

[67] Global digital report, we are social, 2018
[68] KPMG Digital Banking 2017 – Dati Italia



The second driver of change refers to the new competitors entering the banking market and the new technologies developed in collaboration with highly specialized start-ups. New technologies are revolutionizing the banking sector but only some players are seizing the opportunities offered. We mainly refer to fintech startups, innovative companies that have revolutionized, and they are doing it every day more, business models of banking activity. Fintech are taking advantage of the changes taking place reaching critical mass in a very short time: this has always required a lot of time and huge investments for bank since increasing its customer's base corresponded to opening new branches. Fintech operators are characterized by a large use of technologies and big data that allows them to respond quickly to the customers' needs. These new operators pay special attention to the customer experience by simplifying some vital processes for everyday life by changing the way we invest, save or ask for a loan. The main services offered by these new actors ranging from mobile payment to crowdfunding until

social lending services, which are lending activities between private individuals using online platforms.

The exponential growth of the fintech led to the expansion of their operations in the areas shown in the following graph[69].

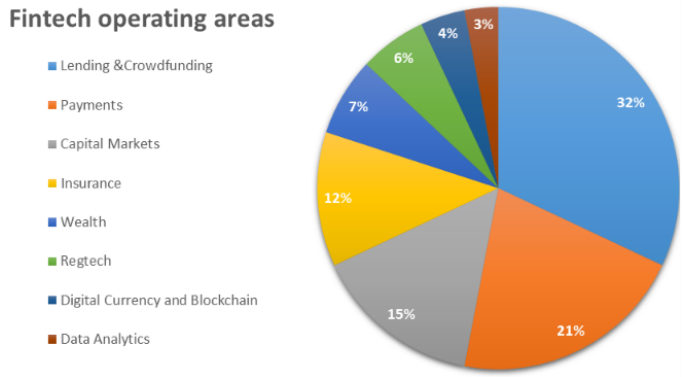
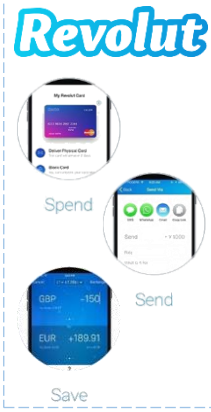


Figure 10. Fintech operating areas

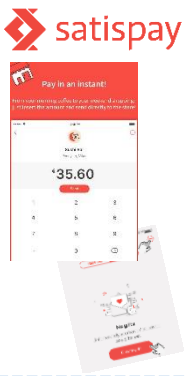
The different areas in which the Fintech are operating demonstrate how a technology could be re-evaluated and reapplied in several fields. These new companies certainly collect large amounts of capital and it is important to consider the footprint they leave, consisting of new directions and frontiers they open, new ways of operating and new skills that can stimulate and support traditional actors: Fintech can be a source of innovation for incumbents.

[69] KPMG "Fintech 100", 2017.

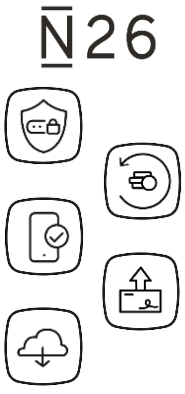
Among the best Fintech platforms that have had the greatest success there are:



Revolut is a digital banking service that allows you to make money transfers around the world: the exchange rate from one currency to another is instantaneous and it is carried out at the interbank rate, the one that the banks use in their foreign exchange transactions. The transaction is without commissions up to 5 thousand euros per month. This application has reached about one million customers in Europe in less than three years.



Satispay is a payment system that allows customers to buy in shops, physical and online, making phone cards and exchange money with friends in a completely free and safe way. To incentivize the use of the app, Satispay offers the Cashback option, which returns a percentage of the expense that does not work as a real discount on the purchase, but as a separate credit. In Italy, about 44,000 merchants use Satispay.



N26 is first European smartphone bank with a full banking license. N26 allows an easier access to account, faster and more secure from the smartphone. The process is simple: in just 8 minutes it is possible to open an account. Thanks to a proprietary technology and a modern user experience, N26 is able to offer an easy-to-use current account, with very competitive costs and banking conditions. The application counts 1 billion transacted per month in Europe after about four months.

The third driver of change refers to the strong pressure on the income statements of banks due to lower margins that banks can earn on the core bank activities. The factors that affect more on this situation are summarized in the

following points: lower interest margins, which correspond to lower revenue, slightly down costs but still high and high number of NPL credits. As a result, banks need to evolve themselves in order to ensure sustainable profitability levels.

The KPMG elaboration, carried out on the balance sheet of the main Italian banking groups, shows that from 2009 to 2017 interest margins for banks is dwindling (from 3,0% up to 2,3%). The key issue is the strong pressure on margins, mainly in consideration of the current rate scenario that does not allow banks to improve their profitability. In order to mitigate this criticality, it is necessary that banks seek new revenues through both innovative and traditional channels.

As anticipated above, another burden for banks is the operating cost which, although slightly down, still has high numbers: around 1.7% in 2009 and 1.6% in 2017. Operating costs have potentially large margins for reductions, but to reach this goal it is necessary to optimize costs and achieve high levels of efficiency. Another factor that should not be underestimated is the cost of risk that still needs deleveraging due to the high stock of NPL: the challenge for banks is to secure the cost of risk and maintain strong safeguards to minimize adjustments on credits.

3.2 Banks'strategic positioning: how the PSD2 guides banks towards an open banking model

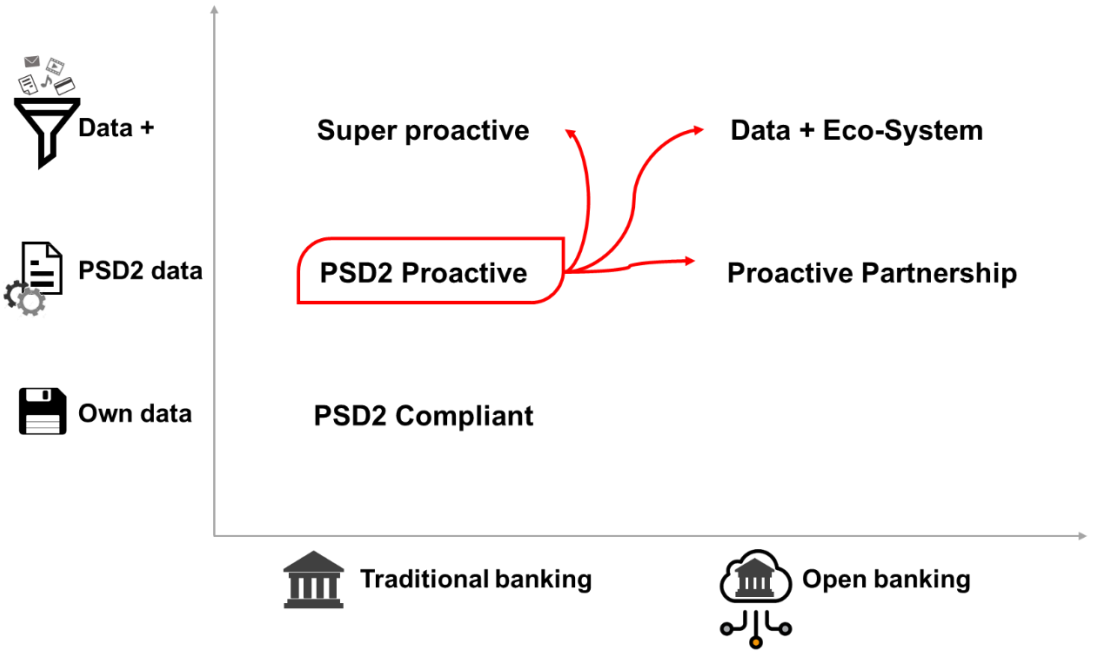
As emerged several times in this paper, the PSD2 offers new opportunities not only to the latest generation of financial operators but also for the traditional ones. The latter then have the right to decide how to benefit and how to create value starting from normative novelties. Of course, in this dynamic context time is a crucial factor and banks who are willing to undertake a process of change should do it so as soon as possible to secure competitive advantage and not lose market share gained over the years. The choices made by the institutes will affect their operations that may remain the same or evolve in areas not yet explored.

In this section, different positions will be figure out based on the degree of proactivity shown by the institutes, identifying for each role possible risks and occasions. Finally, some PSD2 applications that in concrete can support the banks that intend to undertake a path of change will be illustrated.

3.2.1 Proactive reaction to adjustments following the PSD2 is the first step to open banking model

Based on the previous discussion, it is possible to identify different positions depending on the approach banks choose. A crucial aspect that has to be considered is the ability of a bank to rearrange its skills in "non-core" activities in order to create the value that compensates for the margins lost in its "core" activities.

The following matrix depicts the different approaches that a bank can adopt and, consequently, the set of activities that more or less characterizes that position, moving from traditional banking to open banking.



PSD2 compliant is the step that all banks must face as it consists in defining and implementing arrangements to comply with the directive and support the related charges. The adjustments include IT and organizational adaptations in order to allow Third Party Providers (TPP) the access on customers' bank account. In particular, the directive refers to the implementation of compliant security systems and organizational /procedural adjustments that allow banks to operate as described in the directive. This step guarantees the PSD2 compliance but, at the same time, it transforms the bank into a bowl of data to which other banks or other financial institutions can access. In this scenario, the bank becomes a data warehouse for external entities without any personal advantage in providing information on its own customers. This phase is

preparatory to the evolution of a bank but for those who stop in this position there are no advantages in sight.

PSD2 proactive approach considers PSD2 and Open Banking as critical elements to remain competitive and attractive in the overall market. This strategy allows banks to proceed on the path of change by reorganizing their business model and giving themselves the opportunity to obtain the advantage of the first mover in the creation of new innovative services. For example, a bank can offer the client an aggregate view of its financial situation, providing him an updated monitoring of expenditure developments. Of course, this is possible only if the organizational structure is ready to face the proposed change: as history testifies, radical changes require an internal predisposition that in some contexts may not be there and therefore result in organizational inertia, for which companies in general are unable to make big jumps. The PSD2 proactive is the preparatory phase that allows a bank to evolve through an innovation that can lead to the concept of open banking.

The **Super proactive** approach is the last stage a bank can reach while remaining in the boundaries of a traditional bank. Thanks to the amount of available data, the bank focuses on improving the quality of the products offered and the services provided: with this approach, it is placed within a Data Driven scenario. In this phase, a bank can enrich the information for a better profiling of the customer also through partnerships with external subjects: for example data can come from social media, from the various CRM systems (Customer Relationship Management), from the cash desk of a supermarket to a phone call that arrives at a call center.

Proactive partnership is an approach that envisages possible partnerships with Fintech or other market innovators with the aim to offer new services/solutions or synergies to gain more market shares, eroding those of competitors. In this way, the banks try to redesign the actual relationships they have with customers, as many Fintech are already doing. This obviously involves choices that are more coordinated and oriented by strategic business objectives. For example, a bank could start providing travel services by exploiting a partnership with an airline company: the bank could gain money on the access to the service offered by the customer; in the same way, the airline would benefit from the partnerships by extending its marketing campaigns to the bank's customer base. Customers could benefit from travel discounts and other incentives offered by the bank. Finally, exploiting the data collected with its interfaces, the bank has the opportunity to make more personalized interactions, create targeted promotions, co-marketing initiatives with partners and much more.

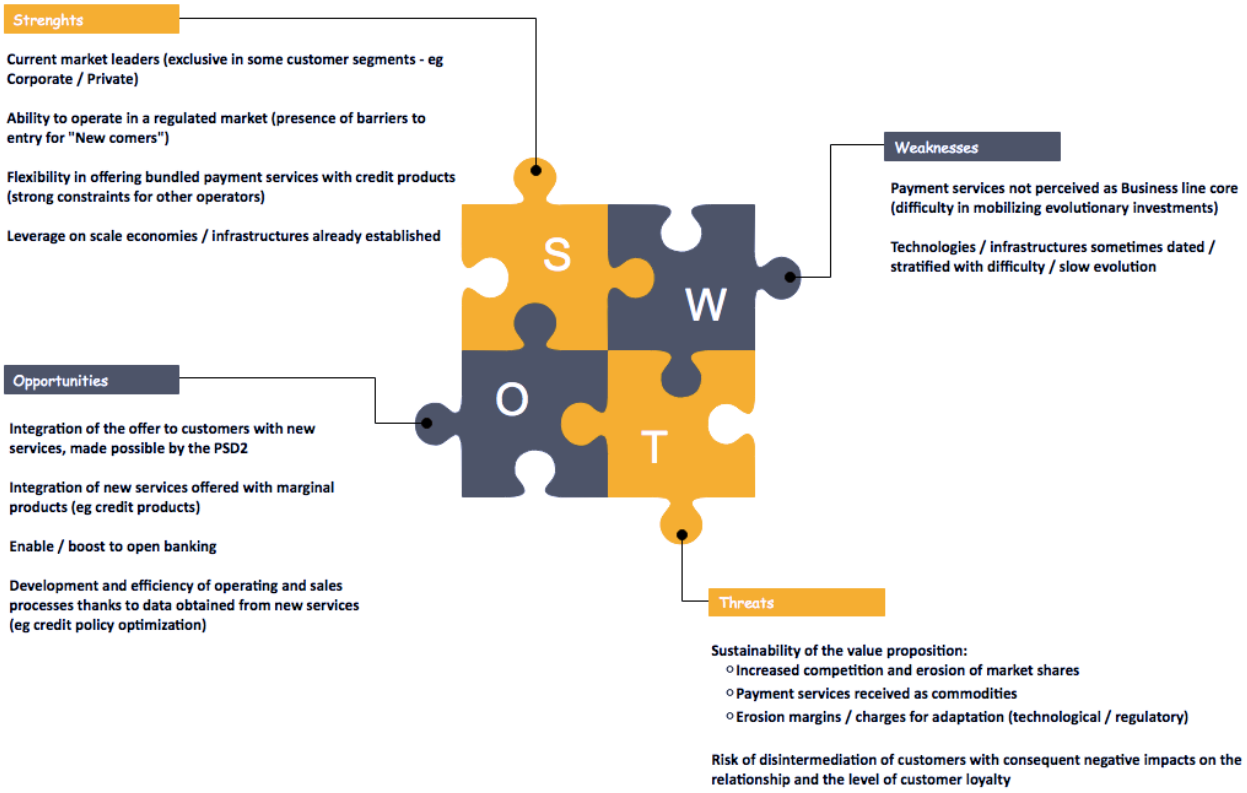
Data + Eco-system is the last stage a bank can aspire to, that is the construction of a finance app store for merchants, consumers and other stakeholders. This scenario assumes a fully integrated solution, in which the bank is present in the entire decision-making process that the customer makes before purchasing, also meeting the needs of adjacent consumers. For example, banks could create an ecosystem that involves several stakeholders to provide a unique interface through which customers can follow all the stages required for buying a home.

In this process of change, the decisions that the banks take will be crucial to outline their future from here to the next 10 years. Surely, every choice will be

taken considering the structure and the organization that distinguish one bank from the others: small banks will be oriented towards solutions that provide partnerships with external providers; large banks will have to put radical changes into account in order to maintain leadership and not remain passive spectators of their industry.

3.2.2 PSD2 offers important opportunities: possible applications for banks

Nowadays, banks still have a leading market position even if the coming threats could subvert this order. Let us try to evaluate the banks 'competitive position by using the SWOT analysis that is identifying strengths, weaknesses, opportunities and threats.



In order to face the threats highlighted, the PSD2 offers banks some opportunities to re-launch "core" revenues and, at the same time, to earn new revenues from "non-core" activities by developing new products and services to satisfy actual customers and to expand the customers' base. With more

technological products and services, the banks also improve the customer experience of digital users who are inclined to technological innovations.

The PSD2 still allows the possibility of integrating the fintech operating and business models with a view to the open banking described above. Finally, the new processes introduced by the directive enable the strengthening of risk management and control, further protecting online consumers.

To realize in practice what has been said in the preceding pages, below some possible applications that a bank could implement in order to take advantage of PSD2 opportunities. With reference to banking operators, there are three different macro-scopes of PSD2 applications illustrated in detail.

First of all, the strengthening of marketing and commercial targeting processes by using information on balances and movements of customer current accounts obtained by qualifying as AISP. Positioning in the market with this role can be a target of operators who intermediary large volumes, oversee a significant customer base in the reference market and across multiple segments (e.g. retail, corporate, public administration) and can leverage their ability to process and investment in technologies and marketing.

	Potential opportunity	Operator type
1 **Strengthening of marketing / commercial processes** 	Use information on balances / movements to reinforce the marketing and CRM processes (campaigns, targeting and commercial segmentation, etc.)	AISP 
	"Data monetization" through the construction of commercial leads with information on aggregate balances / movements	AISP 

The second area of application is the possibility of offering new products or services to its customers, such as innovative acquiring services, decoupled cards from current accounts or advanced personal financial management and

planning services. The table below lists some opportunities available in this area.

	Potential opportunity	Operator type
2 New products / services 	Offer of personal / financial management services & planning integrated to multi-bank clientele	AISP
	Offer of debit cards based on various current accounts / payment accounts (also from different banks)	CBPII
	Offering an evolved acquiring service that bypasses traditional circuits	PISP

Finally, the third macro strand of opportunities concerns credit. In fact, through the services introduced by the PSD2, banks will be able, on the one hand, to optimize their credit supply models both in terms of quality, strengthening the scoring systems, and in terms of commercial effectiveness, reinforcing the instant lending processes. On the other hand, access to information on customer balances and movements will allow banks to improve their early warning and early management models.

	Potential opportunity	Operator type
3 Models and credit processes optimization 	Optimization of scoring models through the use of information on customer balances / movements	AISP
	Optimization of early warning and early managing models through the use of information on customer balances / movements	AISP
	Strengthening and improving the effectiveness of instant lending processes through the use of information on customer balances / movements	AISP

For the **optimization of scoring and early warning models**, the expected process is as follows:

The AISP interrogates the banks and payment institutions of the client. Thanks to client initial authorization, these respond by providing information related to the balance and payment transactions. Then, the AISP aggregates the information relative to the progress of the balance and transmits it both to the calculation engine of the credit scoring, adding important information for the

evaluation, and to the engine for calculating the early warning, providing an exhaustive view of the customer's movements.

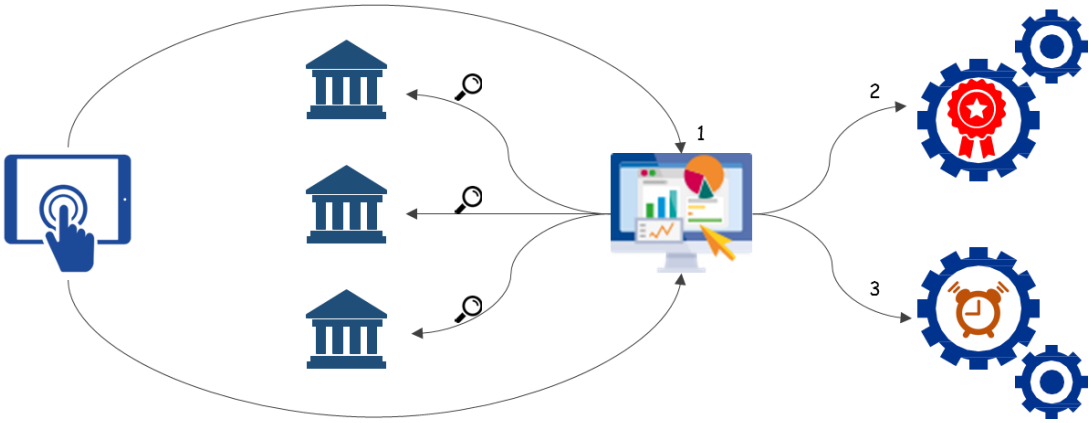


Figure 11. Optimization scoring and early warning under PSD2

For credit scoring, the objective is to analyze the debtor's recurring commitments in all its accounts in order to verify the actual amount available to repay any new financing. For example, customers with multiple accounts with whom they have received negative balances will be considered less deserving.

For the early warning, the objective is to constantly analyze the total performance of customer's balances, also at other institutions, to verify the actual performance of debtor's financial situation. For example, the progressive reduction of current account balances with other banks and payment institutions can be a clear sign of possible credit deterioration.

The **strengthening of the marketing / CRM processes** is instead possible by adopting the following procedure:

The AISP interrogates the banks and the payment institutions of the client. Thanks to the customer initial authorization, banks respond by providing information on the balance and payment transactions. The AISP aggregates

the information related to the operators and transfers them to the marketing and CRM systems to insert data into the customer commercial profiling programs, as represented in the figure below.

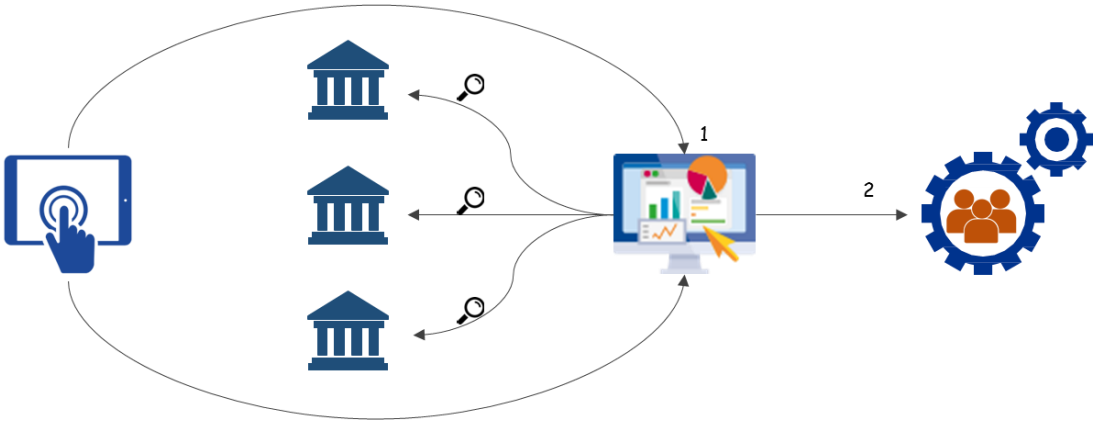


Figure 12. Marketing / CRM processes under PSD2

The process described is aimed at analyzing the reasons for payment transactions to intercept purchases of products and services of competitors and intervene through marketing campaigns to acquire volumes.

For example, analyzing customers, the bank notes that part of customers buys financial products from other operators and that the repurchase of products takes place for the most part in the first months of the year. This information allows banks to develop commercial campaigns with reduced scope both by customer segment and by time; this leads to an increasing redemption / cost ratio.

In a nutshell, the qualification as AISP will generate new revenues for financial institutions deriving from new services offered, from the strengthening of marketing processes, from "data monetization" and an improvement in risk levels due to the increase in effectiveness of scoring systems, early warning

and early managing. Only financial institutions that will be able to grasp this opportunity will enjoy the related benefits.

3.3 Potential quantitative impacts deriving from the implementation of AISP models

As emerged several times in this work, thanks to the AISP services, banks can analyze information on balances and movements of customers optimizing different areas of their operations. These operational improvements can translate into a significant increase in revenues, as we will show in the following paragraph. The methodology applied to perform the analysis and to construct a business case is organized in the following steps:

- A preliminary assessment of the strategic options available. The analysis was conducted considering long-term variables to define a strategic plan in order to respond to the phenomena of radical change taking place. This strategic decision has required the full involvement of top management in order to define shared objectives and guide the company in the right direction;
- In the second phase, it is necessary to explore the possible practical applications, which can lead to the realization of the objectives envisaged. It will therefore be necessary to analyze the characteristics and positioning of the operator to decline a series of possible use cases. Operators interested in exploiting PSD2 to make their credit management systems more efficient could qualify as AISP to gather information on debtors; while operators who wish to attack the

payment market could qualify as PISP and offer an alternative payment service to credit cards;

- Investing in apparently attractive initiatives that prove ineffective in bringing actual economic results or inconsistent with the defined strategy is one of the operators' motivated concerns. To reduce this risk, an accurate analysis of the potential benefits deriving from the identified use cases is necessary: terms such as "data monetization" or "strengthening of early warning" and "early managing" processes must in fact result in clear economic objectives and must not represent useless investments in technologies.

For phase 1 - evaluation of strategic options - meetings with commercial and IT structures of the bank have been organized in which it was discussed the crucial question "remain compliant or undertake changes taking advantage of the PSD2 opportunities?". To respond to this dilemma, a market benchmark was made in order to see how many banks and financial operators were already taking advantage of these opportunities. From the analysis carried out in the first half of 2018 of 90 European banks, it emerged that about 47% of European banks were thinking about possible solutions to be developed; while on average 22% of the banks had already prepared a plan for change. Moreover, new players like google, apple, amazon, are part of the current value chain, adding to the traditional operators: payment and transfer services connected to traditional payment systems are intermediators and can affect bank margins and volumes.

Once the context has been analyzed, the bank has chosen to evaluate the possible scenarios of change with the aim of remaining competitive on the

market. In this way, we moved on to phase two, where the various opportunities were assessed based on the characteristics of the bank. Among the applications mentioned in the previous paragraph, the bank decided to consider the opportunity to provide the AISP services in order to increase the customer base by attracting new ones and to avoid the loss of the touch point with current customers. In particular, the applications that the bank has considered for its operations concern:

- Improvement of scoring / Early Warning processes
- Data monetization through the sale of information to third parties
- Cross selling improvement
- Sales of money management service

After the bank has identified areas to be targeted, for each a quantitative model has been constructed that can estimate the benefits provided by the chosen solution. Below are the models made and the results obtained from the analysis.

3.3.1 Optimization of scoring & early warning models

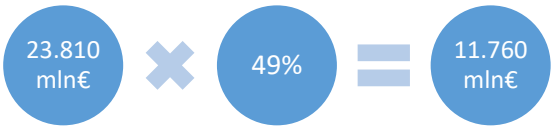
The constructed model makes possible the estimation of benefits deriving from the availability of information on balances and customer transactions to increase the effectiveness of scoring and early warning systems, anticipating the potential deterioration of credit.

The assumptions made for the construction of this model are the following:

- it has been hypothesized that about 49% of customers have granted authorization to the bank's AISP service (
- an annual bank default rate of 1.9% was considered (estimated with 2017 data)

- the average coverage percentage for UTP credits is around 31%
- avoidable default share estimated around 10%

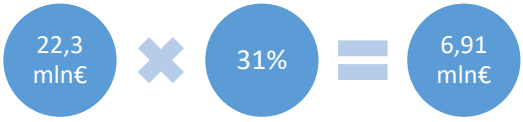
The starting point is the amount of the total performing loan stock of the bank being analyzed: in the first half of 2018, the bank had an amount of 23.81 billion. In order to calculate the analyzable value of the performing loans, the amount of 23.81 billion is multiplied by the percentage of customers who gave the AISP agreement.



The stock gross performing loans analyzed (11.760 mln) was then multiplied by the default annual rate, which for 2017 was equal to 1.9%.

The result obtained, which represents the annual analyzable default flow, was then multiplied by the default percentage considered "avoidable" and estimated at 10%.

22.3 million calculated were finally multiplied by the percentage of the coverage for UTPs which, as anticipated in the assumptions, for the bank examined is equal to 32%.



The final estimate is equal to about 6.91 million saved thanks to a lower cost of risk achieved with the improvement of scoring and early warning systems. We can therefore say that a bank can potentially save about 5-7 million euros by improving its systems: this result can only be achieved thanks to the opportunity offered by the PSD2.

3.3.2 Implementation of the data monetization model

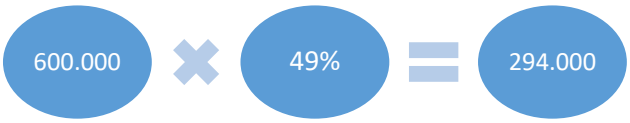
The second application concerns the revenues that a bank could perceive from the sale of consumer information, thanks to the AISP service. The assumptions made to estimate the possible benefits deriving from this activity are described below:

- it has been hypothesized that about 49% of customers have granted authorization to the bank's AISP service
- it was assumed an average revenue per lead between 0,50€ - 1€ [70] .
- it has been hypothesized that the bank can count a number of sales per lead equal to 20
- the share of profitable leads on the market is equal to 75% (calculated from an average calculated by Euromonitor considering an age between 13 and 64 years)

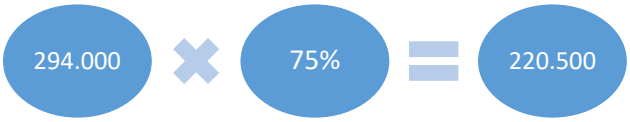
The starting point of the analysis is the number of retail customers of the bank. In our case in question, the bank has about 600.000 retail customers. From this number it has been considered only customers willing to give their agreement

[70] "How much is your personal data?", Financial Times

for the AISP service: as anticipated in the assumptions, the percentage of the clients that hypothetically give their consent is equal to 49%.



294,000 is the number of retail customers who give their consent to the bank. Only a part of these customers has information that can be sold on the market: as hypothesized, 75% of the information can then be sold on the market.



Assuming that information can be sold about 20 times (electronic company, Transport Company, Car Company, supermarket, Airlines Company, etc.) and that information has an average cost of € 0.75:

The opportunity for the bank offered by the sale of leads to third parties, and therefore by the data monetization model, results in a revenue of about 3.31 million euro.

3.3.3 Improvement of the marketing processes and cross-selling of the bank

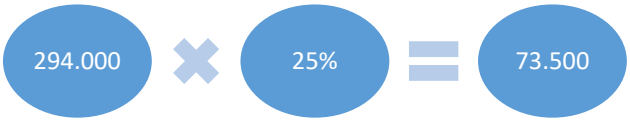
The marketing and cross-selling activity of a bank is certainly one of the most strategic to plan. The bank must study the client in order to encourage him to buy one or more services offered. A greater number of information available

on a customer can lead the bank to have a complete customer profile: this translates into the possibility of better structuring the marketing campaigns but also in offering ad hoc services for its own clients. With the following model, we will try to estimate the benefits deriving from targeted marketing campaigns and sales proposals created specifically for the client.

The assumptions made for this analysis are as follows:

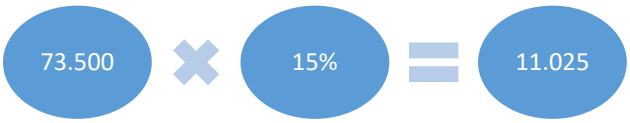
- it has been hypothesized that about 49% of customers have granted authorization to the bank's AISP service
- the target percentage of the bank's commercial campaigns is 25%
- improvement rate of redemption commercial campaigns to 15%
- average margin gap per customer bridged post campaign

As in the previous cases, 49% percent of retail bank customers, which are 600.000 for the bank, give permission for the AISP service. Hence, the number of clients from which we start for the analysis is equal to 294.000. Considering that the target of people involved in the commercial campaign is 15% of customers, we have:



73.500 are the customers involved in the commercial campaigns of the bank. Assuming that the redemption rate of commercial campaigns is 15%, we obtain that 11.025 people have responded positively to the bank's marketing

activities.



As estimated in the KPMG Polarization Paper, we consider that the bank has an average margin per customer equal to 300 €: we are talking about customers excluded from the marketing campaign because they are already users of the bank's services. Instead, we assume that the average margin per customer under campaign is € 150. For the assumption made, we consider that the gap between retail consumer customers and customers under marketing campaign is perfectly filled. This implies that the average margin per customer from 150€ becomes 300€, thus increasing € 150. This delta is then multiplied by the number of people for whom the campaign was successful, leading to a revenue of about 1.65 mln€.

3.3.4 Sale of money management service

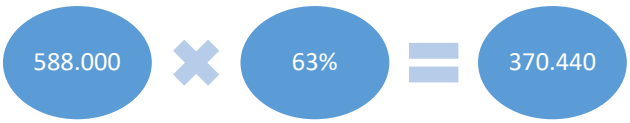
The last model analyzes the case in which the bank intends to offer money management services using information on customer balances / movements. For the collection of information, the AISP interrogates all customer accounts and performs simulations by applying the terms of the products that can be purchased. Once the system has analyzed the data, the banking platform gives

the customer an insight of its financial situation and of its expenses and recommends products (financial and other) cheaper for the customer.

The assumptions made for this model are:

- the percentage of online customers of a bank is 98%[71]
- multi-bank customers' incidence is 63% (80% of which are willing to give the bank authorization for AISP services)
- annual pricing service money management per customer is 12€

With the hypotheses listed above, it is possible to calculate how many retail bank customers are potential targets for the money management service. First, we consider 98% of customers who use online services; in our case on 600,000 customers, we consider a number equal to 588.000. Knowing that the percentage of multi-bank customers is 63%, the number of potential AISP customers is 370.440.

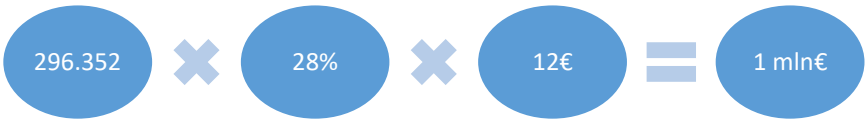


Now suppose that on the 370.440 potential customers, 80%[72] of them give to the bank the agreement for processing their information for AISP purposes. Thus, the number of potential customers is reduced to 296.352. Finally, we consider that the percentage of customers interested in a money management

[71] Digital Banking KPMG

[72] It should be noted that in the previous models the percentage of customers that issued the consent for the AISP services was lower (49%) because we considered the totality of the bank customers. In this case, having already filtered the number of customers based on their proactivity towards online services, the percentage is higher.

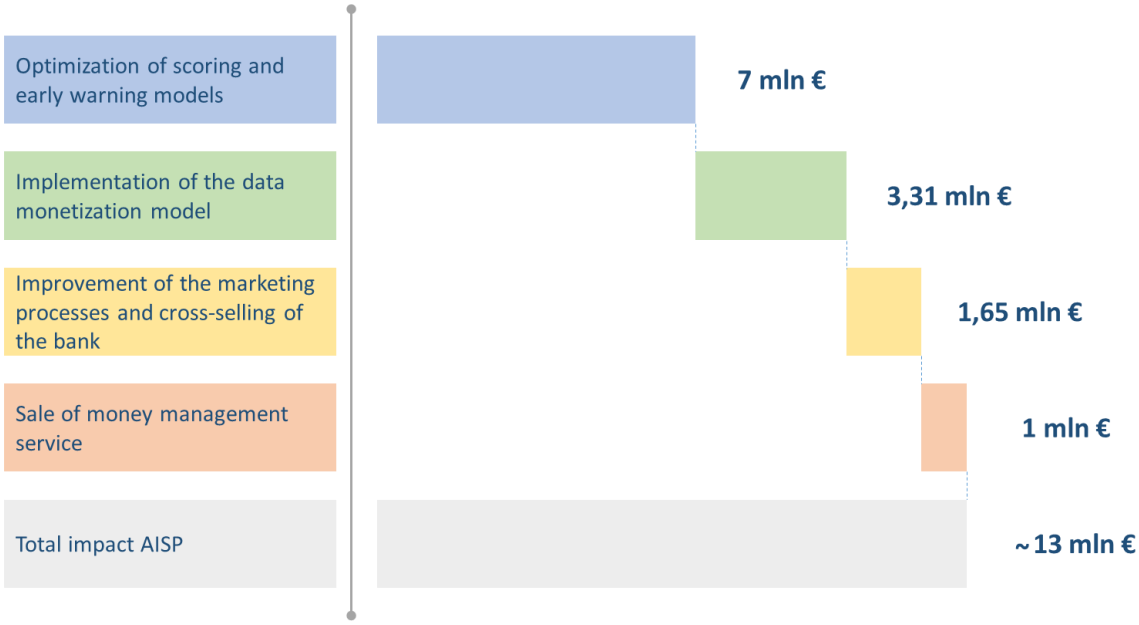
service is equal to 28% and that the bank provides the service at a price of € 12 a year.



The bank's revenue coming from the money management service is approximately 1 million euro per year.

3.4 Discussion of the results and conclusions

From the analysis carried out it was possible to estimate the revenues that approximately a bank can earn thanks to the applications made possible by the new payment service directive. The following graph aggregates the revenues calculated for the four business models described in the previous paragraphs for the four different PSD2 applications.



Thanks to the operational improvements described, the bank can count on an increase in revenues of approximately € 13 million. Of course, the result obtained is merely a potential estimation of income on which the bank could consider exploiting the opportunities available. Revenues may be higher or lower depending on the ability to implement the models by the bank: if the service offered by the bank is better than the one offered by competitors, the customer base that the bank is able to populate could be vary larger, consequently expanding its sales potential.

As it is possible to see, the outcome obtained refers exclusively to revenues and not to the associated costs to develop the platform. This is because part of the costs that the bank must support for the interfaces have already been supported for the technological adaptations required by the directive. The other development costs, which are specific to AISP's activities, depend on the way in which a bank decides to carry out these developments (internally or externally), but this is another strategical choice to make.

In any case, the thesis has the aim to support the bank's decision by providing possible future scenarios based on which the bank can assess whether or not to take advantage of the business opportunities offered. The alternatives described are certainly not exhaustive but provide an idea of the possible developments thanks to the new directive. The main challenge for banks is to attract and retain customers in a market where consumers have a very low lock-in effect, given the many alternatives available. This can be done for example by differentiating the services offered compared to those offered by competitors and moving away from standard services. Another important challenge will be to choose the right positioning in the value chain in which to develop the new core business: banks, as highlighted above, must avoid becoming data warehouses from which the Fintech can draw to create their own benefit.

What emerged from the present work for some might seem to be the amplification of a phenomenon that cannot be a threat to the current operations of the banks. The latter is the thought of the bank middle management who believe that things will not change and banks will never lose market leadership. For the avant-garde, however, this represents the turning

point in a sector that until now banks have dominated and managed monopolistically. Radical changes as happened for telecom or media industry are inevitable: in this era we order online shopping, we organize meetings in video conference, we book restaurants flights and hotels being able to select the one that best suits our needs, making all these things comfortably from the armchair of the house. In the same way, consumers expect changes in the banking sector too: many changes have already been put in place with the latest generation apps, with card less withdrawals and instant transfers; other changes are still to be addressed and only those who undertake the road to the open banking will have the opportunity to reap the benefits.