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PSD2: A Strategic Perspective on Third-Party Payment Service Providers

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Executive Summary

The purpose of this Thesis: “PSD2: A Strategic Perspective on Third-Party Payment Service Providers” is to explore how the new EU regulation “the revised Payment Service Directive” (PSD2) will change the European payments market through its provisions on access to account (XS2A) for Third-Party Payment Service Providers (TPPs), in particular for Payment Initiation Service Providers (PISP) and Account Information Service Providers (AISP). As the technological developments in general, and specifically in the area of financial technology have increased in recent years, so have the emergence of new payment services and payment service providers. By exploring how EU regulators are bringing these services and players into the scope of the PSD2, we have been able to illustrate changes in the payment chain which includes the major provisions related to the Regulatory Technical Standards (RTS) on Strong Customer Authentication (SCA) and Common and Secure Communication (CSC).

Building on these findings, we have explored how existing market players (e.g. banks) have reacted to the provisions in PSD2 by going through previous research on the topic. As the PSD2 entered into force 13th of January 2018, and its supplementing RTS is scheduled to enter in September 2019, there are no general solution to incumbent’s approach beyond compliance with PSD2. Prior research has therefore focused on how incumbents should strategically position themselves in the market, based on the activities they perform.

By using the provisions in PSD2 and prior research on incumbents’ strategic positioning, we have developed a model for how TPPs should strategically approach the (European) payment market.

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Abbreviations and Acronyms

AIS	Account Information Services
AISP	Account Information Service Provider
API	Application Programming Interface
ASPSP	Account Service Payment Service Provider
CSC	Common and Secure Communication
EEA	European Economic Area
EMI	Electronic Money Institutions
EU	European Union
PIS	Payment Initiation Services
PISP	Payment Initiation Services Provider
PSD1	The first Payment Service Directive
PSD2	The revised Payment Service Directive
PSP	Payment Service Provider
PSU	Payment Service User
RTS	Regulatory Technical Standards
SCA	Strong Customer Authentication
SEPA	Single Euro Payment Area
TPP	Third-Part Payment Service Provider
XS2A	Access to Account

1. Introduction

Since the first Payment Services Directive (Hereinafter referred to as PSD1) introduced a new category of Payment Service Providers (PSPs) called “payment institutions” in 2007, non-banks and other financial players have been given access to provide electronic and digital payment solutions without having to comply with the high banking standard. The changes in the European regulatory framework for payments together with the technological development in the market and the increased use of electronic- and mobile payments have resulted in new and innovative payment solutions that have changed consumers payment expectations.

Now, in 2018, eleven years later, the European payment landscape is entering into an even more significant era of payment solutions with the introduction of the revised Payment Services Directive (Hereinafter referred to as PSD2) and its provisions to allow PSPs, payment institutions, and a new category called Third-Party Payment Service Providers (TPPs) access to customers bank account information, given that the Payment Service User (PSU) have given their explicit consent. This enables, among other things, PSPs, particularly TPPs, with the possibility to deliver personalized and flexible Payment Initiation Services (PIS) and Account Information Services (AIS) to their customers, given that they are registered and authorized by their country’s competent authorities. In addition, the provisions in PSD2 also aim to increase cross-border competition between PSPs, as both the PSD1 and the PSD2 was created to harmonize the legal framework across European Member States and the European Economic Area (EEA) countries.

This would have a considerably impact on the 7,720 institutions offering retail payment services (Statista, 2018) to around five hundred million EU citizens and millions of companies, which in 2016 undertook 122 billion non-cash transactions (European Central Bank, 2017c), equivalent to a value of €268 trillion. The financial disbursements around these transactions are in a traditional electronic payment process divided between multiple participants, such as payment processors, card associations, the acquiring bank and the issuing bank. By allowing PSPs, particularly TPPs, direct access to accounts, the number of players involved in a payment process may be reduced and hence, create a fiercer competition over existing and potential customers.

In an international view, large technology companies (BigTechs) and other non-banks, such as financial technology firms (FinTechs) are entering the payments

market, previously dominated by banks. In the United States, Facebook has made it possible to transfer money from their Messenger application, Apple have launched Apple pay, and in China Alibaba have launched Yue Bao which in short time became the world's largest money market funds (Financial Times, 2017). The entering of these players could have an immense impact on banks revenue from payments as BigTechs already have well-established distribution channels and customer groups. Evidentially, the market believe that FinTech companies have far-reaching possibilities to deliver personal and flexible financial solutions as the value of global FinTech investments grew by 75 percent in 2015 to US\$22.3 billion. Since 2010, corporates, venture capital and private equity firms have invested more than US\$50 billion in almost 2,500 global FinTech start-ups (European Parliament Think Tank, 2017). FinTech's and BigTech's (hereinafter called TPPs) have a brand new technological infrastructure which is more efficient, and cheaper to operate than banks' legacy systems (Evry, 2017a). According to Evry (2017a), the services TPPs offer, which are flexible, customizable and personalized can in addition to "steal" banks current and potential customers, offer services for those who are deemed ineligible by traditional banks.

Traditionally, banks have not been able to provide flexible and personalized solutions as these new players due to strict regulations and requirements (e.g. the high banking standard, include licensing, supervision, minimum capital, etc.). These requirements are established to avoid unnecessary risks and to create and secure profits. As a consequence of these barriers, banks have faced limited competition and not been innovating to the same degree as more consumer-centric industries (e.g. technology intensive industries, hotel industry, telecommunication industry, etc.). Related research to the PSD2 topic has therefore to a large extent been focusing on how banks should formulate their strategies to comply with the provisions laid down in PSD2 and how banks should face the upcoming competition from new players.

In this Thesis, we are particularly interested in disclosing what the PSD2 is changing, how these changes will impact the structure of the European Payments market, what incumbents' reactions to these changes are and how new payment institutions and TPPs can use the provisions in PSD2 to enter the market with a sound strategic formulation depending on the reactions of the incumbents.

2. Research Statement

The European payment landscape is undergoing major changes as the revised Payment Services Directive (PSD2) provisions on access to accounts (XS2A) for TPPs, in particular Payment Initiation Service Providers (PISP) and Account Information Service Providers (AISP) will accelerate the on-going digitization of the payment processes.

Historically, banks have been the dominant player in both the front-end payment process (payment initiating) and in the back-end process (payment processing). A quarter of European banks total revenue come from payment solutions (44 percent interest, 35 percent transaction, and 21 percent payment product related), and amounted to approximately €128 billion in 2015 (Deloitte, 2015). Banks monopoly on access to accounts have provided them with a strategic competitive advantage and offered the possibility to push other products (e.g. credit cards, loans, insurance, etc.). At the same time, this lock-in approach is about to be reduced with the introduction of PSD2. Consumers expectation have started to shift towards more use and acceptance of digital payment solution and trust in new non-bank players. This have led the European banking industry into a search for new revenue sources and generation of value. For the time being, no general solution has appeared in the market and different approaches are being taken. Some banks have a proactive approach through “Open Banking Transformation” where banks collaborate with new entrants, while others take a defensive approach to see how the market evolves.

Accenture (2017) identified six emerging bank customer trends impacting the banking sector, such as the younger generations willingness to purchase banking services from alternative online providers, reduction of personalized relationships and the value of personal data. These consumer trends, along with the provisions in the first payment services directive (PSD1), have resulted in new entrants offering innovative digital solutions, threatening banks business models.

The strategic considerations banks are up against are immense. Recent market research have to a large degree focused on how banks should strategically position themselves towards uncertainty and risk versus innovation and new business strategies (Evry, 2017b). How consumer behavior direct banks strategic responses (Sandrock & Firnges, 2016). Or how the open banking initiative transform banks business models (Evry, 2017a). However, the underlying mechanisms for innovation, competition and new services (potentially disruptive technological

solutions) can evolve from the way banks are providing XS2A, explicitly through open Application Programming Interfaces (APIs). Where recent research regarding key challenges and opportunities related to open APIs (Zachariadis, 2011; Zachariadis & Ozcan, 2017) are of greater interest for investigating possible market outcomes, concerning banks, TPPs and customers.

As banks business models have been the major focus of recent research on PSD2, little attention has been made towards the payment institutions and TPPs actions and strategic consideration regarding their entry into the European payments market. We intend therefore to disclose how European legislative acts have contributed to reduce entry barriers of these new players and how these rules and regulations are contributing to opportunities as well as restrictions for TPPs to deliver innovative payments solutions. As these rules will impact the payments market, existing players, such as banks and other PSPs will have to comply and make strategic decisions to how they should embrace the new situation.

2.1 Research Question

In our initial market research, we found three particular issues of great interest. The first issue is related the regulatory framework, PSD2. What will actually change with the provisions laid down in the PSD2 and how will these changes impact both existing and new market actors as well as the payment service users? The main focus of this Thesis intends therefore to answer the question:

“How will the main changes found in the revised payment service directive impact existing players, new market entrants and payment service users?”

The second issue is related to how existing market actors will react to these changes. One part is to comply with the provision, another is related to the emergence of new entrants as disclosed under PSD1. As the PSD2 have only applied since 13th of January 2018 and its related regulatory technical standards will not apply before 14th of September 2019, we intend, through a literature review, to answer the question:

“How will incumbents’ react to the structural market changes as new players are entering the European payments market?”

The third issue is building on the two previous and is related to how new players can enter the European payments market with a sound strategic formulation building on the provisions laid down in the PSD2 and on the incumbents’ reactions:

“Based on the changes made in the PSD2 and on incumbents' reactions to these changes, what strategic approaches should new third-party payment service providers take in order to successfully enter the market?”

2.2 Research Design and Methodology

We saw it necessary to use two different methods in the process of answering our research questions above. The use of two methods made it possible for us to get a thorough understanding of the European Unions present regulatory situation in addition to the most important trends in the financial and payments industry. Our intent was for these two methods to complement each other, bringing fourth valuable information both from the regulatory aspect and the current industrial financial trends.

In section three, we present the most important changes and trends in the EU-28 payments industry between 2008 and 2016. In order for us to get valid results and impression of the whole payments industry in the European Union, a quantitative analysis was conducted using secondary data, mainly gathered from the European Central Bank`s databases and other trustworthy EU related institutions. Although an analysis of secondary data can be conducted by using both quantitative data (Dale, Arber, & Procter, 1988) and qualitative data (Corti, Foster, & Thompson, 1995), we saw quantitative data as most valuable in order for us to achieve the desired overview and impression of the industries total.

As stated in Dale et al. (1988), there are several advantages of using secondary data in an analysis. One key benefit is the time saved in comparison to conducting large scale surveys or interviews for primary data. These processes are both time consuming, comprehensive, and in some cases costly. If the sufficient data is reliable and available time can be used on other important steps in the process.

As we went through PSD2, legal dogmatic method (MCCrudden, 2006) was used in order to analyze and describe PSD2 and other complimentary regulations. As PSD2 is the revised version of PSD1, a comparison analysis was conducted in order to identify similarities, differences and general principles. With this we enabled ourselves to understand why and with what purposes changes was made.

The research in this thesis is case-based, where the overall focus is on the European Union and the legislative impact, with emphasize on the PSD2 and on the payments industry. We are not focusing on a specific services or financial institutions, but the

payments industry as a whole. Our focus is to disclose and interpret the upcoming legislation`s impact in the European Union`s payments industry and use this analysis to build a model explaining the strategic implications for payment institutions and TPPs in the light of the PSD2 implementation.

As this case research is focused on the European Union, we see that our findings are only applicable for the EU-28 members and EEA countries (Norway, Iceland and Liechtenstein).

2.3 Limitations

There are several limitations to our study. First of all, our academic background is limited to a bachelor`s degree in Entrepreneurship and Business and our ongoing Master of Science in Business program with a major in Strategy. Therefore, we lack the necessary knowledge of the legal method in order to analyze the changes in PSD2 in a valid and robust manner. When it comes to the Legal method section, we are limited to only one course in our bachelor`s degree: “Business law”. We will therefore not provide a comprehensive analysis of the legislative framework. Instead we have chosen to disclose major changes brought by this Directive as laid down by the European Commission and use the European Banking Authority (EBA) online Interactive Single Rulebook (2018a) to review the EBA`s final Technical Standards and Guidelines associated with the PSD2. As we will go through related European payment legislatives, we use the same steps as with PSD2, namely by using the European Union`s and the European Commission`s statements about the respective legislations.

As with our limitation with the legal method, we have also limited experience with the payments market, notably constrained to personal use and experience, we have therefore seen it necessary to participate in on-going discussion related to PSD2 (i.e. we have been to open meetings between banks and fintech`s in Norway facilitated by “The Factory” and “Mesh”) and reviewed basic payment process from incumbents explanations provided on their webpages. We have deliberately chosen not to conduct any interviews with market participants as their opinion on PSD2 and expected market outcomes would have hindered us to take an objective view of the new market situation PSD2 facilitates.

A second limitation to our study is that robust and valid data on banks strategic approaches are limited. The PSD2 will not enter into full force before the

Regulatory Technical Standards have fully been implemented in September 2019. We have therefore seen it necessary to use secondary research regarding banks strategic approaches based on questionnaires, interviews and other collection methods used by other researchers which will be difficult to prove valid for further research. We intend therefore to approach an inductive theory about how payment institutions and TPPs successfully should enter the payments market, our findings and models will have to be tested and proved in future research.

Another limitation is the timeframe under which this study was conducted. As we began our study in the autumn 2017, little information other than assessments of PSD1 and the law text of PSD2 was provided. PSD2 went into force 13. January 2018, and the Regulatory Technical Standards are entering into force in September 2019. As our final delivery date is 3rd of September 2018, we have a limited timeframe for data collection and analysis. To overcome this issue, we have chosen to provide a comprehensive document that are covering the European payments market, where the understanding of the payment industry is provided together with the major changes brought by PSD2. This will enable new players to assess the market based on the information provided and use our explanation of PSD2 to see possibilities and constraints related to entering the European payment industry. Our final delivery will also consist of a model describing possible strategic approaches which these new entrants can assess and choose to implement in their business models.

3. The EU Retail Payments Market

In chapter four, a more thorough review of the European payment industry's history will be presented through EU legislatives such as the SEPA initiative, PSD1 and PSD2. To understand recent developments in the European payments market, the players involved and how they are affected by EU's regulations and directives related to payments, an overview with explanations and definitions will be presented in this chapter

3.1 Background and context

Historically, credit institutions and other financial institutions have been the main provider of payment services, both in the front-end process (payment initiation) and in the back-end process (payment processing). Laws and regulations have hindered other players in entering the market without having to comply with the high banking standard. Past developments in the European payment industry is therefore constrained notably to these financial institutions. The activities they perform are broader than just payments and reliable data constrained to their payment activities (in particular, data for internet and mobile payments) are difficult to collect and identify as the environment is fragmented and transaction data cannot easily be separated from the overall data for core payment instrument (European Commission, 2013a). A general overview of the market (i.e. number of financial institutions, return on equity and costs of capital and the number and value of payment transactions) will therefore be presented. Valid and robust data on core payment instruments such as payment cards, credit transfers, and direct debits is regularly published by the European Central Bank and will be presented to show the general evolvement in the European Payment industry. To illustrate how the banking industry is structured and how it has performed, data are compiled from the European Banking Federation (EBF), the European Central Bank (ECB), European Commission (EC), Eurostat, Statista and the European Banking Authority (EBA).

3.1.1 Understanding payments

The payments ecosystem can be hard to grasp as the terminology can evoke complexity and confusions among novice and professionals alike (Recurly inc., 2016). The composition of participants (networks) and regulations are contributing factors to the complexity. We intend therefore to define the main players and define

some of the terminology followed by an assessment of the European payments market. Some of these definitions, among others can be found in annex I, where we have chosen to recite definitions laid down in both PSD1 and PSD2.

Retail payments are defined as everyday payments between individuals (i.e. from a payer to a payee), such as private persons, companies, NGOs, government agencies, etc. of relatively low value and typically not of a time-crucial manner, the payer and payee can also be one and the same person. Examples of retail payments are payments from consumers to retailers, salary payments, tax payment and social contributions (European Central Bank, 2018b).

To transfer funds from a payer to a payee, several *means of payments* or *payment instruments* can be used, such as credit transfers, direct debits, payment cards as well as mobile payments (m-payments). There are payments that require physical handling of paper such as cash and cheques, but as the PSD2 only covers electronic payments (e.g. electronic credit transfers, direct debits, payments card, mobile, online banking, contactless payments, etc.), we will exclude payments that require physical handling of paper.

One important aspect of the PSD2, as will be described later, are the provisions on payment initiation services (PIS). Previous to these provisions' payments could be initiated based on the different means of payments:

A *credit transfer* is a payment initiated by the payer. The payment is initiated when the payer sends a payment instruction to his or her Payment Service Provider (PSP), e.g. the payers bank. The PSP then transfer the funds to the payee's PSP either through a direct transfer or through several intermediaries.

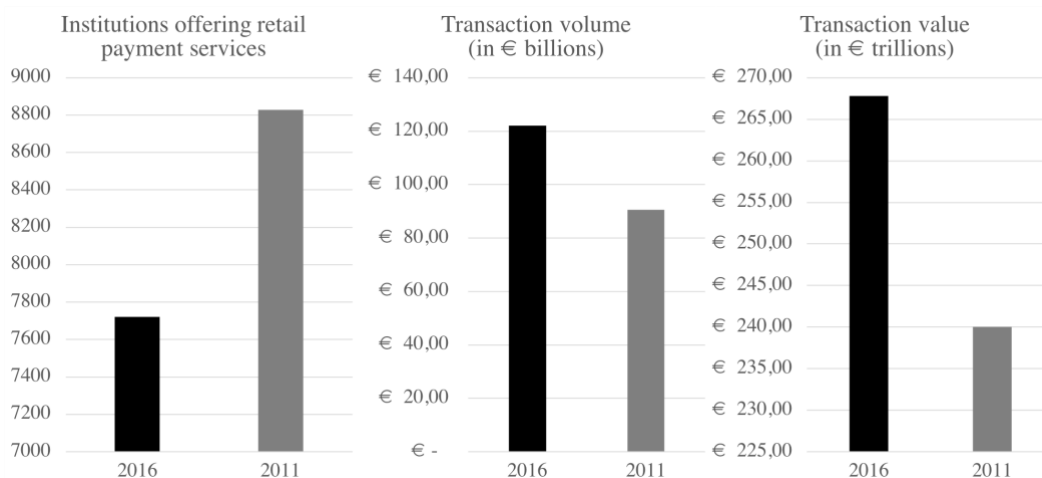
A *direct debit* is initiated by the payee. The payee sends a payment instruction to their PSP to transfer the funds from the payer's payment account into theirs, based on the requirement of a pre-authorization from the payer. Direct debits are often used for recurring payments, e.g. entertainment subscriptions or utility bills. Direct debits can also be used for one-off payments, in this case, the payer authorizes an individual payment.

Payment cards, as with credit transfers are payment initiated by the payer. Payments card can be divided between debit cards and credit cards. Debit cards allow the cardholder to purchase directly from his or her payment account, while credit cards provides the cardholder with a limit within which they can make a purchase.

Payment Services are the services enabling cash to be deposited in or withdrawn from a bank or payment account. Payment services also includes all the operations required to operate the account. This can include transfer of funds, direct debits, credit transfers and card payments (European Central Bank, 2018b).

3.2 Market Size

The European retail payments market is one of the largest in the world and involves millions of companies and over five hundred million EU citizens. In the most recent payments statistics report published by the ECB, 7,720 institutions offered retail payment services in the EU28 in 2016, and €122 billion transaction were undertaken for a value of €267.8 trillion (European Central Bank, 2017b). In comparison to 2011, the number of institutions offering retail payment services had declined in 2016 with 12.56 percent (from 8,829 institutions in 2011), while the number of transactions and the total value had increased with around 34.5 percent (from €90.6 billion in 2011) and 11.5 percent (from €240 trillion in 2011) respectively (European Commission, 2013a), see graphs below:



(Source: European Central Bank, 2017c; European Commission, 2013a)

Figure 1

3.2.1 Market size between European Member States

A comparison of European Member States shows that there is a wide spread between the number of payment institutions among countries, where, for example, Germany has 1756 institutions offering retail payment service, while Slovenia only has 24 institutions. Further comparison shows that a minority of Member States contributed with the majority percentage of total value. In 2016, The Netherlands, United Kingdom, Germany and France accounted for 71.58 percent of the total transaction value, whereas they only accounted for 61.2 percent of the total

transaction volume (see *ECB payment statistic* table below), indicating a higher profit per transaction in some member states compared to others.

ECB payments statistics - number and value of institutions offering payment services 2012-2016												
Country	Total number of institutions offering payment services to non-MFIs		Total value of transactions				Total number of transactions				Average value per payment (EUR)	
			EUR (trillions)		Percent of total		millions		percentage			
	2016	2012	2016	2012	2016	2012	2016	2012	2016	2012	2016	2012
AT	619	755	3	3	1,1 %	1,2 %	1 659	2 376	1,4	2,5	1 781	1 258
BE	118	112	6,6	3,8	2,5 %	1,5 %	3 445	2 511	2,80	2,70	1 909	1 526
BG	39	43	0,5	0,4	0,2 %	0,2 %	456	226	0,4	0,2	1 063	1 726
HR	38	-	0,3	-	0,1 %	-	694	-	0,6	-	416	-
CY	67	-	0,3	0,5	0,1 %	0,2 %	95	101	0,1	0,1	2 650	5 375
CZ	228	66	9,2	1,7	3,4 %	0,7 %	2 426	1 060	2,00	1,10	3 786	1 558
DK	115	138	0,9	0,7	0,3 %	0,3 %	2 322	1 767	1,9	1,9	403	401
EE	50	44	0,2	0,2	0,1 %	0,1 %	431	334	0,4	0,4	414	618
FI	288	321	2,8	4,6	1,0 %	1,8 %	2 446	2 428	2	2,6	1 142	1 890
FR	493	646	26,8	27,8	10,0 %	10,8 %	20 908	18 068	17,1	19,1	1 280	1 540
DE	1 756	1 918	55	71,7	20,4 %	27,8 %	21 423	18 211	17,6	19,3	2 542	3 940
EL	50	53	0,6	0,9	0,2 %	0,3 %	642	248	0,5	0,3	1 000	3 785
HU	108	181	4	2	1,5 %	0,8 %	1 182	898	1	1	3 366	2 189
IE	385	474	2,5	0,6	0,9 %	0,2 %	1 215	747	1	0,8	2 025	831
IT	656	764	8,7	9,8	3,2 %	3,8 %	5 746	4 263	4,7	4,5	1 506	2 290
LV	62	33	0,3	0,5	0,1 %	0,2 %	399	264	0,3	0,3	725	1 878
LT	142	125	0,2	0,2	0,1 %	0,1 %	457	312	0,4	0,3	480	688
LU	156	153	1,5	1,3	0,6 %	0,5 %	2 390	1 161	2	1,2	631	1 150
MT	57	39	0,1	0,1	0,0 %	0,0 %	47	32	0	0	2 656	3 805
NL	157	273	19,5	5,8	7,3 %	2,2 %	7 219	5 783	5,9	6,1	2 700	1 009
PL	700	700	12,4	8,5	4,6 %	3,3 %	5 665	2 976	4,6	3,2	2 184	2 869
PT	526	288	1,4	1,5	0,5 %	0,6 %	2 160	1 770	1,8	1,9	662	868
RO	43	49	1,6	1,3	0,6 %	0,5 %	599	366	0,5	0,4	2 593	3 476
SK	43	34	1	0,9	0,4 %	0,3 %	791	497	0,6	0,5	1 287	1 733
SI	24	33	0,4	0,3	0,1 %	0,1 %	384	320	0,3	0,3	932	1 055
ES	257	262	16,3	12,6	6,1 %	4,9 %	6 877	5 810	5,6	6,2	2 370	2 169
SE	187	190	1,7	1,7	0,6 %	0,7 %	4 777	3 346	3,9	3,5	355	518
UK	356	375	90,9	95,6	33,9 %	37,0 %	25 154	18 504	20,6	19,6	3 614	5 165
EU tot	7 720	8 069	267,8	258,2	100 %	100 %	122 008	94 378	100 %	100 %	2 195	2 736

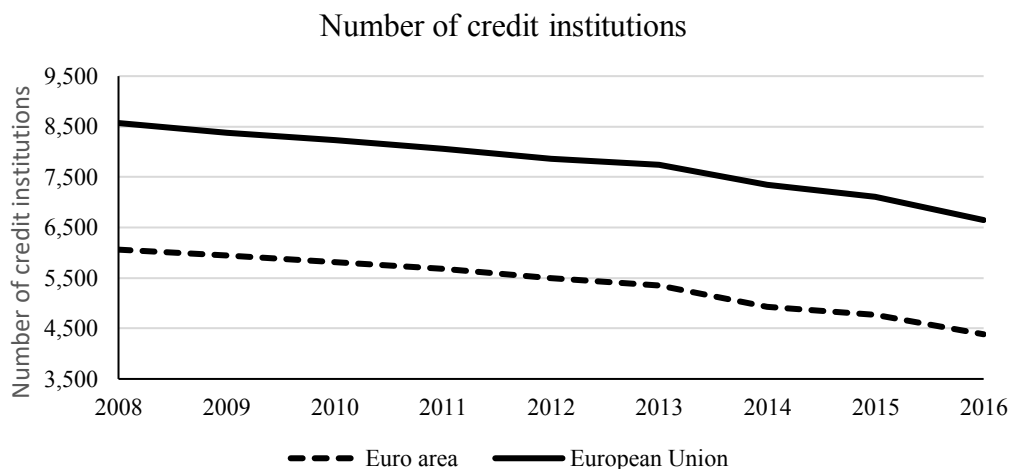
(Adapted from ECB "Payment statistics 2016", European Central Bank, 2017b)

Figure 2

3.2.2 Reduction of credit institutions

The competitive environment in the European payments industry have to a large degree consisted of credit institutions (e.g. credit unions, commercial banks, savings banks, post office banks). In 2011, they accounted for 91 percent of all financial institutions offering retail payment services (European Banking Federation, 2017b). In 2016, this number had dropped down to 85 percent. The

number of credit institutions have experienced a gradually decline in numbers, both in the EU and in the euro area, as shown in the graph below:



Source: Report on Financial Structure, 2017 (ECB)

Figure 3

3.2.3 Reduction of physical bank branches and subsidiaries

The overall number of credit institutions subsidiaries and physical bank branches have also been reduced in recent years. The overall numbers on credit institutions subsidiaries experienced a steep downward sloping trend over the eight consecutive years between 2008 and 2016 from 503 to 343. In comparison, the number of credit institutions subsidiaries outside the EU have remained quite stable with a decrease from 286 to 258 over the respective years (European Banking Federation, 2017b). On the other hand, subsidiaries within credit institutions had its sharpest year-on-year decline of 4.7 percent since 2004.

Bank customers have increasingly adopted electronical payments as well as online and mobile banking (Accenture, 2017). This has implicitly reduced the importance of widespread bank branch network. The importance of having a close and local bank branch has been diluted and changed with the technological and regulatory enhancements where consumers now are able to apply for loans, make payments and chat with their respective financial institutions from a personal computer or smart phone in their own home. This, in addition to other factors such as Artificial Intelligence, increased effectiveness and competition have reduced the need for physical contact with customers and implicitly reduced the number of banks physical locations with 20.4 percent between 2008 and 2016, a reduction from 237.702 physical stores to 189.270 respectively. A direct consequence of downsizing physical stores is the reduction of employees in credit institutions which

are now the lowest since the European Central Bank (ECB) began collecting data in 1997 with a drop of approximately 14 percent since 2008.

3.3 EU banks profitability

Regulations arising from the financial crisis in 2008 have led to increased capital and liquidity requirements for credit institutions through Basel III and its implementing act in Europe through the Capital Requirements Directive (CRD) IV and Capital Requirements Regulation (CRR), as well as increased operational costs due to an increase in compliance and reporting requirements. The European banking sector have become more resilient and robust since the financial crisis as the recapitalisation effort that European banks have made is starting to pay off. EU banks show a solid capital position and have continued to strengthen their balance sheets (see table below):

Total (recorded in June every year)	2011	2012	2013	2015	2016
Core Equity Tier (CET) 1 Capital	5,3%	7,8%	9,0%	11,8%	12,8%
CET1 shortfall (€bn.) at 4.5%	29	9	15	0	0
CET1 shortfall (€bn.) at 7%	277	130	65	1	1
Tier 1 Capital	6,8%	8,1%	9,2%	12,3%	13,4%
Total Capital	8,1%	9,1%	10,9%	14,7%	16,1%
Tier 1 Capital shortfall (€bn.)	411	249	120	8	4
Total Capital shortfall (€bn.)	544	383	190	18	4
Leverage Ratio (LR) (3%)	2,8%	3,1%	3,1%	4,4%	4,7%
Leverage shortfall (LS) (€bn.)	N/A	N/A	64	9	3
Liquidity Coverage Ratio (LCR)	71%	N/A	110%	128%	135%
LCR Shortfall (€bn.)	1.200	N/A	262	33	3
Net Stable Funding Ratio (NSFR)	89%	95%	N/A	105%	108%
NSFR shortfall (€bn.)	1.800	1.200	N/A	341	159

(Data and assumptions from EBA and EBF, European Banking Federation, 2017a)

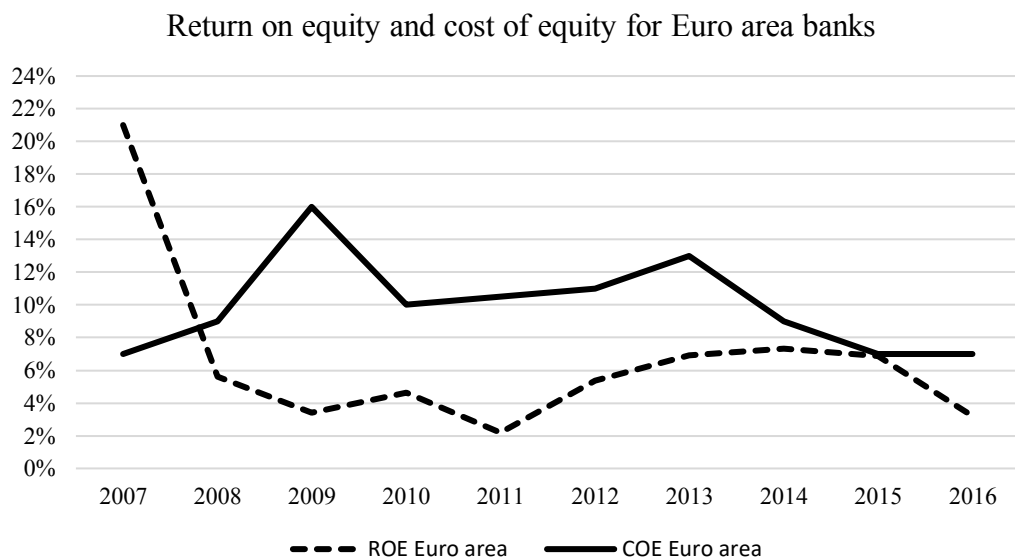
Figure 4

3.3.1 Euro Areas Banks Return on Equity and Cost of Equity

Return on Equity (ROE) has fluctuated extensively the past years, whereas the euro area has been positive at 5 percent in 2016 (European Banking Federation, 2017a). The first two quarters of 2017 showed a continuous increase in ROE with an average of 6.96 percent, indicating a healthy evolvement for euro area banks

(European Banking Authority, 2017). As the average interest rate in EU gradually decreased from about 3 percent in 2008 to 0.25 percent in 2016 (European Central Bank, 2018a), banks have experienced decreasing incomes related to loans and credits in terms of interests. As a response and attempt to cover costs and stay profitable, banks and other financial institutions have found new revenue streams with increased fees on loans, payments account's and consumer credits (European Banking Authority, 2017).

The up-trending signs does therefore not provide relieving news for many of the euro area banks at the moment where profitability have been pressured with respect to cost of equity (COE) which exceed return on equity (ROE) in mid-2008 (EBF, 2017b) as shown in the graph below.



(Source: European Banking Federation, 2017a)

Figure 5

3.4 Increased competition in the EU retail payment industry

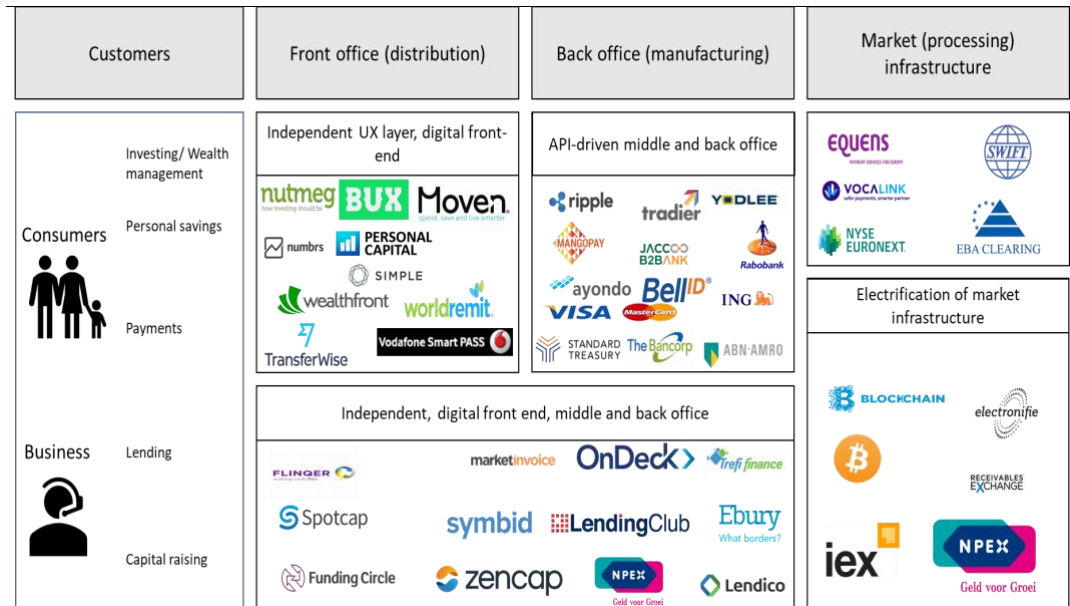
As credit institutions have decreased in numbers, The European Parliament Think Tank (2017) highlights that the value of global FinTech investment in 2015 grew by 75 percent to US\$22.3 billion. As of March 2017, Corporates, venture capital and private equity firms have invested more than US\$50 billion in almost 2,500 global FinTech start-ups since 2010. This indicates a shift, not only towards electronic payments, but also a shift towards new players entering the payments market. So, in addition to credit institutions and other financial institutions (traditional PSPs), new entrants, such as challenger banks, Fintechs and BigTechs are starting to offer payment services.

3.4.1 Challenger banks

Challenger banks are, as we know it, small and recently founded digital banks. As most incumbent banks have branches, although the number of bank branches have been reduced with 20.4 percent between 2008 and 2016 (see section “3.2.3 Reduction of physical bank branches and subsidiaries” p. 11), new challenger banks have a strong focus on the digital aspect of banking services showing an increase in wholly digital banks. The agility of their digital systems facilitate quickly adaptation and change when faced with a shift in expectations and consumer demand. As a main rule, challenger banks can be divided into four main categories; (1) new banks; (2) beta banks; (3) neobanks and; (4) non-banks (Grindstad, 2018). New banks refer to new established banks that operate under a full banking license, thus compete on the same terms as incumbent banks. Beta banks refers to greenfield subsidiaries or joint ventures of existing incumbent banks and use the incumbent banks license as a means to operate. Neobanks do not have their own license or license through a subsidiary or joint venture as new and beta banks do. These banks operate under a license obtained through partnerships, while Non-banks don't operate under any traditional banking license, but are enabled to operate and offer financial services through e.g. e-money licenses (Grindstad, 2018).

3.4.2 FinTechs

There has been a solid emergence of new innovative fintech companies, especially the ones emerged within the payments industry. Firms valued in the billion-euro class have emerged from almost nothing. Stripe, which is an online payment processing firm for internet businesses, and Square, which is a credit card processing firm, is good examples of this with valuations of €7,9 (CNBC, 2018) and €21 billion euros respectively in 2018 (Bloomberg.com, 2018b). These firms were founded in 2010 and 2009 respectively and has grown in an extreme pace. As a main description of fintech's entering, or already have entered, the payments industry, the aim is for them to build AIS and/or PIS services on top of banks already existing technology. The illustration below by Cortet, Rijks, and Nijland (2016, p. 16) provides a good overview over fintech's, and their value chain position, who already have taken a piece of the banking services pie:



(Adapted from Cortet et al., 2016)

Figure 6

3.4.3 BigTechs

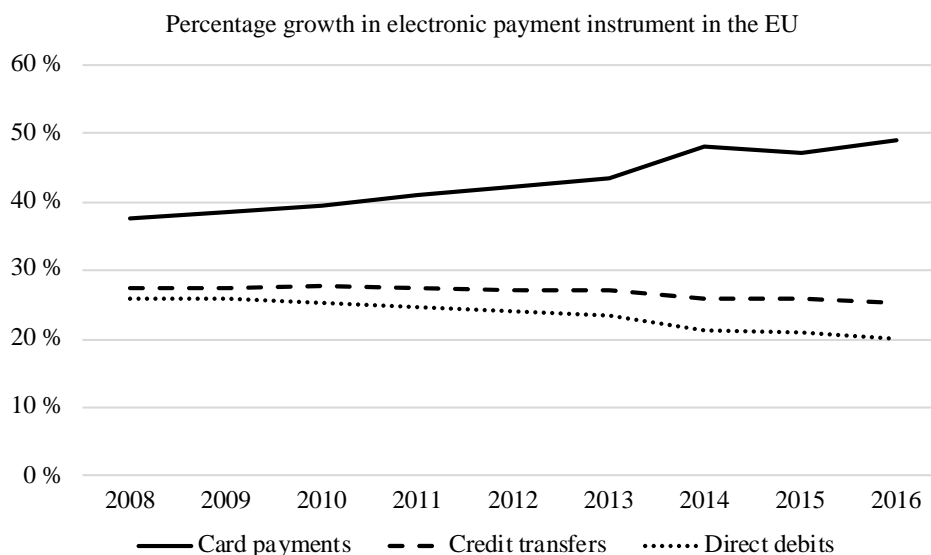
BigTech’s can be referred to large and capital-intensive technology firms with a broad international reach. The best known bigtech’s in the western world is Facebook, Google, Apple and Amazon, which is talked about and discussed on whether they have the power, knowledge and capabilities to disrupt the banking industry as we know today. But as these companies have operated on their own terms with immense creativity and agility, inflexible and strict regulations debilitate their ability to do so at the same pace within the financial industry. In light of this, the ability for these bigtech’s to operate and provide consumers with the same product and service range as traditional bank is not to be expected. On the other hand, their ability to offer or “take over” some of the traditional banks services and products are certainly there. As of now, Apple have launched Apple Pay in several European countries which lets users pay consumer goods with their Apple device, Amazons sellers are provided with loans, Google lets you send money and Facebook launched people to people payments within the US, with an ongoing application for e-money license in Europe (Evry, 2017a). Their capital intensity, technological superiority, international reach and an already built up customer base among others argue for an imminent threat for incumbent banks.

3.5 Electronic Payment Instruments

A consequence of the reduction in physical bank branches and subsidiaries can be explained by the increased use of digital solutions. The market has shifted towards

the use of electronic payment instruments which is defined as any personalized device and/or set of procedures agreed upon by the payment service user (PSU) and the payment service provider (PSP) and used by the PSU in order to initiate a payment order (European Commission, 2015). Payment cards followed by credit transfers, direct debits and e-money payments were the most popular non-cash payment instruments in the EU in 2016.

According to the ECB statistics (2017c) on payment instruments, the total number of non-cash payments increased by 8.5 percent to €122 billion in 2016 compared to 2015. Payment cards accounted for 48.9 percent followed by credit transfers with 25.1 percent, direct debits with 20.4 percent, and e-money with 2.3 percent, together these four methods of payments accounted for 96.7 percent of all cashless payments. See graph below:



(Source: European Central Bank, 2017c)

Figure 7

3.5.1 Payment cards – basic functioning

The processing of a card payment takes only a few seconds to complete, enabled by a well-structured communication system which is provided by multiple stakeholders. While there is a general rule for how the payment process works, the underlying system can be hard to grasp as there are several variations, differing roles of participants, confusing terminology, pricing models and regulations.

The most basic description of the payment processes consists mainly of four players; the customer, the merchant, an issuer and an acquirer. The customer is the person buying goods or services with his or her payment card. The payment card is

issued by an issuer (e.g. the customer's bank) and accepted as a payment instrument by the merchant who is selling the goods or services. The merchant would need to have a merchant account at their acquirer (e.g. the merchant's bank or another financial institution) to accept and receive card payments. This system is operated by an independent card association (e.g. Visa, Mastercard, BankAxept, etc.). Card associations maintain the network by authorizing issuers to sell their card brand and acquirers to accept it. These associations allow banks and other financial institutions to communicate with each other (also known as the interchange) by setting the rules and standards of the network.

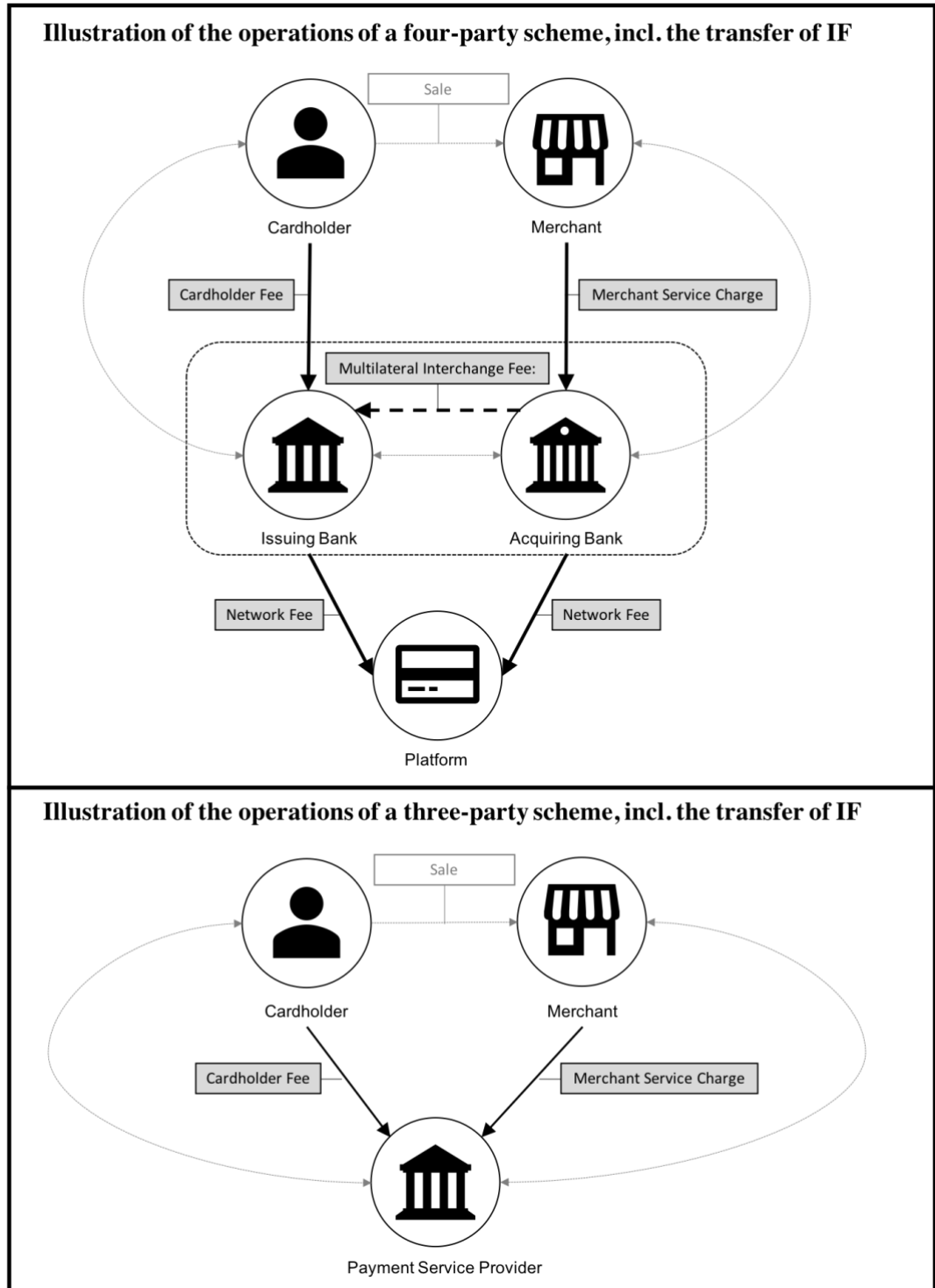
The process begins when the customer (cardholder) receives a payment card from the issuer and uses this to initiate and pay for goods or services at the merchant's physical store or at the merchant's online webpage. The merchant then processes the card information through a payment terminal (or the customer enters these details into the merchant webpage checkout page). The front-end of the process begins with an authorization request: the merchant submits the card details to their acquirer, which again submits these details onwards to the issuer. The issuer either responds with a confirmation or a decline to whether or not the customer has sufficient funds and sends this information back to the acquirer who again informs the merchant. The back-end of the process are the settlement of funds, where the issuer pays the acquirer who then pays the merchant, less certain fees. The process is completed when the issuer bills the customer.

The four-party card scheme is a good representation of the basic processes in a payment process. Another simple representation is the three-party card scheme (e.g. American Express), which is similar to the four-party card scheme, but instead of four players, it only consists of three, whereas the issuer and the acquirer is the same entity.

By comparing the four-party card scheme and the three-party card scheme we can simply illustrate how the players involved take on different roles. A further complication to the process, different pricing schemes will also depend on the card scheme and players. A simple representation through the four-party card scheme would include a cardholder fee, a merchant service charge, a multilateral interchange fee (MIF) and a licensing fee as illustrated below.

The cardholder pays a cardholder fee to the issuer for providing the payment card. The issuer pays a licensing fee to the card association for providing the card

network. The acquiring bank also pays the card association a licensing fee and in addition a collectively agreed multilateral interchange fee (MIF) to the issuer. The merchant would have to pay a merchant service charge to the acquirer for services provided:



(Adapted from: European Commission, 2013a; Mastercard Incorporated, 2018; Visa International Service Association, 2018)

Figure 8

The representations above clarifies some of the payment process, but in order to fully understand the implications of PSD2 we would have to provide a more comprehensive overview of the payment process. Since the scope of PSD2 primarily considers cashless payments and emphasizes the growing use of online transaction, we will first and foremost be considering online payments. As of today, online payments could be accomplished either by credit transfer (the customer pays directly with their online bank account), by invoicing (the merchant sends out an invoice to the customer) or using a credit or debit card (the customer enter the card information on the merchant's webpage).

As the four- and three-party card scheme provides a good representation of the main players involved, the authorization and response process, and the settlement process it lacks some explanations to who the real players are, how they operate, how they are connected, and the real prices paid for a payment processing network. We will therefore start by clarifying and giving a more comprehensive description of the possible players involved and the terminology used.

In order to accept a card payment online today a merchant would need to have a payment gateway, a payment processor, a merchant account, compliance measures, and so on, in place. To help facilitate this process several companies, banks and other financial organization are delivering either some elements or a complete package of this process.

One of the most difficult players to understand in the payment process are the acquirers. Acquirers are banks or other financial institutions that process credit or debit card transactions on behalf of merchants (recently these PSPs have in addition started to accept other types of payment instruments, e.g. mobile payments which we will describe later under PSD2). In this setting to "acquire" means to "accept" payments made by credit or debit cards. In order for a merchant to accept payment cards, they would need a merchant account, which is a special account operated by the acquirer. The acquirer will process the transaction through the merchant account before settling the transaction to the merchant's bank account. To add to the complexity, an acquirer could have one or several partnerships with multiple third-party providers, such as Independent Sales Organizations (ISOs), Member Servicing Partners (MSPs), processor companies, and payment gateways, that operates different parts of the payment process.

The term “acquirer” is often a source of misconception and confusion as it is used interchangeably with “acquiring bank”, “merchant bank”, “merchant acquirer”, “processor”, “payment provider”, etc. The terms “merchant bank” and “acquiring bank” is based on that the acquirer, in addition to providing the merchant account, also functions as the merchant regular bank, operating their bank account. But this may not always be the case, as other financial institutions can operate a merchant account and connecting the settlement with the merchant’s commercial bank account. The term “processor” is not accurate as it relates to the communication system between the banks and financial institutions, and could be operated by third-party providers, not directly involved with the merchant account. We are therefore using the word “acquirer” as an umbrella term for banks and other financial institutions providing payment processing services, responsible for the merchant account.

For merchants to be able to accept online payments, in addition to the merchant account, they will need to have payment gateway in place. A payment gateway is a software which provides the technology to securely authorize card (and electronic) payments by encrypting and protecting the customers sensitive information (e.g. credit card information and other account information) to ensure secure transmission across internet. This gateway is connected to the merchant’s checkout page and to the payment processors.

The payment processors are those mechanisms that communicates with all parties involved in the transaction and moves funds from A to B and vice versa. A processor handles the authentication (ensures that the payment is sent by its claimed source), authorization (request the issuer to authorize the specified amount from the customer’s credit or debit card) and protects the electronic payment throughout the process.

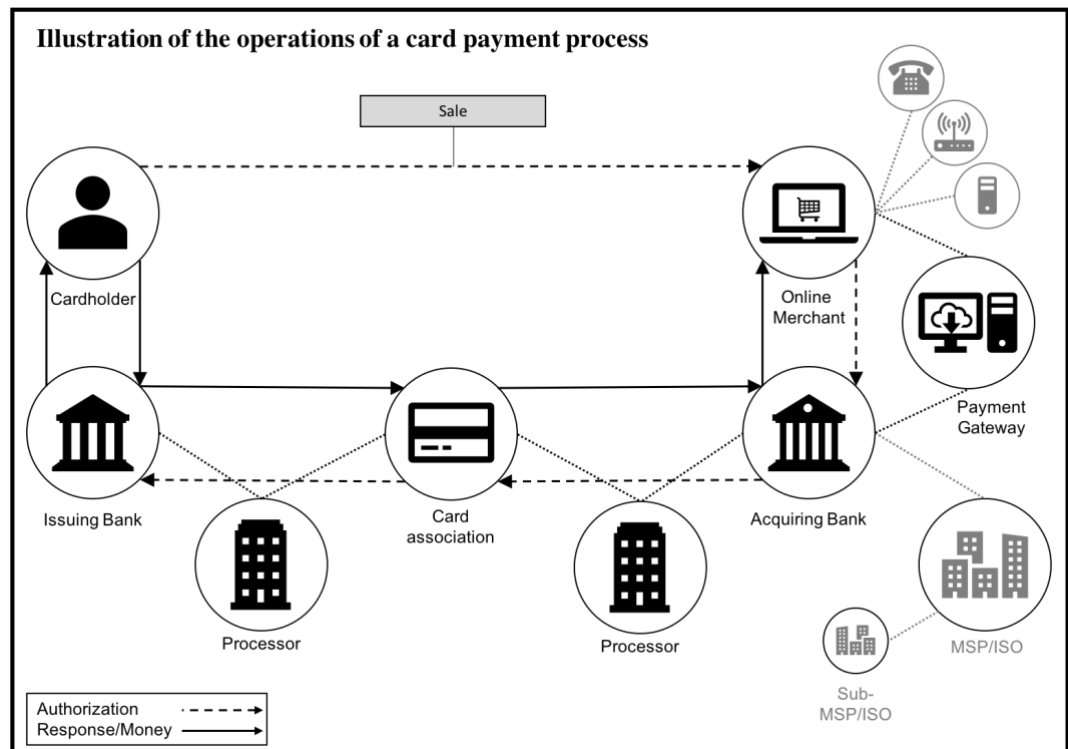
A more comprehensive explanation of the electronic payment process is illustrated below. To fully understand today’s situation, we will go through each step of this illustration before we move on to the implications of PSD2.

The first step of the transaction process begins with a customer buying a good or service from the merchant’s online webpage. He or she then proceeds to the merchant checkout page and enters the card information, including a billing address, a card number, expiration dates, and a card security code (CCV).

In the second step, the payment gateway encodes this information to ensure secure transmission across the internet to the acquiring bank for authorization. (There are a variety of ways to transmit the information to the acquiring bank for authorization if the card is present at a physical store: the merchant could either (1) use a standard terminal, which is a standard phone line to the acquirer, (2) use a processing software, which is a computer software combined with the magnetic stripe- or chip reader, (3) an IP terminal, which submits the request through an internet connection to the acquirer using a specially designed terminal).

In step three, the acquirer’s payment processor (which could be provided by the acquirer all together, or by an ISO, MSP, or another independent processor firm) authenticates that the data is being sent from its claimed sources. This is to reduce fraud. The processor determines with card association that issued the card and routes (switch) the request over to the correct card association.

The card association figures out who issued the card and forwards the request to the issuer. The issuer then receives the authorization request, verifies the available funds on the customer’s account and respond back through the same channels with either a confirmation or decline (yes/no). This entire process takes only a few seconds. The settlement occurs when the card issuer sends the appropriate funds to the acquirer, which deposits them into the merchant’s account.



(Self assessment based on information from: Mastercard Incorporated, 2018; PayPal Incorporated, 2018; Visa International Service Association, 2018)

Figure 9

4. The European Union and its legislatives frameworks

The European Union (EU) was founded in 1957 when Belgium, France, Germany, Italy, Luxembourg and the Netherlands signed “the Treaty of Rome”, creating the European Economic Community (EEC). The aim was to end frequent wars between neighbours, which culminated in the Second World War and establish a Single Market (also referred to as “Common Market” or “Internal Market”) for trade (European Union, 2018a). To achieve this, the Internal Market had to have a close economic and monetary co-operations (European Commission, 2018a). To figure out the issues with free flow trade across EU borders, a six-years program was signed under the “Single European Act” in 1986, which in 1992 led to the “Maastricht” Treaty (officially known as the “Treaty on European Union”). Representatives from twelve countries signed the Maastricht Treaty which involved coordination of economic and fiscal policies, a common monetary policy and a common currency, the euro (European Commission, 2018f). The Treaty introduced free movements of goods, services, people and capital (commonly known as the “four freedoms”), and thus created the Single Market. This was also the beginning of the Economic and Monetary Union (EMU), which basically established the European Union (EU) we know today (European Central Bank, 2017a).

4.1 Regulations, Directives and other Acts

To achieve the aims set out in EU treaties (such as the Treaty on European Union), the Union imposes several types of legal acts; Regulations, Directives, Recommendations and Opinions (European Union, 2018b). As explained on the European Union’s webpage under EU law; an EU Regulation is a binding act that applies to all countries that are a part of the EU (i.e. Member States) and does not have to be transposed into national law, as they apply to all Member States. A Directive (e.g. the Payment Services Directive), on the other side, is a legislative act that sets out a goal that all Member States must achieve, but it is up to the individual countries to devise their own laws on how to reach these goals. As the main focus of this Thesis depends on the provisions laid down in PSD2, we will not be focusing on how each Member State or Members of the EEA are implementing the directive into national law, instead we will only be focusing on the provisions made by EU regulators in PSD2.

4.1.1 Transformation of the European payment landscape in the 1990s

In the 1990s, three important stages took place in the European economy and the beginning of several regulatory changes leading up the Payment Services Directive (PSD) began transforming the European payments market. Between 1990 and 1993, the EU introduced free movements of capital between Member States and aimed to increase cross-border competition in the EU with the Second Banking Coordination Directive (The Council of the European Communities, 1989). That Directive defined the basic conditions for the provisions of the so-called Single Banking Licence (European Commission, 1992) and was considered to be one of the most significant deregulation in European banking (Angelini & Cetorelli, 2003) as it enabled banks to branch freely into other EU countries and thereby “creates the world’s largest banking market free of regulatory barriers” (European Commission, 1992). From 1994 to 1998 cooperation between national central banks and alignment of Member States’ economic policies increased. From 1999 to today the introduction of a single currency, the euro, together with the implementation of a single monetary policy, the euro area, for which the European Central Bank (ECB) is responsible for (European Central Bank, 2017a), created the foundations for the PSD.

4.1.2 The Single European Payment Area (SEPA)

In 1999, the ECB published the report *Improving cross-border retail payment services – the Eurosystem’s view*, where they stated that “citizens and businesses can only benefit fully from the principles of the free movements of goods, services, capital and people if they are able to transfer money as rapidly, reliably and cheaply from one part of the European Union to another as is now the case within each Member State” (European Central Bank, 1999). Based on this statement, a true Single Market would only be possible through a harmonized European payments market. EU institutions (i.e. the European Commission, the European Parliament, the Council of EU representing EU governments and the European Central Bank) aimed therefore at creating a Single European Payment Area (SEPA) which lets citizens and businesses make cross-border payments as easily and safely as they would in their home countries, and where cross-border payments are subject to the same charges as domestic payments (European Commission, 2018b).

The first step of the SEPA processes began in 2001 when EU co-legislators (i.e. the European Parliament and the Council of the representing governments) adopted

“Regulation (EC) No 2560/2001 on cross-border payments in euro”, which stated that Payment Service Providers (PSPs) are not allowed to impose different charges for domestic and cross-border payments or automated teller machines (ATM) withdrawals in euro within the EU (European Parliament & Council of the European Union, 2001), this regulation together with the creation of a common decision-making body the European Payment Council (EPC) created a road-map where the aim was to develop the necessary procedures, common rules and standards for EU-wide electronic payments in euros by 31. December 2010.

As electronic payments (e-payments) and other non-cash payments started to increase in volume, the EU set up some common rules for payments with the adoption of “Directive 2007/64/EC on payment services in the internal market” (PSD1). The PSD1 laid the groundwork for the SEPA initiative and Regulation (EC) No 2560/2001 was repealed by “Regulation (EU) 924/2009 on cross-border payments in the community” so that the Regulation applied to cross-border payments in accordance with PSD1 (article 1, point 2, European Commission, 2009). Regulation (EU) 924/2009 was in 2012 amended by the SEPA regulation: “Regulation (EU) No 260/2012 establishing the technical and business requirements for credit transfers and direct debits in euro”.

5. The first Payment Services Directive (PSD1)

Prior to PSD1, the European Commission published first a working document about the possibilities of creating a harmonized legal framework for the single payment area in the Internal Market (European Commission, 2002), where they acknowledge that the integration of euro payments would only be possible with a common legal framework, that would remove local anomalies and differences. This working document led to the European Commission’s proposal for PSD1.

The proposed Directive was concerned with the issue of fragmentations in the Internal Market for payments, as the 27 Member States had their own legal frameworks, hindering cross-border payments and competition (European Commission, 2005). European regulators had identified the dominance of banks and their reluctance to innovate in the payment market based on entry barriers (e.g. fragmented legal frameworks, capital requirement, etc.). Another important issue was the costs of the current payments system (cash payments). As stated by the European Commission: “For instance, direct debits, which are a common and cost-efficient service to pay for utilities (e.g. gas, water electricity bills) and other regular

bills, cannot be used across borders, even though they represent a cheap, reliable and secure means of payment whose use reduces costs for business and their customers. Similarly, most of the popular and more economical national direct debit cards do not operate across national borders” (European Commission, 2007b). Studies estimated that the costs of cash payments could be as much as three percent of gross domestic product (GDP), whereas cash payments contributed to about 60-70 percent of total costs (European Commission, 2007b). The goal was therefore to switch from cash transactions (which costs between 30 and 55-euro cents) to the use of electronic payment (which costs only a few euro cents). Given that, in 2007, the EU handled 231 billion transaction, with a total value of €52 trillion, according to the EC, the potential savings would be tremendous and amount to billions of euros. As banks limited action in bringing innovation to the payment arena, new players (e.g. non-banks such as technology firms, retailers and mobile network operators) had stepped in and brought new innovative services to the payment market. Removing barriers to competition and cross-border activities by implementing a modern and harmonized legal framework on electronic payments, could save the EU economy upwards of €28 billion per year (European Commission, 2007b).

The first Payment Services Directive (PSD1) was adopted by EU co-legislators 13th of November 2007 which established a modern and comprehensive set of rules applicable to all electronic payment services in the EU and had to be transposed into national law by 1st of November 2009 (European Commission, 2007a)

5.1 Main Objectives

The objectives of the PSD1 was to “establish at Community level a modern and coherent legal framework for payment services, whether or not the services are compatible with the system resulting from the financial sector initiative for a single euro payment area, which is neutral so as to ensure a level playing field for all payment systems, in order to maintain consumer choice, which should mean a considerable step forward in terms of consumer cost, safety, and efficiency, as compared to the present system” (Recital 4 of the PSD1, European Commission, 2007a).

There were two main objectives, the first was to generate more competition in the payments market by removing entry barriers and guaranteeing fair market access. The second was to provide a simplified and fully harmonized set of rules with

regard to the information requirements and the rights of obligations linked to the provisions and use of payment services (such as execution time, liability of PSPs, refunding rights, irrevocability of payments, etc.). Prior to PSD1, the diverging legal rules in the 27 different Member States represented a significant impediment to new PSPs (such as supermarkets, money remitters or telecom and IT providers), that effectively blocked them from competing and offering their services in the Internal Market. Through these objectives, regulators aimed at making cross-border payments as easy, efficient and secure as “national” payments within a Member State.

5.2 Scope

The PSD1 covers a geographical scope within the European Union (EU) and the European Economic Area (EEA), a number of payment service providers (PSPs) and their related activities.

5.2.1 Geographical Scope

The scope of PSD1 covers electronic payments services provided within the EU and EEA. However, title III and IV in the Directive (with exemptions) applied only to the so-called two-leg transactions, where both the payer’s PSP and the payee’s PSP (or the sole PSP in the payment transaction), is located within the Union (article 2 (1) – PSD1). These payment services could be made in euro or another Member States currency (article 2 (2) – PSD1). There are a number of payments means (including cash and cheques) that did not fall within the scope of PSD1 (article 3 – PSD1).

5.2.2 Payment Service Providers

Prior to the PSD1, credit institutions, electronic money institutions, post office giro institutions, and in most EU Member States, a number of other financial institutions (institutions providing selected payment services such as remittance and other types of cross-border transfer of funds) operated under a regulatory regime which varied greatly across the EU (London economics & iff, 2013).

The PSD1 defined common rules, obligations and rights for PSPs and PSUs, and created a new type of financial institution, namely a payment institution which is “... a legal person that has been granted authorization in accordance with Article

10 of the PSD1 to provide and execute payment services throughout the Community” (Recital: Article 4(4) of the PSD1, European Commission, 2007a).

Following the implementation of the PSD1, six different categories of PSPs were distinguished from a regulatory perspective:

1. credit institutions within the meaning of Article 4(1)(a) of Directive 2006/48/EC;
2. electronic money institutions within the meaning of Article 1(3)(a) of Directive 2006/46/EC;
3. Post office giro institutions which are entitled under national law to provide payment services;
4. Payment institutions within the meaning of this Directive;
5. The European Central Bank and national central banks when not acting in their capacity as monetary authority or other public authorities;
6. Member States or their regional or local authorities when not acting in their capacity as public authorities.

(Recital: Article 1 of the PSD1, European Commission, 2007a).

5.2.3 Payment Services

The list of payment services covered by the PSD1 are:

1. Services enabling cash to be placed on a payment account as well as all the operations for operating a payment account.
2. Services enabling cash withdrawals from a payment account as well as all the operations required for operating a payment account.
3. Execution of payment transactions, including transfers of funds on a payment account with the user’s payment service provider or with another payment service providers:
 - execution of direct debits, including one-off direct debits,
 - execution of payment transactions through a payment card or a similar device,
 - execution of credit transfers, including standing order,

-
4. Execution of payment transaction where the funds are covered by a credit line for a payment service user:
 - execution of direct debits, including ne-off direct debits,
 - execution of payment transactions through a payment card or a similar device,
 - execution of credit transfers, including standing orders.
 5. Issuing and/or acquiring of payment instruments.
 6. Money remittance.
 7. Execution of payment transactions where the consent of the payer to execute a payment transaction is given by means of any telecommunication, digital or IT device and the payment is made to the telecommunication, IT system or network operator, acting only as an intermediary between the payment service user and the supplier of the goods and services.

(Recital PSD1 Annex, European Commission, 2007a)

When it came to mobile payments, a telecom operator that made a payment on behalf of a Payment Service User (PSU) to a third party, the payment transaction was within the scope of PSD1 (when the operator acted solely as an intermediary making the payment). On the other hand, payment related to digital purchases (e.g. ringtones, digital newspapers, etc.) were not covered.

5.3 The introduction of payment institutions

PSD1 introduced a new category of PSPs other than banks, coined “payment institutions”, with less requirements than banks and other financial institutions. The aim was to increase competition and consumers choice of payment methods and payment instruments under a harmonized framework in response to the growing number of payment solutions that were emerging to the corresponding growth in electronic commerce. Three different types of payment institutions could be authorized under PSD1: (1) money remitters; (2) payment transaction carried out by mobile and telecom operators and; (3) full-range PSPs (e.g. credit transfers, direct debits, card payments) including credit related to payments. Payment institutions were required to fulfil a variety of qualitative (e.g. sound administrative,

risk management, accounting procedures, proper internal control mechanisms, etc) and quantitative requirements (e.g. capital requirements). According to Cortet, Rijks and Nijland (2016) these payment institutions can be considered the “early FinTech companies”, as they, among other things, execute payment transactions for merchants. Payment institutions have experienced considerable growth since their inception and have caused considerable disintermediation of banks in the merchant acquiring business.

5.3.1 Lighter Regulatory Requirements for Payment Institutions

To allow these new and innovative payment institutions to compete in the market under the same rules and conditions, PSD1 created a lighter regulatory regime for these companies. Prior to PSD1, banks had been the dominant market player providing payment solutions but was constrained by a heavy regulatory regime, especially regarding capital requirements. PSD1 lifted the capital requirements to allow payment institutions to deliver front-end payment services.

The capital requirements for banks and payment institutions under PSD1, are combined of an initial capital (fixed, flat rate) and ongoing capital (which increases with business volume), below are a simplified version provided by the European Commission:

Payment institutions	
Initial capital:	<ul style="list-style-type: none"> • <u>Money remitters</u>: €20,000 • <u>Mobile payments</u>: €50,000 • <u>Full range PSPs (incl. any credit)</u>: €125,000
Ongoing capital:	<p>The competent authorities may choose one of the three methods:</p> <ul style="list-style-type: none"> • <u>Method A</u>: 10% of fixed overhead (administration expenses, rent salaries, etc.) • <u>Method B</u>: Degressive percentage (from 4% to 0.25%) of amount of monthly payment transactions in previous year • <u>Method C</u>: Degressive percentage (from 10% to 1.5%) of sum of relevant indicators (sum of interest income, interest expense, commission and fees, other operating income • <u>For method A and C</u>: a scaling factor is used to reduce the ongoing capital as follows: <ul style="list-style-type: none"> ○ 0.5 money remitters

	<ul style="list-style-type: none"> ○ 0.8 payment transaction carried out by mobile telecom operators
Additionally:	Depending on the quality of the payment institution’s risk management, the competent authorities of the Member state may increase or reduce the ongoing capital requirement for the three methods by up to 20%. In case where a payment institution grant credit in connection with a payment, national supervisory authorities must be satisfied that the own funds of the payment institution are appropriate in view of the overall amount of credit provided.
Banks	
Initial capital:	<ul style="list-style-type: none"> • €5,000,000
Ongoing capital:	<p>The situation is more complicated. Under Basel II, sophisticated rules have been developed for banks to ensure financial stability and that depositors can be repaid on demand. Put simply, banks have ongoing capital charges calculated as the sum of three components:</p> <ul style="list-style-type: none"> • <u>Credit risk</u>: based on the amount of loans they make. • <u>Market risk</u>: based on possible losses incurred when trading. • <u>Operational risk</u>: based on risks they incur for people, processes and systems

(Source: European Commission, 2007b)

Figure 10

The reason for the different capital requirements is based on the different risk profiles of payment institutions and banks. PSD1 introduced a Single License, which made it possible for payment institutions to provide payment services without taking deposits or issuing electronic money. To clarify, Article 16(2) states that: “when payment institutions engage in the provisions of one or more of the payment services listed in the Annex, they may hold payment accounts used exclusively for payment transactions. Any funds received by payment institutions from payment services users with a view to the provision of payment services shall not constitute a deposit or other repayable funds within the meaning of Article 5 of Directive 2006/48/EC, or electronic money within the meaning of Article 1(3) of Directive 2000/46/EC” (Recital 16(2) of the PSD1, European Commission, 2007a)), therefore, it is not meaningful to compare capital charges for payment institutions and banks, since they carry out different sets of activities and have very

different risk profiles. Banks, which holds deposits that are used for a variety of risk-related activities (including providing credit) can pose a systematic risk to the wider financial system, while payment institutions cannot take deposits pose a very low level of risk in comparison.

However, when considering payment services in isolation, payment institutions have considerably lower capital requirements than banks (e.g. see initial capital in the table above). Regarding the ongoing capital, it is possible to make a rough comparison between banks and Payment Institution in method A and C, while method B have no comparable risk charge for banks. Method A where banks and investment firms can have a capital charge based on fixed overhead costs, in such case the charge is 25 percent compared to 10 percent. Method C is a very simplified version of the operational capital risk charge for payment services carried out by banks. This capital charge is given in the Annex of the Capital Requirements Directive 2006/48/EC (CRD) (this directive was repealed by Directive 2013/36/EU in 2013). For payment services the CRD capital charge was a flat rate percentage of 15 percent as compared to the degressive percentage (from 10% to 1.5%) under the PSD1.

In addition to the reduced capital requirements, small payment institutions (commonly referred to as Small Payment Service Providers, SPSPs) could waive some of the requirements even further under article 26 in the PSD1 to their competent authorities with restriction, such as the total amount of transactions carried out by a waived Payment Institution may not exceed €3 million per month. There were three reasons for this: first, to facilitate market entry and innovation by new players without subjecting them to the full rigors of the authorization framework. Second, to encourage small scale market players (e.g. typically persons providing remittance services), that may be operating informally to leave the black economy and have them officially registered and identified and third, to comply with international obligations which requires all EU governments to register money remitters for global anti-money laundering and anti-terrorists financing purposes (European Commission, 2007b).

5.4 Goals

PSD1 is the first, comprehensive legislation on payments in the EU aiming at harmonizing the payment market. It has made access to new market players easier, it has provided more transparency and information to consumers (e.g. execution

time has been reduced to one business day, consumer rights have been strengthened and liabilities clarified) and it has helped the SEPA in practice. An assessment by the European Commission (European Commission, 2013a) concluded that this legal framework proved valid and robust, and has provided a good foundation for the development of EU-wide payments at a high level.

To sum up the main goals set out in PSD1, the table below lists three main beneficiaries and their desired outcome through this Directive: Payments Service Providers (PSP) (e.g. banks, e-money institutions, payment institutions), payment services users (PSU) (e.g. end-consumers and merchants) and the Internal Market for payments:

PSPs	PSU	Payment Services Market
<ul style="list-style-type: none"> • Bring more innovative solutions into the payment market • Effective supervision by competent authorities • Higher safety and equal access to markets • Efficiency and lower cost 	<ul style="list-style-type: none"> • Access to information (e.g. prices, interest rates, security) • Equal prices in the internal market • Fast payments ("D+1") • Suitability 	<ul style="list-style-type: none"> • Cross-border with equal condition (SEPA) • New entries (PSPs) • Transparency • Increased competition

Source: *The German Institute for Financial Services (London economics & iff, P.5)*

Figure 11

5.4 Assessments

Article 87 in PSD1, required that the European Commission shall present a report on the implementation and impact of this directive. The report “Commission staff working document – impact assessment” was published in 2013 and concluded that the harmonization of rights and obligations of PSPs in the PSD1 had contributed both to facilitating provision of uniform payment services across the EU and, for many PSPs, to reducing legal compliance and production costs. Further, the European Commission stated that PSD1 had achieved its main objectives and that any future changes should follow an evolutionary and not a revolutionary approach (European Commission, 2013a).

In January 2012, the European Commission published its Green Paper “*Towards an Integrated European Market for Card, Internet and Mobile Payments*” (2012). The aim of that paper was to identify the obstacles that could potentially prevent integration in the market for card, Internet and mobile payments. The document revealed that unprecedented market developments (particularly rapid emergence of electronic and mobile payments) gave rise to important challenges from a regulatory perspective. The report showed that card payments, internet and mobile payments had remained fragmented along national borders, contradicting the goals set out in PSD1.

One reason for this was related to the different approaches used by PSPs and Member States when the Directive gave them margin of maneuver and discretion with regard to implementation (European Commission, 2013d). Differing interpretation together with recent market developments led certain payment-related activities to be excluded from the PSD1 (such as payments through mobile or other IT devices, limited networks and telecommunication) or the rules proved to be too ambiguous, too general or outdated. PSPs covering these services were, as a consequence, left unregulated and hence, did not require to fulfill the provisions about initial capital, own funds, safeguarding of funds and liabilities toward the consumers as the regulated PSPs. This led to a lack of consumer protection in certain areas, clearly benefiting the unregulated payment institutions, creating an unlevelled playing field.

Another issue was related to the differing legislatives, even though the European Commission emphasizes that significant progress had been achieved in integrating retail payments in the Union, especially in the context of the Union acts on payments, in particular through: The PSD1; Regulation (EC) No 924/2009 “on cross-border payments in the Community”; Directive 2009/110/EC “on taking up, pursuit and prudential supervision of the business of electronic money institutions” (EMD II); Regulation (EU) No 260/2012 “establishing technical and business requirements for credit transfers and direct debits in euro” (SEPA) and; Directive 2011/83/EU “on consumer rights” (European Commission, 2015), not all of these legislatives were harmonized and complementary.

According to the assessment impact report, the expected benefits had not yet been fully realized because of differences in other applicable laws and regulations such

as anti-money laundering, data protection and consumer protection across the EU (European Commission, 2013d). London economics and iff (2013) found particularly issues related to electronic money services (e-money service) and payment services as they were regulated in different ways by the PSD1 and Directive 2009/110/EC (EMD II). The issue was related to recent developments in payment services, where on-line payments, mobile payments and other payment modalities were developing with the proliferation of IT terminals. If the payment services (listed in the annex of the PSD1) were to stay the same, only very simple money remittance services for payers and services to collect funds for payees would be covered by the payment services directive, and all other payment methods may qualify as e-money (London economics & iff, 2013).

Because of the licensing regime for payment services was founded on the *possession of funds*, payment initiation services, would easily fall out of the PSD1 scope, even though these services may be viewed by the customers as PSPs (London economics & iff, 2013).

The analysis of PSD1 made by London Economics and iff (2013) and its impact suggested that a number of changes could be envisaged to the PSD1 to enhance its effect, clarifying a number of its aspects to provide a level playing field and to take into account technological developments. The proposed changes were therefore related to extend the scope to include transactions to and from third-countries (countries outside the EEA) and include some of the payment (related) actives that were previously excluded (such as payment initiation services).

The report on the application of PSD1 (2013d) also emphasized that there was a need to accommodate for technological business development. the European Commission recognized that new “third-party payment service providers” (TPPs), had entered the market, offering basically low-cost payment solutions on the internet using consumers’ home online banking application, with their agreement, and informing merchants that their money is on its way, thereby facilitating online shopping (payment initiation). Some players also offer consolidated information on different accounts of a payments service user (“account information services”).” (European Commission, 2013d).

While the European Commission highlighted the undeniable benefits of these new players for PSUs and for the competition in the market, a series of issues was related to the security, access to information on payment accounts and data privacy that

needed to be addressed at EU level, alongside the possibility to license and supervise TPPs as payment institutions under the Payment Services Directive (European Commission, 2013d). Based on these reports the European Commission published a “legislative payment package”, which included a proposal for a revised Payment Services Directive and a new regulation on interchange fees for card-based payment transactions (Interchange Fee Regulation 2015/751) complementing the PSD2.

5.5 Proposal for a revised Payment Services Directive

In the proposal for a revised Payment Services Directive the European Commission emphasized that the electronic payments market in Europe offered great opportunities for innovation. Consumers had already significantly changed their payments habits and the number of credit and debit card payments had increased in both volume and value (EC proposal, 2013). The rise of e-commerce and the increased popularity of smartphones had paved the way for the emergence of new payment services, such as Payment Initiation Services (PIS) and Account Information Services (AIS) that were not subjected to the first payment services directive (European Commission, 2013c). These innovative services had brought more competition into the payments market and often provided cheaper alternatives for Internet payments. According to the European Commission, bringing them within the scope of the payment services directive will “boost transparency, innovation and security in the single market and create a level playing field between different payment service providers” (European Commission, 2018b).

The aim of the proposal was to further develop an EU-wide market for electronic payments, particular in terms of e-commerce. This would enable market players to enjoy the full benefits of the EU Internal Market (European Commission, 2013c). The importance of fully integrating the Internal Market in terms of e-payments was based on the fact that the world moves beyond brick-and-mortar trade towards a digital economy. To achieve a further integration of the payment market, the European Commission stated that:

“To achieve this and promote more competition, efficiency and innovation in the field of e-payments, there should be legal clarity and a level playing field, leading to downward convergence of costs and prices for payment services users, more choice and transparency of payment services,

facilitating the provision of innovative payment services, and to ensure secure and transparent payment services” (EC proposal, 2013)

These objectives would be achieved by updating and complementing the PSD1 framework on payment services by providing for rules that enhance transparency, innovation and security in the field of retail payments and improving consistency between national rules, with an emphasis on the legitimate needs of consumers (European Commission, 2013c).

6. The Second Payment Services Directive (PSD2)

The revised Payment Services Directive (official title: “*Directive 2007/64/EC of the European Parliament and of the Council of 13 November 2007 on payment services in the internal market amending Directives 97/7/EC, 2002/65/EC, 2005/60/EC and 2006/48/EC and repealing Directive 97/5/EC*” – hereinafter referred to as the *PSD2*) has preserved the structure of PSD1 and has retained much of the original text (e.g. similar capital requirements), although some wording has been partially rewritten, and new provisions have been added.

The structure is split into sections (Titles) and subdivision into content areas (chapters with related articles and points). The sections are as follows: Title I: “subject matter, scope and definitions”; Title II: “payment service providers” and specifically the regulation of payment institutions; Title III: “Transparency of conditions and information requirements for payment services”; Title IV: “Rights and obligations in relations to the provision and use of payment services”; followed by Title V: “Delegated acts and regulatory technical standards” where the power conferred on the European Commission to adopt delegated acts and regulatory technical standards appears; and lastly, Title VI: “final provisions”.

The PSD2 was published in the official journal of the EU in December 2015 and had to be transposed into national law by 13th of January 2018, as of which date the PSD2 fully repealed and replaced the PSD1.

Under PSD2 the Level 2 legislative process applies. At level 2, the Commission can adopt, adapt and update technical implementing measures with the help of consultative bodies composed mainly of EU countries representatives (European Commission, 2018e). The European Banking Authority (EBA) has been given the mandate to develop Regulatory Technical Standards (RTS) and guidelines across a number of provisions according to article 98(4) in the PSD2, which is

supplementing the PSD2, the RTS is scheduled to apply from 14 September 2019 (European Banking Authority, 2018b).

PSD2 widens the scope of PSD1 in accordance with the recommendations laid down in article 87 in the PSD1 and to the Commissions assessment reports by covering new services and players by extending the scope of existing services (payment instruments issued by PSPs that do not manage the account of the PSU), enabling third-parties access to customers account data and to initiate payments and provide them an overview of their various payments accounts based on explicit customer consent. These new players will be registered and licensed at EU level. It is foreseen that the competition will increase by removing barriers for these companies, which should lead to lower costs for customers.

PSD2 also updates the telecom exemption, extending the scope of currencies and geographical scope. In addition, cooperation and information between authorities in the context of authorization and supervision of payment institutions has been enhanced, whereas the EBA will develop a central register of authorized and registered payment institutions.

To make electronic payments safer and more secure, PSD2 introduces enhanced security measures to be implemented by all PSPs. The EBA will develop the regulatory technical standards that covers Strong Customer Authentication (SCA) to be provided by PSPs and Common and Secure Communication (CSC) between PSPs.

6.1 Main Objectives

As PSD2 is a continuation and an updated version of the PSD1, the main objective is still to develop an Internal Market for safe electronic payments across borders that supports the growth of the EU economy. The regulatory framework should contribute to a more integrated and efficient European payments market, improve the level playing field for PSPs (including new players), make payments safer and protect consumers (European Commission, 2018c). Based on the PSD1 assessment reports and recent market developments, the European Commission (2015) states in point 6 of the PSD2 that:

“New rules should be established to close regulatory gaps while at the same time providing more legal certainty and ensuring consistent application of

the legislative framework across the Union. Equivalent operating conditions should be guaranteed, to existing and new players on the market, enabling new means of payment to reach a broader market, and ensuring a high level of consumer protection in the use of those payment services across the Union as a whole. This should generate efficiencies in the payment system as a whole and lead to more choice and more transparency of payment services while strengthening the trust of consumers in a harmonised payments market“ (Recital (6) in the PSD2, European Commission, 2015).

A major focus on making payments safer and more secure are steaming from the fact that the security risks relating to electronic payments have increased. The growing technical complexity of electronic payments, the continuously growing volume of electronic payments worldwide and the emerging types of payment services are factors contributing to the security risks. According to the European Commission (2015), safe and secure payment services constitute a vital condition for a well-functioning payment services market where users of payment services should be adequately protected against such risks.

Whereas PSD1 contributed to the reduction in the use of intermediaries between banks and payment institutions in the merchant acquiring business, PSD2 is expected to the disintermediation on the consumer side(Cortet et al., 2016) . PSD2 aim to open up the payment market for innovative PSPs (both banks and non-banks) in response to the drivers of changing consumer behavior and technology driven innovation.

6.2 Scope

The scope of the PSD2 has been extended both in terms of geographical scope and in terms of providers providing payment services. In addition, the scope has been extended to cover activities provided by telecom operators and within limited networks.

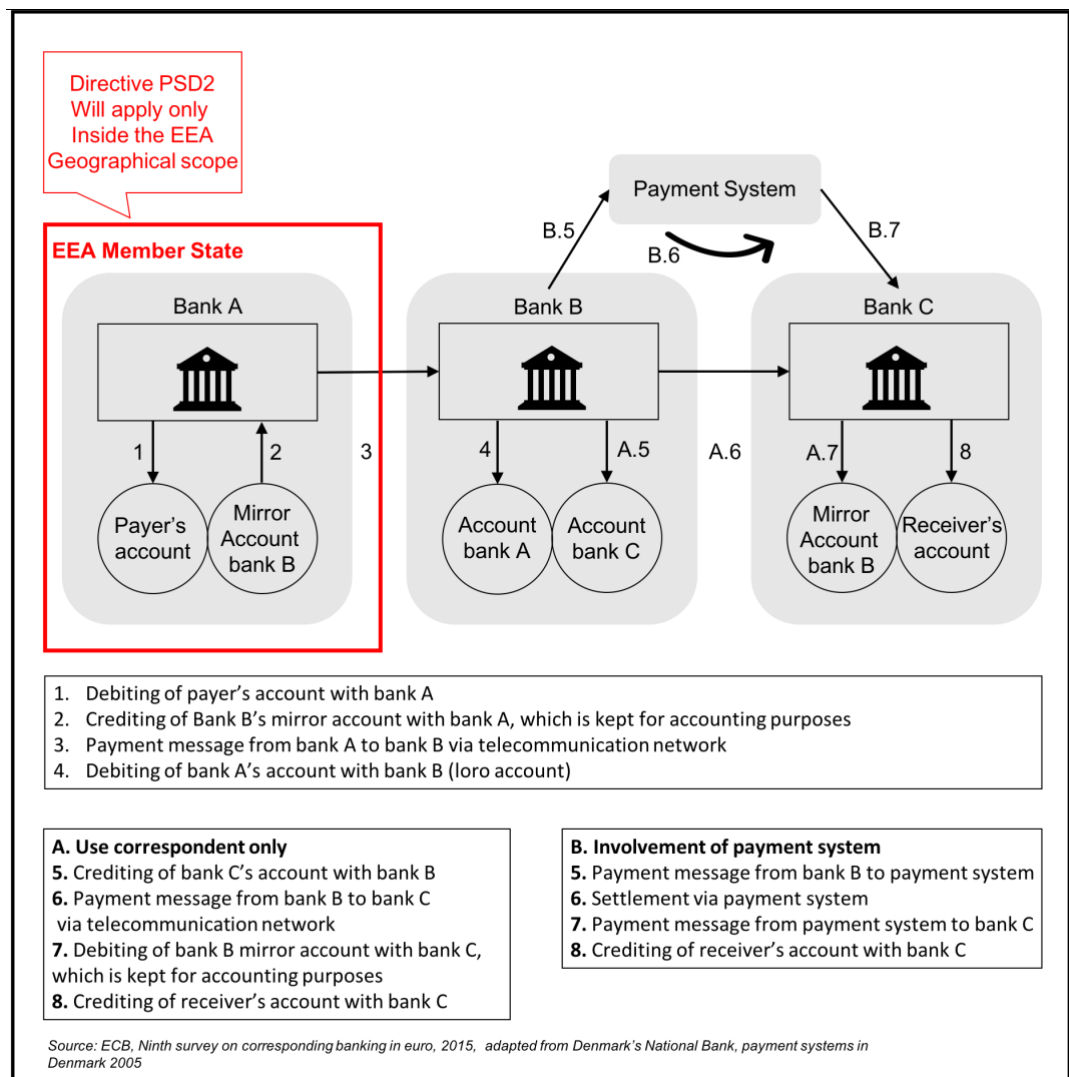
6.2.1 Geographical Scope

PSD2 applies to payment services provided within the EU’s Member States and the European Economic Area (EEA), which consist today of 28 EU Member States plus

three Member States of the EEA (Norway Iceland and Liechtenstein), see “Geographical Scope of PSD2” in appendix number III.

As the PSD1 covered payment services provided within the EU through the so-called “two-leg transactions” and in the currency of a Member State, PSD2 widens the scope to cover intra-EEA payments (two-legs in) in non-EEA currencies and payments to and from non-EEA countries (one-leg in or out) in any currency (article 2 (1) – (4), PSD2). It is important to note that these extensions only apply to those part of the transaction that are carried out within the EEA.

The European Banking Federation (EBF) have illustrated, at a high level the process of international correspondent banking to help identify where PSD2 rules and geographical scope apply. The illustration below depicts a cross-border transaction initiated in the EEA: Bank A is the payer’s PSP located in the EEA, Bank B is the corresponding bank or intermediary PSP outside the EEA and Bank C is the beneficiary PSP, located outside the EEA. The payment system is clearing the specific foreign currency at domestic level, e.g. US dollar in the US:



Source: ECB, Ninth survey on corresponding banking in euro, 2015. Adapted from Denmark's National Bank, payment systems in Denmark 2005.

Figure 12

6.2.2 Payment Service Providers

The list of PSPs under PSD2 distinguish the same six different categories of PSPs from a regulatory perspective as PSD1, only with modifications related to definitions and scope:

1. credit institutions as defined in Point (1) of Article 4(1) of regulation (EU) No 575/2013 of the European Parliament and of the Council, including branches thereof within the meaning of point (17) Article 4(1) of that Regulation where such branches are located within the Union, whether the head office of those branches are located within the Union or, in accordance with article 47 of Directive 2013/36/EU and with national law, outside the Union;

-
2. electronic money institutions within the meaning of point (1) of article 2 of Directive 2009/110/EC, including, in accordance with Article 8 of that Directive and with national law, branches thereof, where such branches are located within the Union and their head offices are located outside the Union, in as far as the payment services provided by those branches are linked to the issuance of electronic money;
 3. post office giro institutions which are entitled under national law to provide payment services;
 4. Payment institutions;
 5. The ECB and national central banks when not acting in their capacity as monetary authority or other public authorities;
 6. Member States or their regional or local authorities when not acting in their capacity as public authorities.

In addition, this Directive also establish rules concerning:

1. Transparency conditions and information requirements for payment services; and
2. The respective rights and obligations of payment service users and payment service providers in relation to the provision of payment services as a regular occupation or business activity.

(Recital: Article 1 of the PSD2, European Commission, 2015)

6.2.3 Payment Services

The scope of which payment services covered by the PSD2 continues to cover full-range PSPs: (point (1) to (5)), money remittance services (point (6)), and been extended to include payment initiation services (point (7)) and account information services (point (8)):

1. Services enabling cash to be placed on a payment account as well as all the operations for operating a payment account.
2. Services enabling cash withdrawals from a payment account as well as all the operations required for operating a payment account.

-
3. Execution of payment transactions, including transfers of funds on a payment account with the user's payment service provider or with another payment service providers:
 - execution of direct debits, including one-off direct debits,
 - execution of payment transactions through a payment card or a similar device,
 - execution of credit transfers, including standing order,
 4. Execution of payment transaction where the funds are covered by a credit line for a payment service user:
 - execution of direct debits, including one-off direct debits,
 - execution of payment transactions through a payment card or a similar device,
 - execution of credit transfers, including standing orders.
 5. Issuing payment instruments and/or acquiring of payment transactions
 6. Money remittance.
 7. Payment initiation services
 8. Account information services

(Recital: Annex I of the PSD2, European Commission, 2015).

6.2.3 Telecom operators

PSD1 did not cover payments made through a telecom provider, where the telecom operator acted as an intermediary between the consumer and the PSP. Under PSD2, article 3 (I) the purchase of physical goods and services through a telecom operator now falls within the scope of PSD2. In addition, PSD2 have further specified and narrowed down the exclusions for payments through telecom operators. The exclusion now covers only payments made through a telecom operator for the purchase of digital services such as music and digital newspapers that are downloaded on a digital device or of electronic tickets or donations to charities. In order to avoid the risk of exposure to substantial financial risks to payers, only payments under a certain threshold are excluded (€50 per transaction; €300 per billing month). Telecom operators that engage in such activities shall notify the competent authorities, on an annual basis, that they comply with these limits. The activity will also be listed in the public registers (European Commission, 2015).

PSD2 also enhances cooperation between authorities in the context of authorization and supervision of payment institutions. The European banking Authority will develop a central register of authorized and registered payment institutions (Article 15 “EBA register”, PSD2).

The list of payment services listed in the Annex to the PSD2 sets out the payment services which are within the scope of the PSD2 (listed here in annex II). As nearly half of the competent authorities found the list provided in PSD1 adequate, which also conflicted with the EMD II (London economics & iff, 2013), the European Commission have extended the scope to include the aforementioned Payment Initiation Services (PIS) and Account Information Services (AIS) within the scope of PSD2.

6.3 Payment Service Providers under PSD2

PSD1 introduced “payment institutions” into the payment landscape. As explained in the assessment report of PSD1 and in the proposal for PSD2, new service providers, (i.e. payment initiation service providers and account information service providers) had emerged with recent market developments, such as technological developments and changed consumer behavior. These service providers have brought innovation and competition, providing more and often cheaper alternatives for Internet payments (European Commission, 2015), but were previously unregulated as they do not manage the funds of their customers (London economics & iff, 2013).

PSD2 aims to boost transparency, innovation and security in the Single Market and create a level playing field between different PSPs by bringing these new services within the scope of PSD2. Both payment initiation service providers (PISPs) and account information service providers (AISPs) are commonly referred to as “Third-Party Payments Service Providers” (TPPs).

TPPs are treated as “payment institutions” which is, in accordance with PSD2, “... a legal person that has been granted authorization in accordance with Article 11 to provide and execute payment services throughout the Union” (Recital: Article 4(4) of the PSD2, European Commission, 2015). According to article 33 “Account information service providers”: natural or legal persons providing only Account Information Service (AIS) shall also be treated as payment institutions.

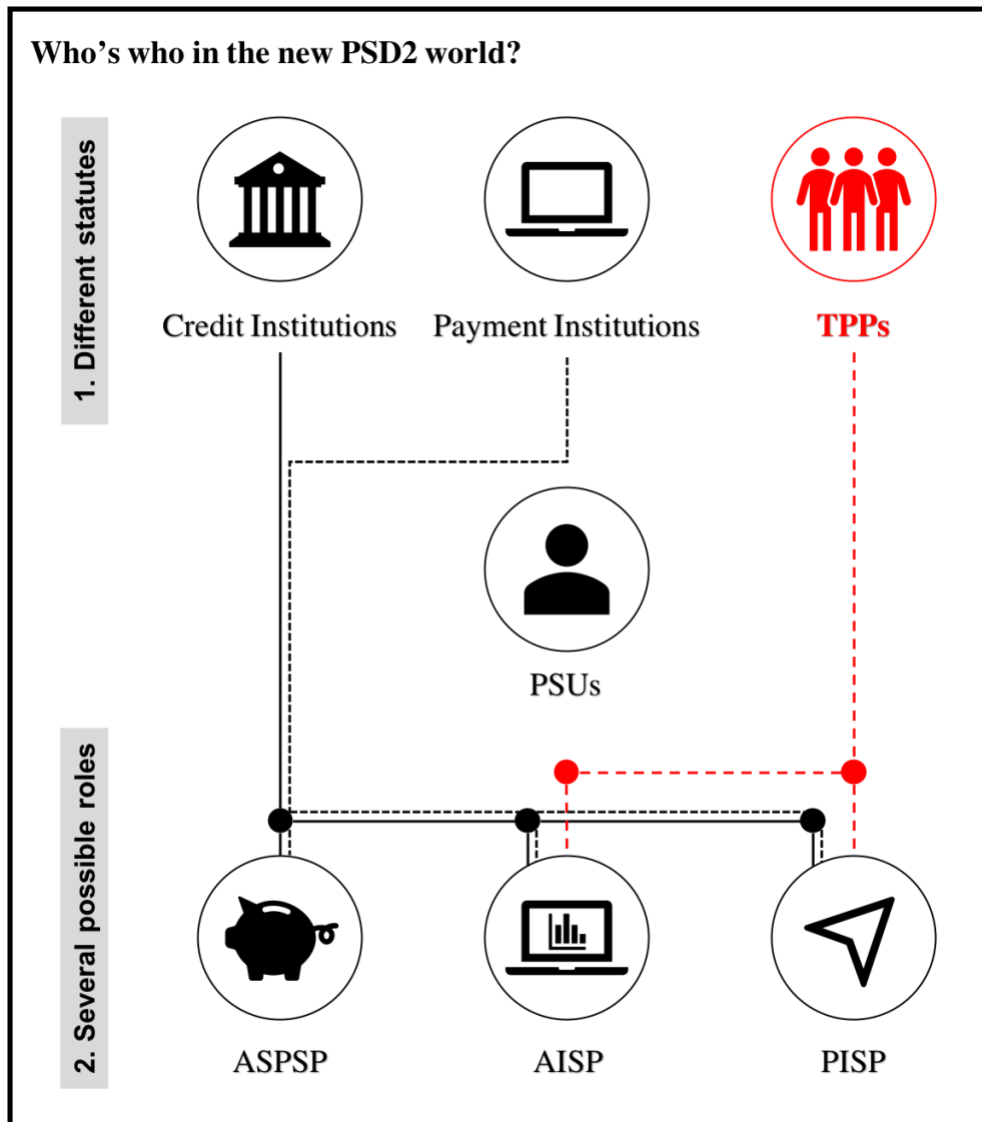
TPPs, both PISP and AISP are to be contrasted with “Account Servicing Payment Service Provider” (ASPSP) which is “... a payment service provider providing and maintaining a payment account for a payer” (Recital Article 4 (17) of the PSD2). A “Payment Account” is defined in the PSD2 as “... an account held in the name of one or more payment service user which is used for the execution of payment transactions” (Recital article 4(12) of the PSD2, European Commission, 2015).

The players (PSPs) and their related activities under PSD now consist of:

- Payment Service Users (PSUs) which are both individuals and corporations making use of a payment service, either as the payer, the payee or both.
- Third-Party Payment Service providers (TPPs) are defined as payment institutions which do not hold payment accounts for its customers and provides Payment Initiation Services (PIS) and/or Account Information Services (AIS). It can act as
 - Payment Initiation Service Provider (PISP) which perform activities such as the facilitation of online banking to make a payment;
 - Account Information Service Provider (AISP) which perform activities such as aggregation of online information for multiple payment accounts in a single place, in order to offer a global view of the customer’s daily finances.
- Account Servicing Payment Service Providers (ASPSP) perform activities such as provision and maintenance of the PSU’s payment accounts. Credit institutions, payment institutions and electronic money institutions can act as ASPSPs as they are authorized, licensed and registered at the highest level under the provisions laid down in the PSD2, but also PISP and AISP.

Who the players are and which activities they perform are illustrated below. This illustration depicts, at a high level the main players and the possible activities they can perform. A more thorough description of these players and their related activities will follow in the upcoming sections, where the players

will have to implement systems and activities in order to comply with the PSD2 and the supplementing RTS.



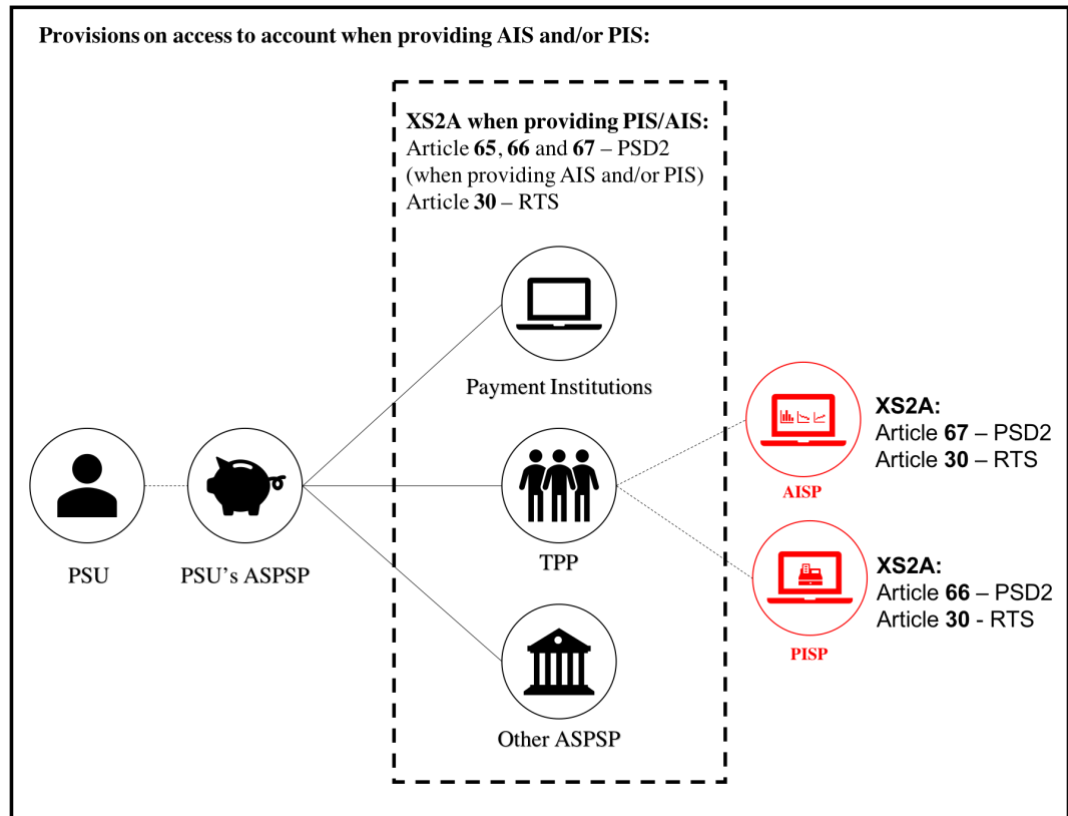
(Adapted from the EPC infographic on PSD2, European Payment Council, 2017a)

Figure 13

6.3.1 Access to Accounts (XS2A)

One of the most important provisions in the PSD2 are the provisions related to access to accounts (commonly referred to as XS2A) and its supplementing provisions in the RTS. With PSD2, the list of activities that PSPs can carry out is being expanded to include access to consumers payment accounts (held at their respective ASPSPs) for payment initiation services (see article 66 “Rules on access to payment account in the case of payment initiation services”, PSD2) and/or account information services (see article 67 “Rules on access to and use of payment account information in the case of account information services”, PSD2), given that the consumer has given their explicit consent to the PSPs to provide PIS and/or AIS.

This is also the case for PSPs issuing card-based payment instruments (CBPII), where the respective ASPSP immediately confirm whether an amount necessary for the execution of a card-based payment transaction is available on the payment account of the payer (see article 65 “Confirmation on the availability of funds”, PSD2). For specific requirements for the common and secure open standards of communication (as will be described later on), article 30 of the RTS applies:



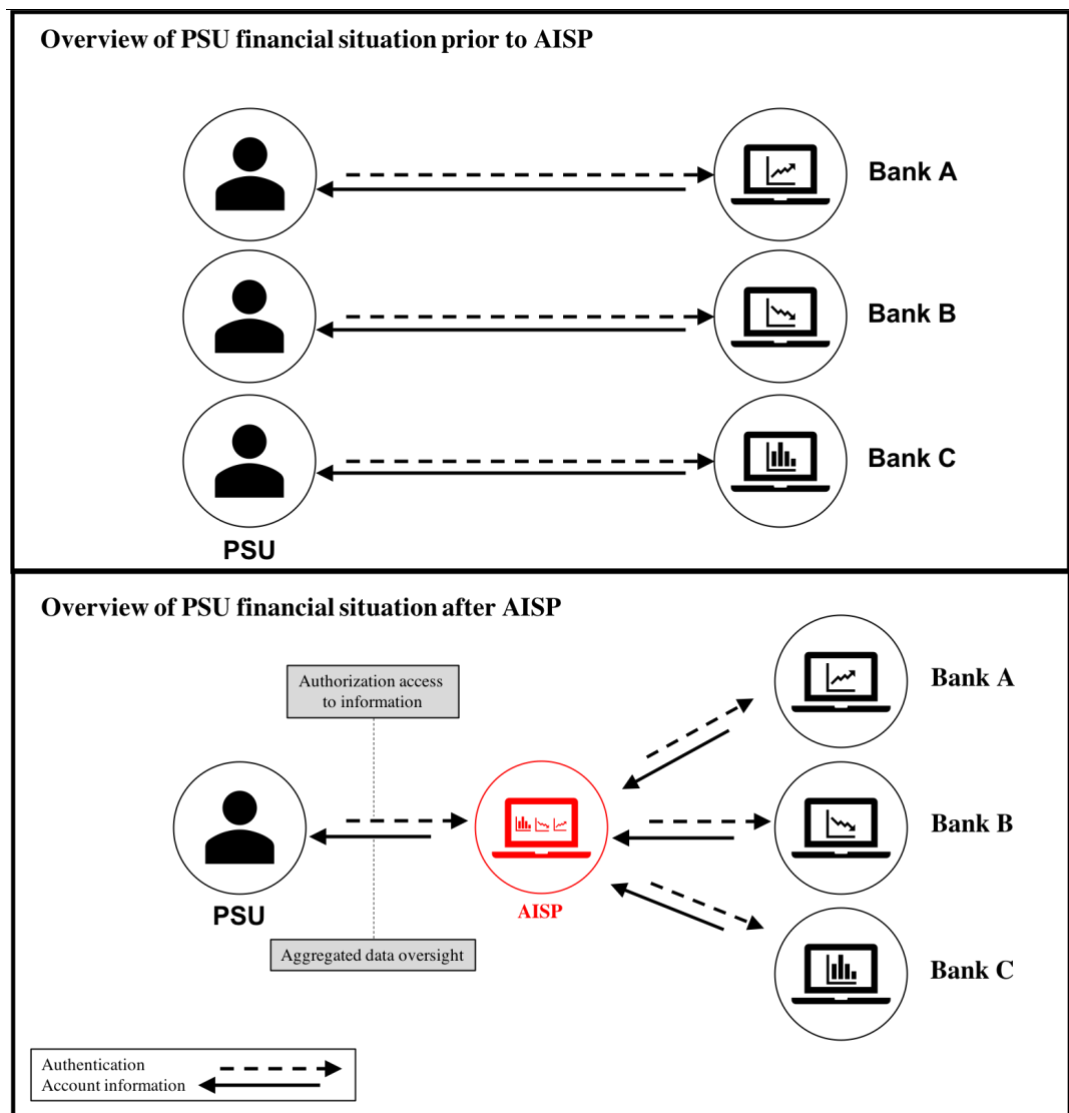
(Source: European Banking Authority, 2018b)

Figure 14

6.3.2 Account information Service Providers (AISP)

AIS are complementary services that have emerged in recent years due to the technological developments. Those services provide the PSU with consolidated online information on one or more payment accounts held with one or several PSPs (article 4(16) of the PSD2) and accessed via online interfaces of the ASPSP. The PSU is thus able to have an overall view of its financial situation immediately at any given moment (point (28) of the PSD2).

Prior to the provisions on AIS and AISPs, the PSU would have to enter each of the online payment accounts held by different ASPSPs manually. Illustrations below shows how a PSU aggregated their financial information prior and after AIS/AISP:



(Source: European Commission, 2015)

Figure 15

According to article 67 “Rules on access to and use of payment account information in the case of account information services” ensures that a PSU has the right to make use of services enabling access to account information (the right does not apply where the payment account is not accessible online). According to this article, the AISP shall provide services only where the PSU have given their explicit consent, ensure that the personal security credentials of the PSU are not, with the exception of the user and issuer of the personal security credentials, accessible to other parties and that when they are transmitted by the AISP, this is done through safe and efficient channels (article 67 (2)(a) and (b)).

The AISP can only access the information from designated payments accounts and associated payment transactions. The AISP cannot request sensitive payment data linked to the payment accounts, neither use, access or store any data for purposes

other than for performing the AIS explicitly requested by the PSU, in accordance with data protection rules (Article 67 (2) (d) to (f)).

In accordance with article 98 “Regulatory Technical Standards on authentication and communication”, the AISP shall, for each communication session, identify itself towards the ASPSP(s) of the PSU and securely communicate with the ASPSP(s) and the PSU.

The ASPSP shall also communicate securely with the AISP in accordance with article 98(1)(d) and treat data requests transmitted through the services of an AISP without any discrimination for other than objective reasons (article 67(3)(a) and (b)). It is important to note that the provision of AIS shall not be dependent on the existence of a contractual relationship between the AISP and the ASPSP for that purpose (article 67(4)).

6.3.3 Payment Initiation Service Provider (PISP)

Since the adaptation of the PSD1 new types of payment services have emerged, especially in the area of internet payments. In particular, Payment Initiation Services (PIS) in the field of e-commerce have evolved. Those payment services play a part in the e-commerce payments by establishing a software bridge between the website of the merchant and the online banking platform of the payer’s ASPSP in order to initiate internet payments on the basis of a credit transfer (point 27, PSD2). This enable payers to use a PISP to initiate a credit transfer instead of using a debit or credit card (only 40 percent of the EU population have a credit card (European Commission, 2018c). When payers choose this option, they agree to share their bank credentials with the PISP. The PISP then initiates a payment for the payer and the ASPSP will then execute the payment and debit the payer’s payment account.

PIS enable the PISP to provide comfort to a payee that the payment has been initiated in order to provide an incentive for the payee to release the goods or deliver the services without undue delay. Such services offer low-cost solution both for merchants and consumers and provide consumers with a possibility to shop online even if they do not possess payment cards (point 29, PSD2).

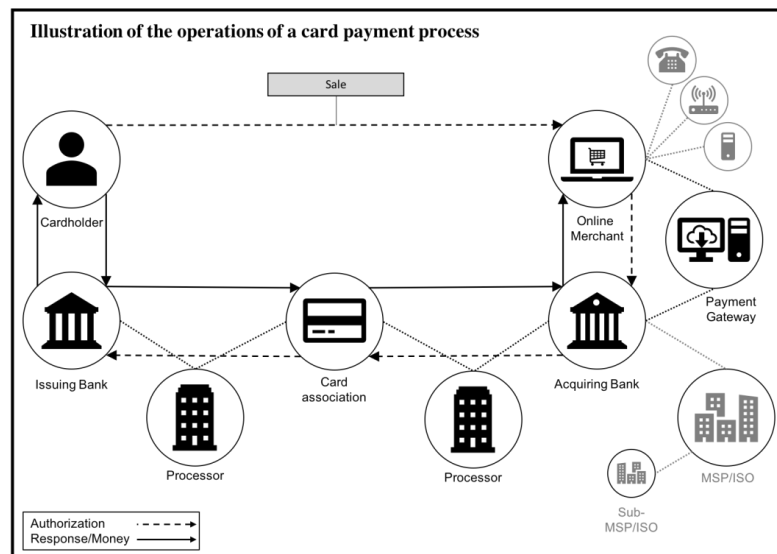
When exclusively providing PIS, the PISP does not at any stage of the payment chain hold the user’s funds. When a PISP intends to provide payment services in

relation to which it holds user funds, it should obtain full authorization for those services (point 31, PSD2).

According to point 33, this Directive, aims at among other things, to guarantee fair competition in the market avoiding unjustifiable discrimination against any existing player on the market. Any PSP, including ASPSP of the PSU, should be able to offer PIS, as illustrated in the “who is who in the new PSD2 world” illustration above.

To illustrate the changes to the payment chain made possible with the provisions on PIS as laid down in the PSD2, three examples can be made by viewing the ASPSP as a PISP, the merchant (as an authorized payment institution) as a PISP and, through an independent TPP exclusively providing PIS as an PISP.

Prior to the provisions laid down in the PSD2, the payment chain went either through a four-party card scheme or a three-party card scheme as described under “payment cards – basic functioning”, page 22 in this Thesis (illustrated below), or through the PSU’s payment initiation performed from their respective online banking module.

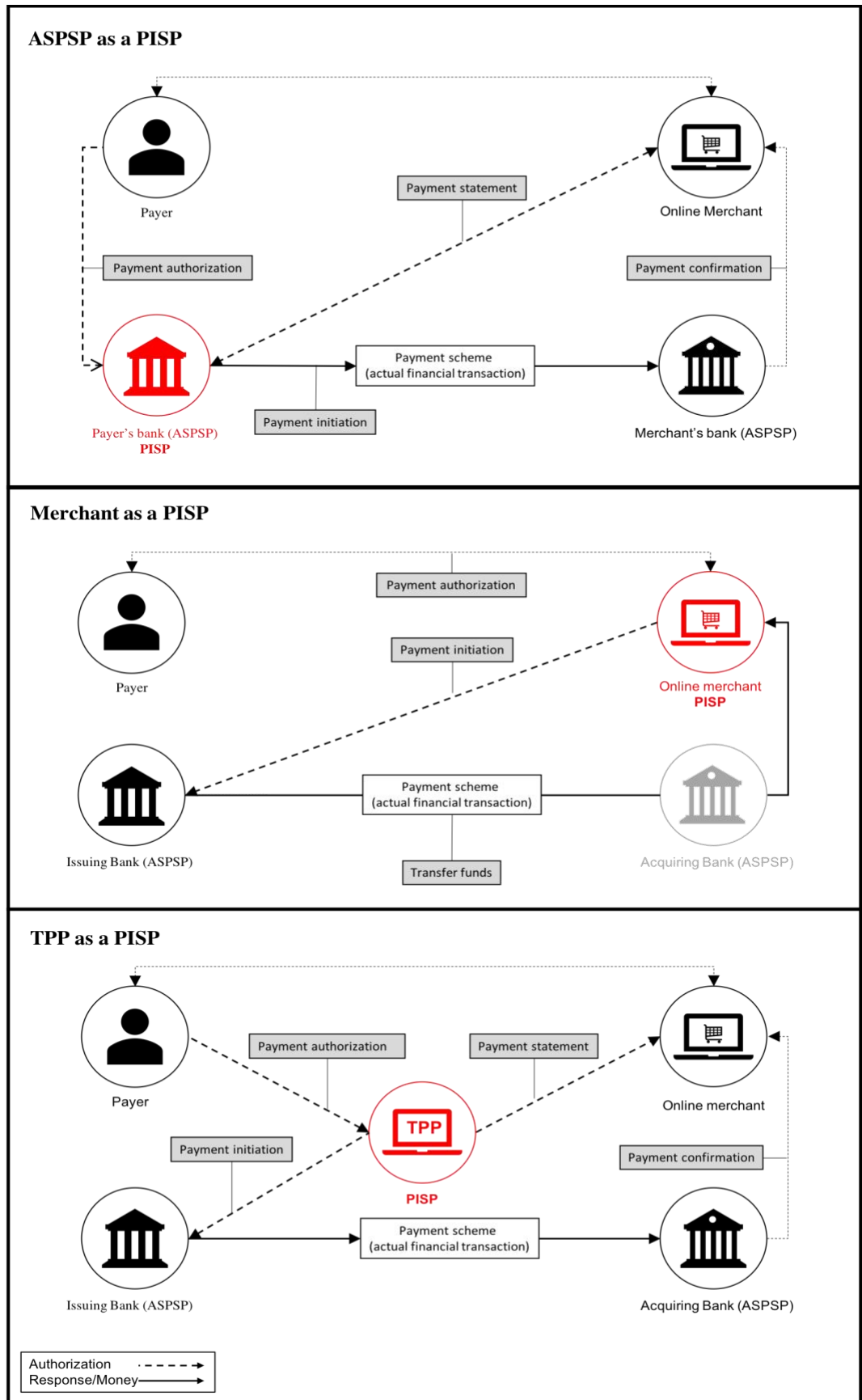


(Self assessment based on information from: Mastercard Incorporated, 2018; PayPal Incorporated, 2018; Visa International Service Association, 2018)

Figure 16

After the implementation, PISP can now directly or indirectly initiate a payment order based on the payer’s explicit consent. The steps will differ depending on the provider providing the payment initiation service (ASPSP, Payment institutions or TPP), but as a general rule the payer will complete a purchase at the merchant’s

webpage by choosing how to initiate the payment, either through their online banking module, a credit card scheme or as illustrated below through a PISP:



(Self assessment based on information provided by the European Commission, 2015)

Figure 17

The PSPs are required to ensure that the following information and conditions are provided or made available by the PSP to the PSU prior to the payment initiation, according to article 45 “Information and conditions”:

- a specification of the information or unique identifier to be provided by the PSU in order for a payment order to be initiated or executed;
- the maximum execution time for the payment service to be provided;
- all charges payable by the PSU to the PSP and, where applicable, a breakdown of those charges;
- where applicable, the actual reference exchange rate to be applied to the payment transaction.

In particular, Member States shall ensure that PISP shall, prior to initiation, provide the payer with, or make available to the payer, the following clear and comprehensive information:

- the name of the PISP, the geographical address of its head office and, where applicable, the geographical address of its agent or branch established in the Member State where the payment service is offered, and any other contract details, including electronic mail address, relevant communication with the PISP; and
- the contact detail of the competent authority.

Article 46 “Information for the payer and payee after the initiation of a payment order”, lay down additional information and conditions specified in article 45, where a payment order is initiated through a PISP, the payment institutions shall, immediately after initiation provide or make available of the following data to the payer, and where applicable, the payee:

- confirmation of the successful initiation of the payment order with the payer’s ASPSP;
- a reference enabling the payer and the payee to identify the payment transaction and, where appropriate, the payee to identify the payer, and any information transferred with the payment transaction;
- the amount of the payment transaction;

-
- where applicable, the amount of any charges payable to the PISP for the transaction, and where applicable a breakdown of those charges.

According to article 66 “Rules on access to account in the case of payment initiation services”, Member States shall ensure that a payer has the right to make use of a PISP to obtain payment services as referred to in point (7) of Annex I (i.e. PIS). The right to make use of a PISP shall not apply where the payment account is not accessible online.

When the payer, in accordance to article 64, gives its explicit consent for a payment to be executed, the ASPSP shall communicate securely with the PISP specified in the RTS in order to ensure the payer’s right to use the PIS. Explicitly, the PISP shall:

- not hold at any time the payer’s funds in connection with the provision of the PIS;
- ensure that personalized security credentials of the PSU are not, with the exception of the user and issuer of the personalized security credentials, accessible to other parties and that they are transmitted by the PISP through safe and efficient channels;
- ensure that other information about the PSU, obtained when providing PIS, is only provided to the payee and only with the PSU’s explicit consent;
- every time a payment is initiated, identify itself towards the ASPSP of the payer and communicate with the ASPSP, the payer and the payee in a secure way in accordance to the RTS;
- not store sensitive payment data of the PSU;
- not request from the PSU any data other than those necessary to provide PIS;
- not use, access or store any data for purposes other than for the provision of the PIS as explicitly requested by the payer;
- not modify the amount, the payee or any other feature of the transaction.

Whereas the ASPSP shall:

-
- Communicate securely with the PISP in accordance to the RTS;
 - Immediately after receipt of the payment order from a PISP, provide or make available all information on the initiation of the payment transaction and all information accessible to the ASPSP regarding the execution of the payment transaction to the PISP;
 - Treat orders transmitted through the services of a PISP without any discrimination other than for objective reasons, in particular in terms of timing, priority or charges vis-à-vis payment orders transmitted directly by the payer.

The provisions of PIS shall not depend on the existence of a contractual relationship between the PISP and the ASPSP for that purpose.

As both AIS and PIS requires valid authentication of the PSU and specific communication channels between providers, the PSD2 is being supplemented by the regulatory technical standards for how the players should provide such mechanisms.

6.4 Regulatory Technical Standards (RTS)

The Regulatory Technical Standards (RTS) were published in the official journal on 3 March 2018 and will legally apply from 14th of September 2019. The RTS are implementation requirements for PSPs to comply with PSD2. They specify the requirements under article 98 of the PSD2 of Strong Customer Authentication (SCA), the exemptions from the application of SCA, the requirements with which security measures have to comply in order to protect the confidentiality and the integrity of the PSUs personalized security credentials, and the requirements for Common and Secure open standards of Communication (CSC) between APSPs, PISPs, AISPs, and other PSPs (European Commission, Directorate-General for Financial Stability, Financial Services, & Capital Markets Union, 2017). In the PSD2, these specific security measures were only addressed through general principles, the RTS are therefore, more concrete than PSD2. The RTS are directly applicable in the Member States of the EU and do not have to be transposed into national law.





The EBA (2017) states that the RTS, consider the various objectives of PSD2 by enhancing security measures, promoting competition, ensuring technology and business-model neutrality, contributing to the integration of payment in the EU, protecting consumers, facilitating innovation and enhancing customer convenience.

For industry participants (PSPs), to meet the deadlines for compliance set in the RTS and its full implementation date in September 2019, they will need to develop or amend the necessary systems, hardware and software, including in the case of ASPSP, building interfaces and infrastructures to support the requirements. As a consequence, the EBA and competent authorities have received numerous of queries to clarify specific issues (European Banking Authority, 2018b). The EBA, published on the 13th of June 2018 “opinion of the EBA on the implementation of the RTS on SCA and CSC”, which will be included in the following text.

6.4.1 Strong Customer Authentication (SCA)

PSD2 aims at reducing the risk of fraud for electronic transactions and enhancing the protection of customers’ data. SCA will have to apply when the PSU is accessing their payment account online (including an aggregated view of their payment accounts, i.e. AIS). The SCA will also apply when the PSU makes an electronic payment and when carrying out any action through a remote channel which imply a risk of payment fraud or other abuses.

To put it simply, the SCA are means to verify the customer’s identity, where for all electronic transactions, the customers identity can be authenticated, using at least two or more of the following independent elements categorized as knowledge (something only the user knows), possession (something only the user possesses) and inherence (something the user is), in that the breach of one does not compromise the reliability of others and is designed in such a way as to protect the confidentiality of authenticated data (European Commission, 2015). And for all remote transaction an extra element (e.g. unique identification code). See description below:

<p>Knowledge</p>  <p>Something only the user <i>knows</i> (e.g. password, PIN...)</p>	<p>Possession</p>  <p>Something only the user <i>possesses</i> (e.g. a card, a mobile phone...)</p>	<p>Inherence</p>  <p>Something only the user <i>is</i> (e.g. biometric identification like fingerprint, iris or voice recognition...)</p>	<p>+ extra element for all remote transactions</p>  <p><i>A unique authentication code which dynamically links the transaction to a specific amount and a specific payee (for remote Internet and mobile payments)</i></p>
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(Adapted from the European Payment Council, 2017b)

Figure 18

6.4.1.1 Exemptions from Strong Customer Authentication

The RTS list a number of possible exemptions, to keep electronic payments as convenient and seamless as possible. These exemptions are laid down in chapter III, article 10 to 18 of the RTS. According to article 1(b) in the RTS exemptions of the application of the security requirements of SCA, are subject to specified and limited conditions based on the level of risk, the amount and the recurrence of the payment transaction and of the payment channel used for its execution.

According to article 10 “payment account information” SCA will not apply when a PSU is limited to accessing either the balance of one or more designated payment accounts and/or the payment transactions executed in the last 90 days through one or more designated payment account without disclosure of sensitive payment data (Article 10 relates to access to data in general). These exemptions shall not apply (i.e. SCA will apply) when the PSU is accessing the online information for the first time or when more than 90 days have elapsed since the last time the PSU accessed online information and SCA was applied.

Contactless electronic payments are not subject to SCA when the individual amount of the contactless electronic payment transaction does not exceed €50, except when a cumulative value of €150 is reached or when five contactless payments of up to €50 have been made (article 11 “Contactless payments at point of sale”, RTS). The EBA clarified the issue of whether or not both the limit based on the number of transactions (five) and the limit based on monetary amount (€150) shall be met. The EBA (2018c) have decided that the cumulative limit is either the limit based on the number of transactions or the monetary amount (but not both). The PSP can therefore choose to decide which cumulative limit they use.

Article 12 “Unattended terminals for transport fares and parking fees” exempt SCA where the payer initiates an electronic payment transaction at an unattended payment terminal for the purpose of paying a transport fare or a parking fee.

As a general rule, PSPs shall apply SCA where a payer creates or amends a list of trusted beneficiaries through the payer’s ASPSP. Article 13 “Trusted beneficiaries” in the RTS exempts SCA where the payer initiates a payment transaction and the payee is included in a list of trusted beneficiaries previously created by the payer.

When it comes to recurring payments PSPs shall apply SCA when a payer creates, amends, or initiates for the first time, a series of recurring transactions with the same amount and with the same payee. PSPs are not required to apply SCA for the initiation of all subsequent payment transactions included in recurring payments as mentioned above (Article 14 “recurring payments”, RTS).

For remote payments (electronic and mobile) of low value which do not exceed €30, SCA is not required unless the cumulative amounts to €100 is reached or when five payments of up to €30 each have been made (Article 16 “Low-value transactions”, RTS). As with contactless electronic payments, it is the PSP that decides which cumulative limit they use.

Corporate payments are not subject to SCA if dedicated payment processes and protocols are used and if the national competent authority is satisfied with their level of security (Article 17 “Secure corporate payment processes and protocols”, RTS).

Lastly, when fraud rates observed by the PSP are lower than the pre-set reference fraud rate (as described in the Annex to the RTS), SCA shall be allowed not to apply (European Payment Council, 2017b).

In the case of an unauthorized payment, where SCA measures were not in place, and the payer did not act fraudulently, PSD2 foresees that the payer can claim full reimbursement from their PSP (European Payment Council, 2017b), which will make PSPs responsible for SCA application. However, Article 97(2) of PSD2 states that the ASPSP shall allow PISP and AISP to rely on the authentication procedures provided to its PSU and article 67(2)(b) states that the security credentials are accessible to the AISP and PISP. Article 30 of the PSD2 states that the personalized security credentials used for SCA by the PSU or by the PISP are usually those issued by the ASPSP. According to the EBA (2018c), these articles can be read in

conjunction with one another, meaning that the PSP applying SCA is the PSP that issues the personalized security credentials. It is consequentially, the same PSP that decides whether or not to apply exemption in the context of AIS and PIS. The ASPSP may also be contracting with other providers e.g. wallet providers or PISPs and AISP for them to conduct SCA on the ASPSPs behalf and determine the liability between them. PISP and AISP may, in addition, want to issue their own credentials for accessing their own platform, however, according to the EBA only ASPSP can apply SCA or decide whether or not an exemption applies to a PSU's payment account in the context of AIS and PIS (European Banking Authority, 2018c)

6.4.2 Common and Secure Communication (CSC)

How the access to the customer's account is shared between the ASPSP and the PISP or the AISP are further requirements laid down in section 2: "Specific requirements for the common and secure open standards of communication" (CSC) of the RTS. Article 30 "General obligations for access interfaces" of the RTS specifies that the ASPSPs shall establish the interfaces by means of a dedicated interface or by allowing the use by PSPs of the interfaces used for authentication and communication with the ASPSP's PSUs. Hence there are two possible secure communication channels: (1) a dedicated communication interface, which is the creation of an Application Programming Interface (API) and, (2) via the adaptation of the customer online banking interface.

6.4.2.1 Application Programming Interface (API)

APIs are standardized interfaces who are powerful facilitators and drivers of digital businesses. It has commonly been used for sharing data and interconnecting platform solutions with Third-Party Providers, but the scope of API stretches beyond their use in exchange of data. API come in many shapes and forms, varying from private (internal within one organization), to partner (between organizations and public ("open") versions. It allows companies to adopt a modular approach for quickly and cost-effectively creating and scaling new businesses. In all instances, APIs come with technical specifications, testing facilities and clarity under which legal and operational conditions the APIs can be used (Foerster, Rolfe, & Brown, 2017).

Large technology companies such as Facebook, Google, Amazon, Twitter and Uber offer APIs to third parties to login or to initiate messengers, to exemplify the use of API, Uber is a great example of the possibility’s API brings. Uber uses Google Maps API to locate customers and track drivers. For instant messengers, Uber uses Google’s cloud Messaging API and PayPal Braintree API for payments. In addition to using third-party API Uber have developed its own API and provided it to other companies, such as restaurants to extend the reach of their services (Sandrock & Firnges, 2016).

The RTS lays out specific requirements that ASPSP dedicated interfaces (APIs) shall comply with. Where the ASPSP chooses to develop a dedicated interface, this will require a six months period for other providers to be able to test the interface. The main requirements for dedicated interfaces and API initiatives includes, but are not limited to the list provided by the EBA (2018b):

Requirement	Article
Enabling CBPIIs, AISPs and PISPs to access the necessary data from payment accounts accessible online	Article 65, 66 and 67 PSD2 Article 30 RTS
Conforming to (widely used) standard(s) of communication issued by international or European standardization organizations	Article 30(3) RTS
Allowing the PSU to authorize and consent to a payment transaction via a PISP	Articles 64(2) PSD2 Articles 30(1)(c) RTS
Enabling PISPs and AISPs to ensure that, when they transmit the personalized security credentials issued by the ASPSP, they do so through safe and efficient channels	Articles 66(39)(b) and 67(2)(b) PSD2
Enabling the identification of the AISP/PISP/CBPII and supporting eIDAS certificates	Articles 65(2)(c), 66(2)(d) and 67(2)(c) PSD2 Articles 30(1)(a) and 34 RTS
Allowing 90-day reauthentication for AISPs	Article 10(2)(b) RTS
Enabling the ASPSPs and AISPs to count the number of access requests during a given period	Article 36(5) RTS

Allowing a change control process	Article 30(4) RTS
Allowing the possibility of cancelling an initiated transaction in accordance with PSD2, including recurring transactions	Articles 64(2), 80(2) and 80(4) PSD2
Allowing error messages explaining the reasons for the unexpected event or error	Article 36(2) RTS
Supporting access via technology service providers on behalf of authorized actors	Article 19(6) PSD2
Allowing AISPs and PISPs to rely on all authentication procedures issued by the ASPSP to its customers	Article 97(5) PSD2 Article 30(2) RTS
Enabling the AISP to access the same information as is accessible to the individual consumer and corporates in relation to their designated payment accounts and associated payment transactions	Article 67(2)(d) PSD2 Articles 30(1)(b) and 36(1)(a) RTS
Enabling the ASPSP to send, upon request, an immediate yes/no confirmation to the PSP (PISP and CBPII) on whether or not there are funds available	Article 36(1)(c) RTS
Enabling dynamic linking to a specific amount and payee, including batch payments	Article 97(2) PSD2 Article 5 RTS
Enabling the ASPSP to apply the same exemptions from SCA for transactions initiated by PISP as when the PSU interacts directly with the ASPSP	Articles 18(2)(c)(v) and (vi), 18(3), 30(2) and 32(3) RTS
Enabling SCA composed of two different elements	Article 4 RTS
Enabling security at transport and application levels	Articles 28 and 35 RTS
Supporting the needs to mitigate the risk of fraud, have reliable and auditable exchanges and enable providers to monitor payment transactions	Article 97(3) PSD2 Articles 3, 22 and 35 RTS
Allowing traceability	Article 29 RTS
Allowing the ASPSP's dedicated interface to provide at least the same availability and performance as the user interface	Article 32 RTS

(Recital of Table 1. Main requirements for dedicated interfaces and API initiatives, P. 3 and 4 of the EBA's opinion on SCA and CSC: European Banking Authority, 2018b)

Figure 20

The ASPSP has to provide a “fall-back mechanism”, which are measures to be taken in case of API malfunction. The “fall-back mechanism” should restore the access to the customer payment account in such case. There are three exceptions made to

this criterion: (1) if the API meets the quality criteria defined in the RTS; (2) if the API has been successfully tested by the market and; (3) approved by the national competent authority (which itself should have consulted the EBA, to ensure a consistency of quality criteria for APIs) (European Payment Council, 2017a).

6.4.2.2 CSC via the adaptation of the customer online banking interface

The second approach to deliver CSC are through the customers online banking interface already provided by the ASPSP to their customers. The TPPs will, by using this method, be able to access the customer's payment account by using their interface and their personalized security credentials with a secure authentication of the TPP. This can be described as a sophisticated "screen-scraping" version. "Screen scraping" means accessing the data through the customer interface with the use of the customer's security credentials, through screen scraping TPPs can access customer data without any further identification vis-à-vis the banks (European Commission, 2017) and will therefore be prohibited as screen scraping collects data beyond what is needed for payment transactions.

Neither the PSD2 nor the RTS requires the market players to impose either a dedicated interface system or through the customers online banking interface. It is up to the individual players to decide which method to use for CSC.

6.5 General Data Protection Regulation

Article 94 in the PSD2 "Data protection" states that Member States shall permit processing of personal data by payment systems and PSPs when necessary to safeguard the prevention, investigation and detection of payment fraud. Further, the provision of information to individuals about the processing of personal data and the processing of such personal data and any other processing of personal data for the purpose of the PSD2 shall be carried out in accordance with Directive 95/46/EC (Article 94 of the PSD2, European Commission, 2015).

On the 24th of May 2016 the EU Regulation (EU) 2016/697 (commonly referred to as the General Data Protection Regulation, hereinafter referred to as the GDPR) repealed Directive 95/46/EC (European Parliament & Council of the European Union, 2016). This means that account holders can exercise control over the transmission of their personal data under both PSD2 (as laid out in the sections above) and through the GDPR.

The GDPR significantly revised and harmonized how consumers' personal data shall be protected in the EU and entered into effect on 25th of May 2018. In an interview with Gert Heynderickx, European Payments Council Legal Counsel and Company Secretary on the 14th of February(2018) he laid out what this will concretely mean for PSPs:

Following the provisions of the GDPR, PSPs can process personal data either with the consumers consent or because processing is required (e.g. to ensure the performance of a contract, to comply with legal obligations, to safeguard the consumers vital interests or for the purpose of legitimate interests (for example to combat fraud)).

For PSPs, GDPR means that the territorial scope has been widened, processing of personal data strengthened, and individual rights increased. Most important for PSPs however are the increased accountability requirements which includes the "privacy impact assessment" (PIA), broader notification duties for data breaches, the requirements to appoint a Data Protection Officer (with exemptions) and the partially new, partially stricter requirements for "privacy by design" and "privacy by default" (i.e. the obligations to implement appropriate technical and organizational measures to protect the security of personalized data for their clients. If PSPs are not compliant with these requirements a fee of up to €20,000,000 or 4 percent of the worldwide group turnover will be imposed (Heynderickx, 2018).

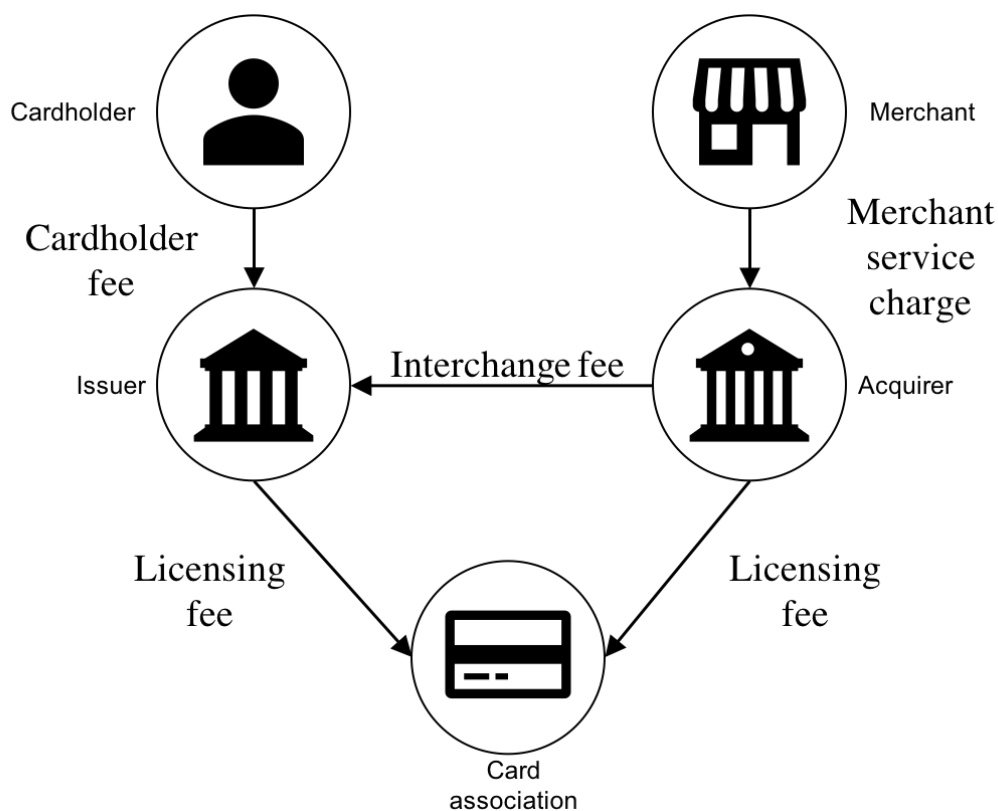
6.6. Interchange Fee Regulations (IFR)

PSD2 is being complemented by Regulation (EU) 2015/751: "on interchange fees for card-based payment transactions" (Interchange Fee Regulation - IFR) to further harmonize the legal framework and to further reduce consumers costs related to card payments.

IFR introduces, in particular, rules on the charging of interchange fees for card-based transactions, bans surcharges for consumer debit and credit card payments and aims to further accelerate the achievement of an effective integrated market for card-based payments.

Interchange fees for card-based payment transactions are paid from the merchant's PSP (acquirer) to the cardholders PSP (issuer), as a percentage of and/or a fixed amount for each transaction made by the cardholder. The caps were set to 0.2 percent for debit card and 0.3 percent for credit card payments in the EU. Which

was considerably lower than the EU average in 2013 of 0.31 for debit cards and 0.92 percent for credit cards (Euromoney Sibos, 2013). The issuing banks are particularly impacted by the fee caps, as their revenue to a large degree are generated from the interchange fee (see illustration below):



Source: based on information from IFR Fact Sheet (European Commission, 2016)

Figure 19

The revenue loss for issuing banks from the interchange fee caps in the largest seven EU economies (Germany, France, UK, Italy, Spain, the Netherlands, and Poland) amount to €3.7 billion (i.e., three percent of total bank payment revenues) (Cortet et al., 2016). In addition to capping interchange fees, the IFR also aims to improve transparency and competition in the card market. The Interchange fee caps came into effect on 9 December 2015, whereas the majority of provisions relating to business rules (for each newly issued card – whether debit, credit, prepaid or commercial – to be visibly and electronically identifiable) entered into force 9 June 2016.

In a press release on January 12, 2018 from the European Commission Valdis Dombrovskis (Vice-President responsible for Financial Stability, Financial Services and Capital Market Union) said about PSD2 and the IFR: “This legislation (i.e. PSD2) is another step towards a digital single market in the EU. It will promote the development of innovative online and mobile payments, which will benefit the

economy and growth. With PSD2 becoming applicable, we are banning surcharges for consumer debit and credit card payments. This could save more than €550 million per year for EU consumers. Consumers will also be better protected when they make payments” (European Commission, 2018d). Consumers will also be better protected when they make payments” (European Commission, 2018d).

6.7 Other related acts

In addition to the PSD2, RTS, GDPR and IFR, as explained above, European regulators are seeking to enhance security measures, introduce risk reduction and management procedures and data protection requirements for electronic transactions through other related directives such as:

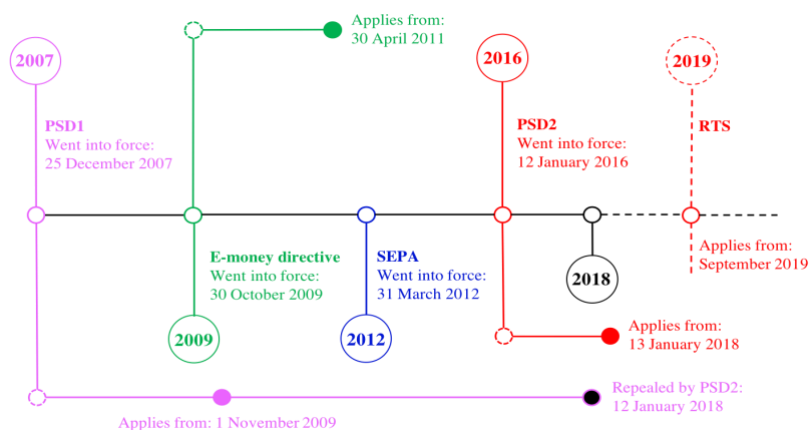
- the Fourth Anti-Money Laundering Directive (AML 4);
- Anti- Terrorism Financing (AFT);
- regulation on Electronic Identification and Trusted Services (eIDAS) (29 September 2018);
- Directive 2014/92/EU) - a directive relating to the comparability of fees related to payment accounts, payment account switching and access to payment accounts; and
- Regulation (EU) 2015/847 - a regulation on information accompanying transfers of funds.

6.8 Timeline on recent legislatives

To summarize, there are today three main legislatives related to the European payments market as described on the European Commission’s webpage: PSD2, EMD and SEPA. The Commission states that these legislatives should guarantee the same rules all over the EU, clear information on payments, fast payments, consumer protection and a wide choice of payment services

The EU created common rules for payments with the adoption of the PSD1 in 2007. PSD1 established the same set of rules on payments across the whole EEA, covering all types of electronic and non-cash payments. PSD1 provided rules on the information that PSPs have to give to their consumers and about the rights and obligations linked to the use of payment services. PSD1 introduced “payment institutions”, a new category of PSPs, which have increased competition and consumers choice of payment services. PSD1 also laid down the groundwork for

the SEPA initiative, which allows consumers and business to make payment under the same conditions across the euro area. In 2015, the EU adapted the PSD2 to improve existing rules and bringing new digital players within the scope of the PSD. PSD2 includes provisions to make it easier and safer to use internet payment services; better protection of consumers against fraud, abuse, and payment problems; promote innovative mobile and internet payment services; strengthen consumer rights and the role of the EBA to coordinate supervisory authorities and draft technical standards. PSD2 came in a package that also included a regulation in multilateral interchange fees. Together PSD2 and IFR will limit the fees for transactions based on consumers debit and credit cards and ban retailers from imposing surcharges on customers for the use of these types of cards (European Commission, 2018b).



(Source: European Commission, 2018b)

Figure 20

7. Literature Review

Several different perspectives in strategic management research have been developed and researched in the search of explaining the survival and success of a firm. These perspectives have dramatically changed our interpretation of firm success over the years. The early work by Chandler (1962), Ansoff (1965), and Learned, Christensen, Andrews, and Guth (1965/1969), laid the foundation of what is today a comprehensive body of research within the strategic management field. In the 1960s, the aforementioned authors built their research on classical management theories introduced by Barnard (1938), Selznick (1957), and Penrose (1959), among others (Hoskisson, Hitt, Wan, & Yiu, 1999). According to Chandler (1962) strategy is “the determination of the basic long-term goals and objectives of an enterprise, and the adaptation of courses and action and the allocation of resources necessary for carrying out the goals” (Chandler, 1962). Chandler (1962)

further defined structure as “the design of organization through which the enterprise is administered” (Chandler, 1962). According to Hoskisson et al. (1999) changes in strategy can therefore be interpreted as responses to opportunities or needs created by changes in the external environment (e.g. technological innovation). In this time-period, the focus was on the internal competitive resources and aimed at identifying firms’ “best practices” that contribute to firm success (Ansoff, 1965; Learned et al., 1965/1969).

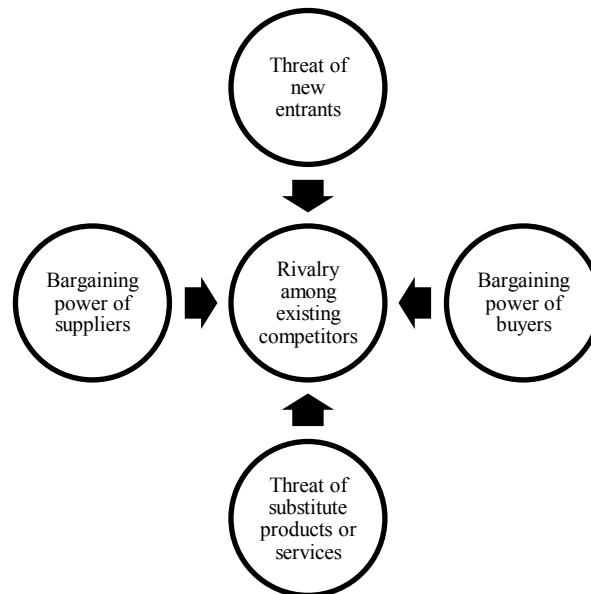
In the 1970s and 1980s the strategic management research shifted direction from the firms’ internal factors toward the firms’ external factors. Research that previously were dominated by inductive, case studies on a single firm or industry, had now turned towards deductive, large-scale statistical analysis seeking to validate scientific hypotheses (Hoskisson et al., 1999). The shift had been influenced by industrial organizations (IO) economics, where (Bain, 1956, 1968) introduced the structure-conduct-performance (S-C-P) paradigm. Bain (1968) was concerned with “the environmental settings within which enterprises operate and how they behave in these settings as producers, sellers, and buyers” (Bain, 1968). This turned the internal view of the firm into an external approach, where the primary unit of analysis was the industry or competing groups of firms. As summarized by M. E. Porter (1981) the S-C-P paradigm can be explained as “that a firm’s performance is primarily a function of the industry environment in which it competes; and because structure determines conduct (or conduct is simply a reflection of the industry environment), which in turn determines performance, conduct can be ignored and performance can, therefore, be explained by structure.

Michael Porter employed an Industrial Organization (IO) economic logic to utilize a structural analysis approach to understand the structure of an industry (M. E. Porter, 1980). Porter focused on competition outside the firm’s immediate and existing rivals. To specify the various aspects of an industry structure, Porter (1980) developed his famous “Five Forces Model”, which is a useful analytical tool to assess an industry’s attractiveness and facilitates competitor analysis. According to M. E. Porter (1980, 1985, 1996), the ability for a firm to gain competitive advantage rests mainly on how well it positions and differentiates itself in an industry to make profit, and that the state of competition depends on five basic forces; bargaining power of suppliers; bargaining power of buyers; threat of substitute products or services; threat of new entrants; and rivalry amongst existing competitors.

According to M. Porter (2008), these forces influence both short and long term profits in an industry.

7.1 Porter's framework for competitive analysis

The framework presented below will be used as our main tool in order to fully understand the competitive environment and attractiveness of the European payments industry. It has been applied by scholars and industry researchers for decades and are still finding its way into modern day research. We find this framework somewhat superior in comparison to other frameworks and methods within industry analysis duo to its effective and analytical components.



(Source: M. E. Porter, 1980)

Figure 21

With in-depth understanding and analysis of these competitive forces, M. Porter (2008) argues for a greater understanding of the essence of profitability and forthcoming competition over time in an given industry.

7.1.1 Threat of new entrants

The first industry force to investigate when going through the five forces framework is the threat of new entrants into the current industry. For incumbents this is especially interesting since these possible new entrants could possess innovative and cutting-edge technology and resources that could bring a competitive and destabilizing factor for the incumbents in the market. These new entrants may try to take over some of the already “distributed” market share which will facilitate a pressure on the industries prices, costs and investments cost to compete if the threat is high. This threat is especially high if firms/incumbents from other industries

leverage their already well-established resources and competences to compete in another industry (M. Porter, 2008). As Porter (2008) emphasize, this step in the five forces analysis is not to explain whether the industry experience new entrants, but the threat of it which relates to how high the barriers to entry are and how incumbents will react when new firms enter the market. If these two factors are high, the threat of entry is low. Porter (2008, pp. 31-32) proposed seven major sources for barriers to entry which can be applied in a five forces analysis:

1. *Supply-side economics of scale* refers to when firms in an industry reap benefitting effects in terms of lower unit cost when producing at a large scale. Firms may then benefit from higher surplus which can be used on R&D and efficiency improvements among others.
2. *Demand-side benefits of scale* refers to when the demand and willingness to pay for a firm's product increases in line with its popularity. M. Porter (2008) refers this to the same as the network effect. In addition to the network effect, this could also be explained by long lasting firms with a strong built up trust.
3. *Customer switching costs* is the cost customers are faced with if they were to switch supplier. An example of switching cost is the cost of training staff for a new it-system if a firm decides to switch from one system to another.
4. *Capital requirements* refers to the investments needed to enter a market. These can e.g. be legal capital requirements for opening up a or investments in machinery for production.
5. *Incumbency advantages independent of size* lies in the advantage's incumbents have over potential entrants regardless of their size and resources. These can be proprietary technology, best access to raw materials cumulative experience or established brand identity.
6. *Unequal access to distribution channels* refers to the relatively access to distribution of entrant's products. This could be distribution through super markets, where the competition for store shelves are high. Without a distribution channel new entrant will struggle to sell their products. And in some cases, incumbents are able to set up agreements with distributors which omit them from distributing for others.
7. *Restrictive governance policy* refers to regulatory requirements or restrictions imposed into the market by governments.

Porter (M. Porter, 2008, p. 32) emphasize that “entry barriers should be assessed relative to the capabilities of potential entrants”.

7.1.2 Bargaining power of suppliers

This industry force relates to the relative force industry suppliers have in the industry. For suppliers with high industry power; prices, quality, quantity and profitability of products delivered in the market is in a sense directed and squeezed out by them, letting them capture the majority of the industry’s value. Porter (2008, pp. 33-34) suggest that a group of suppliers is powerful if:

1. It is more concentrated than the industry it sells to
2. The supplier group does not depend heavily on the industry for its revenues
3. Industry participants face switching costs in changing suppliers
4. Suppliers offer products that are differentiated
5. There is no substitute for what the supplier group provides
6. The supplier group can credibly threaten to integrate forward into the industry

The bargaining power of buyers have a strong influence on the bargaining power of suppliers and vice versa. The side (supplier or buyer) where the power is highest, will in most cases result in inequitable distribution of surplus.

7.1.3 Bargaining power of buyers

This force refers to the power customers have in the market, and whether they have leverage to negotiate to participants in the industry. If the bargaining power of buyers is high, the competition between industry participants is high. This often reduces prices and improves product quality with the demand from buyers. Industries with high bargaining power of buyers is often characterized with low profitability.

A group of customers bargaining power is high if there is:

1. Few numbers of buyers
2. Undifferentiated and standardized products in the industry
3. Low switching cost
4. Credible threat of backward integration from buyers

Further, the price sensitivity of buyer group is high if:

1. The product purchased is a significant amount of their cost structure

-
2. Low profits in buyer group
 3. The products quality has little effect on the buyer's product
 4. The bought product's effect on other costs is low

The understanding of these buyer power sources can be emphasized in the same way for business-to-business customers as well as for end consumers.

7.1.4 Threat of substitute products or services

Porter (2008, p. 36) explains a substitute product or service as something that “performs the same or similar function as an industry's product by a different means”, where one example given is the substitution of travels with video conference or one material substituting another. These substitutions can both be highly related and almost not related at all where the material of a product can e.g. be changed from metal to plastic and the substitution from people living in houses with gardens to apartments will affect the sales of e.g. lawnmowers. Porter (M. Porter, 2008) further explains that substitute products and services will always be present in an industry and that these substitutes are easily overlooked since the relation seems so unlikely. The profitability of an industry is highly affected by the threat of substitution; thus, a high substitution threat puts pressure on an industries profitability. M. Porter (2008, p. 36) further argues that the threat of a substitute is high if:

1. It offers an attractive price- performance trade- off to the industry's product.
2. Low switching cost for a substitution for the buyer's

Overall, the threat of substitution can have both positive and negative effects on an industry, whereas executives and strategists should understand and act upon threatening substitutions due to their potential devastating effects.

7.1.5 Rivalry among existing competitors

Rivalry amongst existing competitors are observed in various forms. It can vary from price wars, competitive marketing and introduction of competitive products, whereas a high degree of rivalry amongst existing competitors often puts a cap on an industries potential profitability. Although, this depends on the intensity of the competition and the basis of the competition. Porter (2008, p. 37) suggests that the rivalry intensity is greatest if:

1. Competitors are numerous or are roughly equal in size and power

-
2. Slow industry growth
 3. High exit barriers
 4. Rivals are highly committed to the business and aspire for leadership
 5. Familiarity deficiency among industry players leading to weak ability to read each other

Further the likelihood of competitive pricing is most likely to occur when there is:

1. Close to identical products and services and low switching cost for buyers
2. Low marginal cost and high fixed costs
3. Large capacity stages are needed for efficiency
4. Perishable products

(M. Porter, 2008, p. 38)

Porter (2008) further elaborate that competition on other factors such as delivery time and product features among others is not a certain indicator of price competition, but can be a facilitator for product improvements and improved value for customers, which can support the industry prices or even an increase.

7.2 Value Network

As strategic management theory has further been developed from internal and external view of the firm in the 1960s and 1970/80 respectively, a network theory approach has been conducted in recent times. The central argument of network research is that “actors are embedded in networks of interconnected social relationships that offer opportunities for and constraints on behavior” (Brass, Galaskiewicz, Greve, & Tsai, 2004). As the payment industry is moving towards “open-banking” where collaboration between start-ups and incumbents may play a vital role for the survival of firms, this view plays an important role to the future of payments. Baum, Calabrese, and Silverman (2000) highlighted previous research on the benefits of strategic alliances where value is created through interorganizational relationships for accessing resources (such as knowledge, complementary assets, access to external legitimacy and status) and creating competitive advantages. Through strategic alliances a firm therefore may influence its capabilities as well as others perceptions of its capabilities (Baum et al., 2000).

In Stabell and Fjeldstad (1998) framework for value configurations they separated how organizations generated value into “value shop”, “value chain” and “value networks”. Further, they described the value network as “firms that create value by

facilitating a network relationship between their customers using a mediating technology” (Stabell & Fjeldstad, 1998, p. 414), defined by Christensen and Raynor (2003, p. 44) as “the context within which a firm establishes a cost structure and operating processes and works with suppliers and channel partners in order to respond profitably to the common needs of a class of customers”.

Going further with the description on value network given by Fjeldstad and Stabell (1998), they distinguish the network effect, or the linking as they call it, into direct and indirect. To illustrate, a study done by Economides and Himmelberg (1995) on the US fax industry found that the real facilitator for its swift adoption and value was the direct network effects where the value lied in the number of users that accepted and used the same technology (fax). Here, the dependence on the networks power lied in the number of users adopting the fax as a means for transforming information. The higher increase of users, the higher the power of the network. The description given above is a good example of positive network effects. Here, the impacting factor is the relative change in network adopters, which further changes the utilization for every network user, or banking platform user as a link to the payments industry, attained from using it (Zachariadis, 2011; Zachariadis & Ozcan, 2017). Another example given in Saloner and Shepard (1995) study on the adoption of automated teller machines, found that the increased installations of ATMs increased its value due to connectivity for both banks and cardholders. These network effects are utilized in almost all platform businesses, whereas the utilization of them in the right way can bring lucrative benefitting effects. As to the payments industry and open banking, which is to be described a value network, the succeeding of attracting the right number of users on both sides of your platform may be a survival criterion.

In contrast to direct network effects, most of the existing payments network such as Visa and Master Card today demonstrate indirect network effects where the value of a credit card for a user depends on the number of merchants that has adopted it into that exact network, and not on the number of other credit card users. The indirect factor here is that the more credit card users increase, the more merchants adopt it. Therefore, the amount of credit card users indirectly effects the value and power of the network. Therefore, in these kinds of networks the direct and indirect network effects are therefore the same (Church, Gandal, & Krause, 2003).

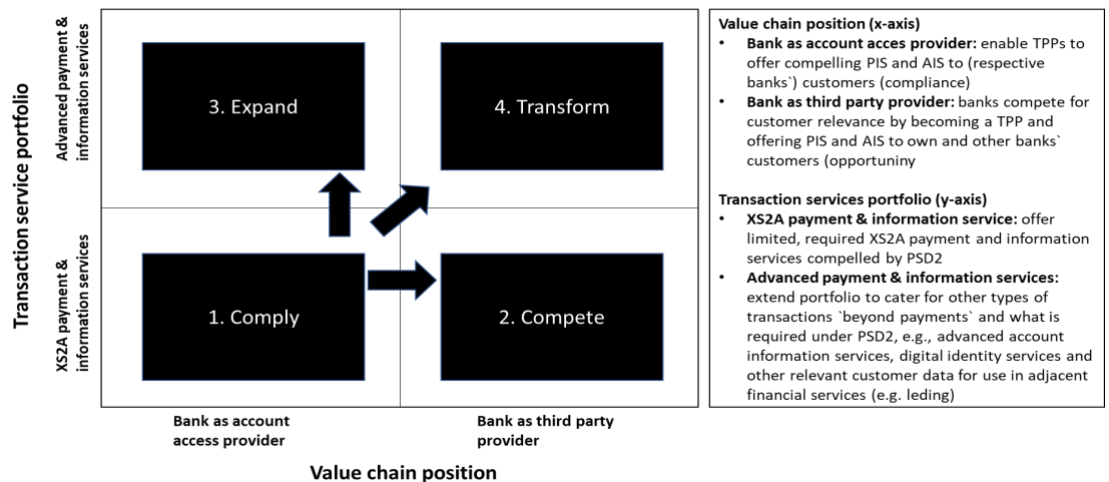
As Christensen and Raynor (2003, p. 44) emphasize, for firms within a value network, it is their competitive strategy, cost structure, market and customer segmentation that determines the expected value of a sustaining or disruptive innovation. In relation to network industries and regulations, Martin, et al., (2005) investigated the impact prior EU regulations have made on network industries such as telecommunications, energy and air transportation. In all four network industries their results showed substantial evidence of a reduced consumer price, in addition the likelihood for new product- and industry entrants increased in line with the supply and demand side. Further, they emphasized that the stabilization of these network industries, with emphasize on the aforementioned factors, will most likely take a relative amount of time.

7.3 Banks strategic approach to PSD2

With the implementation of PSD2 banks strategic choice and positioning is high on the present agenda for relevant scholars and executives. What should they do? And how should they approach it? In this section we will summarize, and present researchers propositions to what strategic choices and business models' players, with emphasize on incumbents, in the European payments landscape proposedly could be faced with in relation to the implementation of PSD2. As one of the research questions for this thesis is narrowed down "*Based on the changes made in the PSD2 and on incumbents' reactions to these changes, what strategic approaches should new third-party payment service providers take in order to successfully enter the market?*" we see research on strategic approaches and business models incumbent credit institutions could follow as of high importance. Incumbent credit institutions direction and choice of how to tackle both challenges and opportunities presented with PSD2 can be seen as a direct link to how TPPs will go about their approaches.

In light of the implementation of PSD2, Cortet et al. (2016) identified changing consumer behaviour, technology driven innovation and European regulatory intervention as three main drivers for digital transformation within the European banking sector, and especially the payments landscape. The last aforementioned driver has its main focus on the implementation of PSD2 and the strategic implications for banks where TPPs are enabled to build account information and payment initiation services on top of banks payments infrastructure through open APIs. Cortet et al. (2016) suggests that incumbents must ask themselves "what

should their positioning be in the payments value chain, and what should the breadth of their transaction services portfolio be?”. In light of this Cortet et al. (2016) proposed four possible strategic choices with the implementation of PSD2; comply; compete; expand and; transform (see figure 22), while Foerster et al. (2017, p. 12) suggested five value generating business models in light of PSD2 and open banking services; Third-party module sourcing; Third-party data sourcing; Banking module provider; Banking data provider and; Digital platform.



(Source: Cortet et al., 2016, p. 21)

Figure 22

The propositions by Cortet et al. (2016) and Foerster et al. (2017, p. 12) holds several similarities when it comes to strategic rationales and value driving factors. As for the first strategic proposition by Cortet et al. (2016), “comply”, all players in the financial industry have to oblige to the rules and regulations provided by the European Committee in PSD2. This proposition involves just to comply with the regulation, and not more than what is required. Here credit institutions open the bare minimum of their API information for TPPs in order for them to initiate payments and access information services through their customers’ accounts. To put things bluntly, banks continue to offer their traditional products and services without focus on engaging into the new competitive environment.

Whereas the second propositions “compete” involves the same approach in terms of interaction with others and the opening of their APIs as “comply”, in addition to directly competing with TPPS, well established PSPs, credit and other financial institutions on AIS and PIS services as an attempt to increase their competitive edge and relevance for their customers. A lot of the competitive aspect is, as Foerster et

al. (2017, p. 12) sets it, to defend customer interface and enhance customer relevance.

As the first and the second proposition, the third proposition “*expand*” have the same approach in terms of cooperation with others and complying with the regulation, in addition to expanding their focus towards further product developments for themselves through open APIs. With a strong focus and utilization on API technology, credit institutions could facilitate new revenue streams through advancements in account information, identity information and new products and services (creditworthiness, real-time financial advisory, comparison services, verification, management and personal financial planning). This proposition can be related to Foerster et al. (2017) value generating business model “*third-party data sourcing*”. The foremost focus lies in striving to become an innovation leader in the industry and defend their customer interfaces and retention. The utilization of the right technology such as APIs can be used to both facilitate product and services innovations and improvements. These propositions (both strategic direction and value generating business model) give rise to reduced development costs, retention and engagement of customers (Foerster et al., 2017). The second value generating proposition by Foerster et al. (2017) (Banking module provider) emphasize the same focuses as above, in addition to customer understanding and data-driven development. Here, the strategic rationale lies in customer-centric services and products.

The fourth and last strategic proposition by Cortet et al. (2016) “*transform*”, which can be linked to Foerster et al. (2017) two open banking business models “banking module provider and digital platform”, is a combination of all aforementioned strategic approaches (*comply, compete and expand*) where credit institutions become completely digital and both collaborate and compete with TPPs, well established PSPs, credit and other financial institutions. AS Cortet et al. (2016, p. 23) states; “banks will pursue a bank as a platform strategy”. Here credit institutions invite fintech’s and other appropriate professionals to work within their platform with a future desire that these services and applications will attract customers into their financial ecosystem. With this strategy “banks become a multi-sided digital platform for facilitating its own financial services as well as those of others, e.g., peer-to-peer lending, KYC services, risk and payment services directly to customers and via third parties” (Cortet et al., 2016, p. 23). As for the link to

Foerster et al. (2017) third and fifth proposition (banking module provider and digital platform) innovation is facilitated through external collaboration with other players in the industry, where partnering bank modules is integrated into their own offerings thus a mutual relationship is built up. Here, the focus lies in new businesses, customer acquisitions, cross selling and striving to become the true innovation leader.

There are plenty takes on what strategic opportunities and business models' financial institutions have and should approach in the light of PSD2 and the movement towards open banking. As for the propositions described above, researchers, consultants and other industry participants have gradually the same take on how incumbents should approach the upcoming industry and regulatory changes (Doyle, Sharma, & Ross, 2017; EY, 2017; Ley, Foottit, & Honig, 2015), whereas the key takeaway from most research is that banks will have to choose between competing and defending their customer interface and relevance or embrace the opportunity to play another role in the banking eco system compared to what they previously have done.

The strategic choice credit institutions decide on of the aforementioned strategies will shape the future and their forthcoming position within the financial industry. One option could either reduce or strengthen their customer relations and relevance in the market, and it's up to the individual bank to decide which approach matches their desired outlook for the future.

8. Industry Analysis

In this section we will use M Porters'(2008) five forces framework in order to analyze both the attractiveness and competitive environment in the European payments industry. It will provide a thorough understanding of the aforementioned factors and an important backbone for the model and propositions for TPPs in chapter 9 (Strategic considerations for TPPs).

8.1 Threat of new entrants

As banks have historically been the main provider of payment services, both in payment initiating and payment processing, regulations, such as PSD1, EMD, SEPA and PSD2 are opening up the market for new players which, according to Cortet et al. (2016) have the possibility to impact every part of a banks value chain. To assess the threat of these new entrants M. Porter (2008) laid down seven major

forces for barriers to entry which we intend to use in order to describe TPPs incentives to enter the European payments market.

8.1.1 Supply-side economics of scale

Since PSD1, EU regulators have worked towards the removal of obstacles blocking the creation of a single payment market in Europe. Through PSD1 entry barriers were removed by allowing the so-called payment institutions into the market with less capital requirements. The aim EU regulators put forward was also to facilitate the realization of economies of scale to improve efficiency and reduce the costs of payment systems to the economy. Through PSD2 cross-border barriers are further removed to allow even greater economies of scale benefits, both for new entrants as well as for incumbents. New entrants will therefore have equal opportunities to economies of scale in the European payments market.

8.1.2 Demand-side benefit of scale

The financial industry in the European Union, hence the payments industry has been dominated by large industry incumbents with a solid built up customer base and trust throughout decades, if not centuries. As an example, DNB which is the largest bank in Norway (EEA member) had a market share in terms of total customer deposits of 39,2 percent in 2017, where 70 percent of the total market share was divided between ten incumbents (Finans Norge.no, 2018). DNB was established in 1822 and has through the years built up a solid relationship with the Norwegian population. Here the trust in Norwegian banks are imprinted in the population. To emphasize this, market research conducted by Kantar TNS for Finance Norway (Staaivi & Håkonsen, 2017) resulted in evidence that trust is one of the essential factors for when customers choose a type of payment solution. As an indication for other EU countries, Norwegian banks clearly dominates when it comes to consumer trust with 61 percent, whereas IT-firms including both Google and Apple show dangerously low levels with -19 percent.

On the other hand, there is an emergence of a new generation (millennials and generation Z) payments customers which is less afraid and reluctant to adopt changes. As these generations grew up with and are used to digital devices and tech giants such as Google and Apple, the adoption of TPP solutions such as Google and Apple Pay are seen as much higher as a survey by Moeser and Huber (2018) evidently proves. Here the purchase rate for generation Z through a mobile device

was 64 percent, which is 22 percent higher than the average consumer. Their use of credit cards was also historically low compared to older generations, showing movements towards other payments methods. On that note, the already existing incumbents have the advantage of an already existing base of payments customers and consumer data. These advantages could both be used in terms of customizing even more seamless and consumer friendly services, in addition to the facilitation of network effects. The effect of networks is relatively strong for the payments industry, which it has shown to be since the evolution of Master Card and Visa. As for incumbents, their already large customer base can be used in the implementation of new products and payments solutions benefitting from an already existing network of customer. The more customers using a certain product or service evidently increase both customer value and customer reach through network effects, thus increase the adoption from more users. As M. Porter (2008, p. 10) describes “buyers may also value being in a network with a large number of fellow customers”. The demand side benefits of scale reaped from incumbents may therefore discourage new competitors into the payments market.

On the other hand, international tech giants such as Google, Apple and Facebook do also reap extensive network effects with the adoption of their products across the world. These networks, compared to more domestic networks for incumbents, has a much broader customer reach through their network. In addition, incumbent solutions as of now (in most cases), works just domestically, whereas e.g. Apple Pay works in numerous countries across borders. The advantage these tech giants will get over more domestic solutions is their compatibility across borders.

8.1.3 Customer switching cost

With the increasing implementation of electronic legitimation for secure identification and signing on the web, switching costs related to the relative time consumers have to invest into the switching process have decreased extensively. Some examples of electronic identifications are BankID (Norway), BankID (Sweden), BankID and Mobiilivarmenne (Finland), NemID (Denmark), E-osobna Iskaznica (Croatia). These are mainly a common infrastructure that enables quick, easy and safe login without the necessity of physical attendance at a bank branch. It enables customers to switch or open a second bank account in a matter of minutes and log into accounts, AISP and PISP applications in a matter of seconds. In most cases e-invoices gets automatically transferred over to the new accounts, whereas

direct debits have to be re-established by the user. Therefore, private consumers often hold several bank accounts where the best offer is for different purposes. On the other hand, the effort and time customers use in getting used to and develop certain capabilities in order to use a certain interface is a crucial part of customers switching cost (Brush, Dangol, & O'Brien, 2012). The monetary cost for switching or opening a new account, change AISP or PISP applications is low, and in most cases free. Switching cost for firms compared to private consumers are higher both monetary and time wise due to the difference in complexity. In Norway, the fixed cost for having a bank account relates to the issued debit or credit card which has a yearly cost of between 31 and 21 euro. But holding a payments card is not compulsory. As an enlightenment, about 7 percent of UK citizens switched bank accounts between January 2016 and December 2017 (statista.com, 2018).

8.1.4 Capital requirements

In this section, we have chosen to split the capital requirement into capital requirements for TPPs and banks:

Capital requirements for TPPs:

PSD1 laid down capital requirements for both banks and TPPs (payment institutions). These capital requirements have been maintained in PSD2. According to initial capital in PSD2, article 7: “Member states shall require payment institutions to hold, at the time of authorization, initial capital, comprised of one or more of the items referred to in Article 26 (1) (a) to (e) of Regulation (EU) No 575/2013 (Common Equity Tier 1) as follows”:

(a) Where the payment institution provides only the payment service as referred to in point (6) of Annex I (money remitters), its capital shall at no time be less than €20,000;

(b) Where the payment institution provides only the payment service as referred to in point (7) of Annex I (i.e. payment initiation services), its capital shall at no time be less than €50,000;

(c) Where the payment institution provides only the payment service as referred to in point (1) to (5) of Annex I (i.e. full range PSP, including any credit), its capital shall at no time be less than €125,000.

Capital requirements for banks

The capital requirements for banks are a part of the banking union's single rulebook (European Commission, 2013b) and implement the Basel III agreement (the international agreed bank capital adequacy standards) – in EU legislation. The rule consists of:

(1) Regulation (capital requirements regulation – CRR) which lays down prudential requirements for capital, liquidity and credit risk for investment firms and credit institutions. (2) Directive (capital requirements directive – CRD IV) which lays down the rules on capital buffers, bankers' remuneration and bonuses, prudential supervision and corporate governance. These have applied in all EU member states since 1 January 2014.

Capital requirements for banks is expressed as a percentage of risk-weighted assets, i.e. the safer the assets are, the lower allocation of capital and vice versa. The capital is assigned certain grades according to its quality and risk:

Tier 1 capital is considered to be the going concern capital which allows a bank to continue its activities and keeps it solvent. The highest quality of Tier 1 capital is called common equity tier 1 (CET1) capital.

Tier 2 capital is considered to be the gone capital which allows an institution to repay depositors and senior creditors if a bank became insolvent.

A total amount of capital that banks are required to hold should be at least eight percent of risk-weighted assets. The share that has to be of the highest quality capital (CET1) should make up 4.5 percent of risk-weighted assets (see section 3.3. on how banks have performed)

8.1.5 Incumbency advantages independent of size

One of the most valuable advantages independent of size incumbents have over new entrants in the payments industry is their strong and established brand identity. Here, brand identity is incorporated into consumers through decades if not centuries of operations and marketing. An abundance of incumbent banks has diversified their services by holding both typical bank and payments products and e.g. insurance, implementing their brand awareness through a broader spectre in the financial industry. In relation to both younger and older generations, tech giants such as Google, Apple and Facebook have a well-established brand identity through their platforms and products which will be an important facilitator for its

emergence. It can especially be seen as a great facilitator for the adoption of the younger generations as mentioned in prior sections.

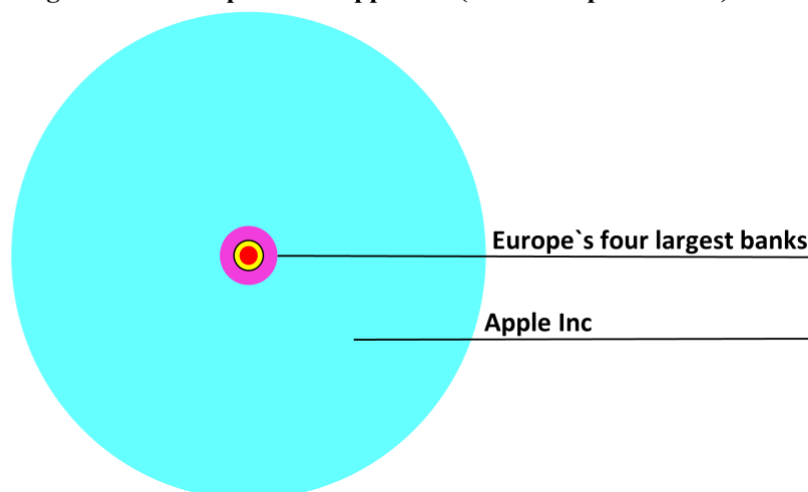
For incumbents, years of operations in the payments industry, cumulative experience and built up knowledge gives great advantages independent of their size compared to entrants.

As the European banking industry goes through an extensive digital transformation, the overall IT spending within banks reached 62 billion euros in 2017 (Computer Business Review, 2018). These investments could result in important and decisive proprietary technology in the future.

8.1.6 Unequal access to distribution channels

Distribution channels within the EU payments industry is foremost provided by banks itself and through agent agreements, both in terms of assistance in performing certain services and aid in the sales process towards customers in terms of direct marketing. These distribution channels are built up by each institution, and extensive investments are often needed in order to get the desired results. For institutions who have engaged in lucrative loyalty programs e.g. in collaboration with aviation firms, such as Norwegian bank and Norwegian airlines, and the newly established BRABank and BRA airlines, in order to attract and retain customers. These types of distribution channels are typically locked to the banks own services and products and can be seen as inaccessible for other incumbents or entrants. As to distribution through digital tools such as digital advertising and google optimization, channels used demands continuously investments and work in order to be optimal at all times. As a benchmark, the German financial industry spent €252 million on online display advertising in 2015 (OVK, 2016).

Bigtech`s have for the most part their own distribution channels in place through existing services or products (such as e.g. iPhone for Apple Pay) which can be exploited for the implementation of AISP and PISP solutions. These firms are extremely capital intensive and provides evident competition for the best existing channels. The illustration below shows the financial advantage, in terms of market cap, large global bigtech`s (Apple in this illustration with 1158 bill EUR) have over the four largest banks in Europe (HSBS Holdings 142 bill EUR, Banco Santander 75 bill EUR, BNP Paribas 68 bill EUR, Lloyds Banking Group 45 bill EUR).

Europe`s four largest banks compared to Apple Inc (market capitalization)


(Source: Bloomberg.com, 2018a)

Figure 23

As is today, TPPs can access rewarding distribution channels by partnering up with other relevant firms, banks or bigtech`s, and distribute through their channels. The use of capital intensive digital and online marketing is also there with the right funding in place. As data becomes more readily available for every day, a good prediction is that TPPs will find new innovative channels to distribute. This also applies for the other players in the financial industry. Bigtech`s will also take advantage of these opportunities but have for the most part own distribution channels in place through existing services and products (such as Iphone distributes Apple Pay for Apple Inc) which can and are exploited for the implementation of AIS and PIS solutions.

8.1.7 Restrictive government policy

The implementation of PSD2 (XS2A) automatically lowers barriers to entry into the payments market as all entrants and present actors are enabled the possibility to access customer account information and initiate payments from customers` accounts without the necessity of screen scraping or a signed partnership with the ASPSP. The reduced capital requirements presented under section 8.1.4 “capital requirements”, imposed by the European Commission facilitates quicker and easier entrance for lower capital intense firms. On the contrary, more restrictive policies around security (RTS), presented in chapter six, where two or more mechanisms has to be implemented in order to achieve secure customer authentication (SCA) and a common and secure communication (CSC) systems could present challenges for newcomers. But, these measurements will first and foremost be challenging the ASPSP as they will have to develop new systems to deliver access to accounts,

whereas new players, usually born digital, will have it easier as they are not constrained by old systems.

To sum up the threat of new entrants, the European payments market is facing a greater threat of new entrant through the provisions laid down in PSD2. The force which have traditionally been considered to be low due to high regulations with extensive capital requirements have now entered into a medium/high phase where new entries are to be considered a threat for existing market players. Especially BigTech's such as Apple Pay, Facebook, Amazon, etc. compose a considerable threat to the traditional payment market. Considering the reception of PSD2 within Europe, the situation has in some countries been embraced by more open approaches, where collaboration between new and existing players have been evident.

8.2 Bargaining power of suppliers

As shown in section 3 (The EU Retail Payments Market), the number of suppliers have gradually decreased throughout the years, implicitly increasing the supplier power with a more concentrated supplier side in the industry (M. Porter, 2008). As with the implementation of PSD2, if the desired effects succeed, more competition, hence suppliers, will emerge, providing a decreasing bargaining power of suppliers. As the implementation of PSD2 will facilitate the emergence of more suppliers in the industry, pressure on industry incumbents will facilitate a decrease in prices and profitability whereas quality will increase (M. Porter, 2008). As the incumbent suppliers depends on their payments products both in terms of revenue (quarter of European banks total revenue comes from payments (Deloitte, 2015)) and as a channel to attract customers to other financial products offered such as loans, the dependence on the offering of payment services for banks is high. Further, the credibility of forward integration from suppliers is valid, especially for incumbents, due to their capital, knowledge and resource insensitivity.

8.3 Bargaining power of buyers

As the level of competition both outside and within the payments industry has increased since the implementation of PSD1 and now PSD2, consumers has naturally enhanced their bargaining power with a more open financial market throughout EU. In a certain extent, consumers no longer only have to rely on "old" domestic providers but are both approached and can approach new and foreign cross

border suppliers throughout EU. Consumers are now presented with a broader variety of services and suppliers which facilitate bargaining opportunities. The enhancement of buyer power will facilitate better prices and product quality for consumers (M. Porter, 2008).

In contrast, M. Porter (2008) criteria's for buyer's negotiation power provides conflicting results in relation to the aforementioned increase in buyers choice. As the number of digital payment buyers increase year by year (see section 3: The EU Retail Payments Market), and buyers gradually gets more dependent on them in line with the frequent digitalization of the financial industry, buyers implicitly loose more and more bargaining power over suppliers (M. Porter, 2008).

Further, low switching cost and the standardization of product offerings in the payments industry has facilitated greater bargaining power for buyers where providers tend to be played against each other, which further puts pressure on suppliers (M. Porter, 2008).

As the implementation of PSD2 makes it possible for entrants to build AIS and PIS services on top of banks payments infrastructure through open APIs, industry buyers with high enough volumes such as i.e. merchant chains are enabled to integrate their outsourced payments solutions inhouse. Here, large merchants can provide their stores with inhouse payment initiation services, cutting out on middleman in the payments value chain. The possibilities for inhouse AISP services could also be seen as an opportunity for merchants where i.e. account information services could be implemented into merchants already existing discount and loyalty schemes and apps. These are all viable threats both for payment initiators and account information providers today, and thus, facilitates greater bargaining power for e.g. the large merchant chain.

8.4 Threat of substitute products or services

As for the threat of substitute products or services, the continuous development and improvements of current and new technologies stimulate the development and launch of more user-friendly payments products. As of now, the emergence of person-to-person payments applications, mobile wallets and digital currencies among others have the potential of disrupting the payments industry as we see it today. With a frequent adoption of these services, the need for customers to interact and log into their standard bank accounts in order to conduct payments or go

through their finances may disappear. As for the emergence of new technologies, blockchain and virtual currencies such as Bitcoin can lead the path towards lower cost of fund remittance both domestic and internationally, which in the future may disrupt and substitute how fund remittance is done today.

As explicated in prior sections, the low switching cost both to similar services and in this regard to possible substitutes enhance the threat for consumers likelihood of the adoption of substitute products.

8.5 Rivalry among existing competitors

The rivalry among existing competitors within the payments industry in EU has clearly intensified, and if the goals of PSD2 prevails, it will surely intensify even more. As for large EU banks, both the intensification of competition and the pressure on operational margins further facilitate rivalry among existing competitors in an attempt to gain market shares. As it wasn't before, card companies, large technology firms, challenger banks, supermarket chains and other TPPs are now presented with an easier way of collecting a piece of the payments industries pie through AIS and PIS services, whereas the traditional banks are no longer rivals against each other where their main focus have naturally settled with an easier overview, but in every direction of the payments value chain. The battle for engaging and attracting customers in terms of relevance and ingenuity is more present where rivalry among existing competitors now also stems from smaller players focusing on a smaller part of the payments value chain. For both rivalry among existing competitors and competition as a whole, "fast growing global demand for banking services, intense technological change and an uninterrupted process of internationalization of financial activities" (Ganiodis, Etlie, & Urbina, 2014, p. 79) has can be seen as some of the key drivers. Newly, an evident rivalry among in the payments market was observed in the payments market between large incumbent banks. Here p2p mobile payments services was launched and marketed at extreme levels in order to attract as many users as possible. An assumption is that banks understood both the direction the market was going and the threat large bigtech's opposed, such as Apple with Apple Pay, and the extreme rivalry was a means to undertake as much market share as possible before its introduction.

9. Strategic considerations for TPPs

As Porter (1996) emphasize; if a firm wants to achieve superior profitability there are two options. Obtain a higher price than your industry rivals or a lower cost, and explicate further that competitors differences stems from operational effectiveness and strategic positioning (M. Porter, 2008), whereas the best attained competitiveness from a firm is through achieving best practises.

A thorough analysis of PSD2, other relevant regulations, trends, the attractiveness and competitive environment in the European payments industry have been conducted through this Thesis. In the section below, we propose our recommendations and views on TPPs possibilities and strategic opportunities based on our overall findings.

Through an extensive amount of readings through thoughts and propositions from scholars and industry participants and throughout the process of conducting this Thesis we have been presented with the idea that TPPs should collaborate in some way in order to reap the full scaling benefits of their services. This may be true. But the focus has, almost always, lied on the idea that they have to collaborate with an incumbent bank. And there is a fair amount of arguments that supports this. On that note, the implementation of PSD2, the technological superiority and evolvment in the industry give rise to other supporting propositions backed up by valid arguments.

As a result of our findings we propose that TPPs entering the European payments industry, or already have entered, are faced with two main strategical approaches in light of the PDS2 implementation. As further elaborated on below, and illustrated in figure 24, TPPs could either approach a collaborative strategy with incumbents, meaning they could work towards getting into a collaborative partnership with existing banks, or a competitive approach, meaning they could initiate without the help of existing banks, either go at it alone, or in collaboration with firms which primarily operate in other industries, but may be used as a support in both entering and further expansion.

As emphasized by Cortet et al. (2016, p. 21) banks have to ask themselves the following question when strategizing towards coping with PSD2. “What should the breadth of my transaction services portfolio and my positioning in the payments

value chain be”? As an opposition to this, we propose that TPPs must ask themselves the two following questions:

1. Do the benefitting effects from collaboration with incumbents suppress the possible rewards you may gain from competing?

This is both a question directed towards the TPPs risk appetite and in making sure that the risk/reward ratio is positive.

2. Based on the key objective and goal for your service, how will you most likely be able to reach the it (compete or collaborate)?

This question lets TPPs reflect on their current capabilities, and if they possess or are able to attain the right network and resources and on how they are strategizing towards customer attraction. A key aspect here is to widen the scope towards other possible collaborators (option “compete” and “collaborate with others”) and question whether they may provide the same benefits for a lower price or complement your service even more.

The answering of these two questions guides TPPs towards two main strategic directions, as presented in figure 24 below. in addition to two sub approaches for competing. Either you collaborate with incumbent banks or compete by going at it alone or through a collaborative partnership with other third-parties.

TPPs strategic approaches to enter the payment market

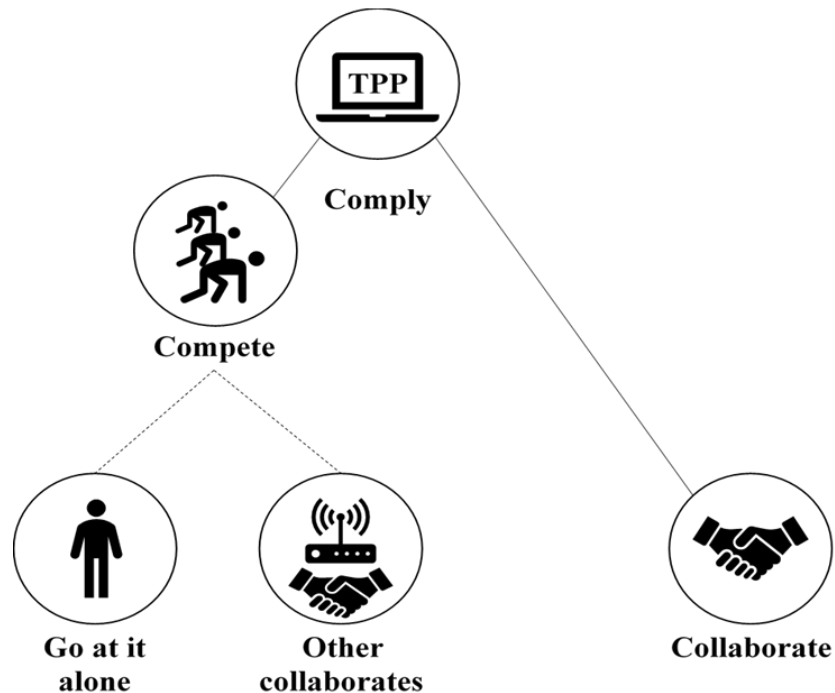


Figure 24

9.1 Comply

As for all entrants and current actors in the EU and EEA payments industry, complying with the rules and regulations set up by the European Commission is an absolute requirement in order to operate as an PSP. As described in section 6, we have emphasized the major changes in the regulatory framework and laid out some of the compliance requirements (note that these are not fully comprehensive and market players are advised to go through these directives and refer competent authority on specific questions). As Credit institutions and other regulated financial institutions acting as ASPSP are subject to higher regulatory requirements (refer the CRR and CRD IV) than TPPs, ASPSPs are forced to implement additional measures for regulatory compliance, security and resilience than new entrants constrained to PISP and/or AISP services. Due to these requirements ASPSPs will still face obstacles for delivering personalized and innovative payment solutions than TPPs. As TPPs are less exposed to the numerous requirements and compliance obligations, they face a situation where they are able to focus on attractive services, specializing on specific PIS and AIS to deliver personalized and flexible payment solutions. Even though, TPPs can “cherry-pick” the most attractive services, they still face the dilemma of how to enter into a reasonably unfamiliar market that have been monopolized by banks for such a long time. Should they enter alone (i.e. do not collaborate with banks) in order to reap the full benefits, or must they collaborate with existing players to attract customers and split the outcome? Or should they take on a different approach, seeking collaboration with incumbents from related technological industries?

- Do the benefitting effects from collaboration with incumbents suppress the possible rewards you may gain from competing?
- Based on the key objective and goal for your service, how will you most likely be able to reach it (compete or collaborate)?

9.2 Compete

As for TPPs answering “no” to the first question and that collaboration with incumbent banks does not provide higher likelihood of achieving the goal for your service the choice of competing is the right strategic direction to approach. As these questions is directly targeted towards incumbent banks, the same questions will have to be questioned in relation to collaboration with other third-parties. If the

answer is still directed towards no collaboration, the sub strategy within competing in the model, go at it alone, is the right choice to approach.

9.2.1 Go at it alone

Without the support of other influential actors, both within and currently outside the payments industry, TPPs will have to start from scratch. As there are several different licensing schemes that payment institutions can be registered and authorized as, determined by the activities they perform, it will be up to the concrete payment institution to advice their scope of activities when deciding to compete without the support of other actors. For example, the exemptions laid down in section 4 of the PSD2 (called waivers under PSD1), restrict TPPs exempted from certain provisions to perform certain activities or execute payment transaction over a certain value determined by the competent authorities (the monthly average of the preceding 12 months' total value of payment transactions executed by an exempted PSP may not amount to more than €3 million).

It is clear that the risk appetite for TPPs engaging in this approach has a higher risk appetite than others, whereas their operating freedom is much higher without the necessity of following banks desires and instructions. Further, when entering alone a clear and single segment to operate in is recommended, enabling the service to be as perfected as possible. Here, the creation of standardized processes is key in order to gain control and handle operational pressure. As stated above, none of the benefiting effects of collaboration is present, and TPPs have to develop capabilities, knowledge, distribution channels and customer base from ground up.

9.2.2 Other collaborates

This approach relates to a competitive approach towards incumbent banks, but a collaborative approach towards other third parties such as bigtech's, established TPPs, and other related and unrelated stakeholders in the European payments landscape. Several of the same benefitting effects may be achieved through this type of collaboration as it would collaborating with incumbent banks. As a collaborative partnership with an incumbent bank may provide access to both distribution channels and a built-up customer base, e.g. a large merchant store chain may also provide some of the same benefitting effects. As these chains possess a solid customer base with solid loyalty programs already implemented in their offerings, the right TPP service may provide valuable additional services benefitting both the customer and the store. This could also be implemented for

other relevant stores where a solid customer base is available. The possibilities to whom to partner with is endless, and with the right ingenuity this approach can take the right TPP a long way. As for collaboration with tech giants, the same benefitting effects in terms of access to distribution channels, a solid customer base and built up customer data in addition to valuable networks and capital. As for negative effects, many of the same obstacles may occur, as elaborated on below, in terms of risk mitigation, higher regulatory pressure and reduction in operational freedom.

Collaborate

This option illustrates TPPs already engaged in the payments industry or TPPs in the process of entering where a collaborative approach with incumbent banks is the most fitting strategy in order to achieve the desired objective. The risk appetite will be relatively low compared to the competitive approach, where risk mitigation due to stricter internal policies may lead to suboptimal customer experience. In addition, the regulatory pressure, both internal and external, may be intensified when engaged with a large incumbent. Further with this approach, TPPs are enabled access to a solid customer base and data on these customers gathered through years of operating in addition to existing distribution channels, valuable network within the financial industry, industry knowledge and easy to reach capital. These benefitting effects may also be a stress mitigatory for the TPP, where several of the classical start-up steps and pitfalls are avoided.

Appendices:

Appendix I: Definitions

Definitions used here stems from the definitions laid down in article 4 and the following point in PSD1 and PSD2. PSD1 have 30 definitions while PSD2 have defined 48, below follows first the identical definitions followed by the newly implemented definitions provided in PSD2.

Definitions:	PSD1	PSD2	Means...
Home Member State	(1)	(1)	...either the following: (a) The Member State in which the registered office of the payment service provider is situated; or (b) If the payment service provider has, under its national law, no registered office, the Member State in which its head office is situated.
Host Member State	(2)	(2)	...the Member State other than the home Member State in which a payment service provider has an agent or a branch or provides payment services.
Payment Service	(3)	(3)	...any business activity set out in Annex I of PSD1 and PSD2 (payment services).
Payment Institution	(4)	(4)	...a legal person that has been granted authorization in accordance with article 10 of PSD1 and article 11 of PSD2 to provide and execute payment services throughout the European Union.
Payment Transaction	(5)	(5)	...an act, initiated by the payer or on his behalf or by the payee, of placing, transferring or withdrawing funds, irrespective of any underlying obligations between the payer and the payee.
Payment System	(6)	(7)	...a funds transfer system with formal and standardized arrangements and common rules for the processing, clearing and/or settlement of payment transactions.
Payer	(7)	(8)	...a natural or legal person who holds a payment account and allows a payment order from that payment account, or, where there is no payment account, a natural or legal person who gives a payment order.
Payee	(8)	(9)	...a natural or legal person who is the intended recipient of funds which have been the subject of a payment transaction.
Payment Service Provider	(9)	(11)	...a body referred to in article 1(1) or a natural or legal person benefiting from an exemption

			pursuant to article (26 in PSD1) 32 or 33 in PSD2.
Payment Service User	(10)	(10)	means a natural or legal person making use of a payment service in the capacity of payer, payee, or both.
Consumer	(11)	(20)	means a natural person who, in payment service contracts covered by PSD1 and PSD2, is acting for purposes other than his or her trade, business or profession.
Framework Contracts	(12)	(21)	means a payment service contract which governs the future execution of individual and successive payment transactions and which may contain the obligation and conditions for setting up a payment account.
Money Remittance	(13)	(22)	means a payment service where funds are received from a payer, without any payment accounts being created in the name of the payer or payee, for the sole purpose of transferring a corresponding amount to a payee or to another payment service providers acting on behalf of the payee, and/or where such funds are received on behalf of and made available to the payee.
Payment Account	(14)	(12)	means an account held in the name of one or more payment service users which is used for the execution of payment transactions.
Funds	(15)	(25)	Means banknotes and coins, scriptural money or electronic money as defined in article 2 (2) of Directive 2009/110/EC.
Payment Order	(16)	(13)	means an instruction by a payer or payee to its payment service provider requesting the execution of a payment transaction.
Value Date	(17)	(26)	Means a reference time used by a payment service provider for the calculation of interests on the funds debited from or credited to a payment account.
Reference Exchange Rate	(18)	(27)	Means the exchange rate which is used as the basis to calculate any currency exchange and which is made available by the payment service provider or comes from publicly available source.
Authentication	(19)	(29)	Means a procedure which allows the payment service provider to verify the identity of a payment service user or the validity of the use of a specific payment instrument, including the use of the user's personalized security credentials.
Reference Interest Rate	(20)	(28)	Means the interest rate which is used as the basis for calculating any interests to be applied and which comes from a publicly available source which can be verified by both parties to a payment service contract.

Unique Identifier	(21)	(33)	... a combination of letters, numbers or symbols specified to the payment service user by the payment service provider and to be provided by the payment service user to identify unambiguously another payment service user and/or the payment account of that other payment service user for a payment transaction.
Agent	(22)	(38)	... a natural or legal person who acts on behalf of a payment institution in providing payment services.
Payment Instrument	(23)	(14)	... a personalized device(s) and/or set of procedures agreed between the payment service user and the payment service provider and used in order to initiate a payment order.
Means of Distance Communication	(24)	(34)	... a method which, without the simultaneous physical presence of the payment service provider and the payment service user, may be used for the conclusion of a payment services contract.
Durable Medium	(25)	(35)	... any instrument which enables the payment service user to store information addressed personally to him in a way accessible for future reference for a period of time adequate to the purpose of the information and which allows the unchanged reproduction of the information stored.
Micro-enterprise	(26)*	(36)	... an enterprise, which at the time of conclusion of the payment service contract, is an enterprise as defined in article 1 and article 2(1) and (3) of the Annex to Recommendation 2003/361/EC.
Business Day	(27)	(37)	... a day on which the relevant payment service provider of the payer or the payment service provider of the payee involved in the execution of a payment transaction is open for business as required for the execution of a payment transaction.
Direct Debit	(28)	(23)	... a payment service for debiting a payer's payment account, where a payment transaction is initiated by the payee on the basis of the consent given by the payer to the payee, to the payee's payment service provider or to the payer's own payment service provider.
Branch	(29)	(39)	... a place of business other than the head office which is a part of a payment institution, which has no legal personality and which carries out directly some or all of the transactions inherent in the business of a payment institution; all of the places of business set up in the same Member State by a payment institution with a head office in

			another Member State shall be regarded as a single branch.
Group	(30)*	(40)	... a group of undertakings which are linked to each other by relationship referred to in article 22 (1), (2) or (7) of directive 2013/34/EU or undertakings as defined in article 4, 5, 6 and 7 of Commission Delegated Regulation (EU) No 241/2014, which are linked to each other by relationship referred to in article 10 (1) or in article 113 (6) or (7) of Regulation (EU) No 575/2013.

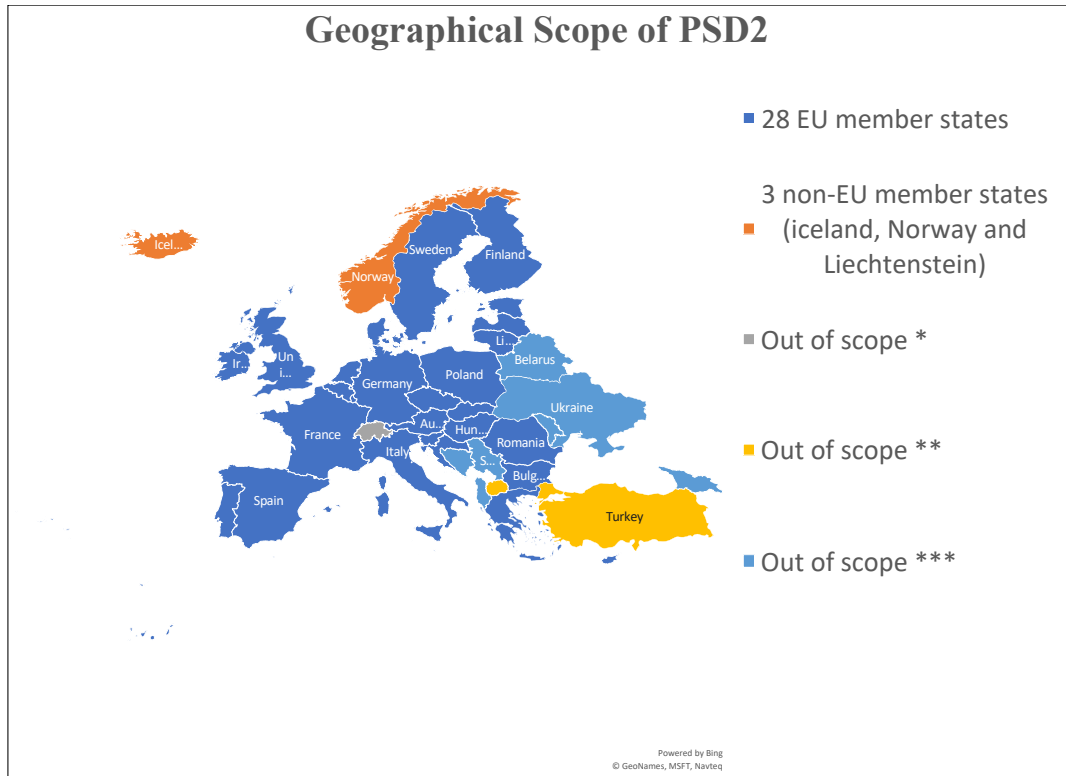
* definitions from PSD2 is used, PSD1 refers to outdated regulations.

Definitions:	PSD2	Means...
Remote Payment Transaction	(6)	... a payment transaction initiated via the internet or through a device that can be used for distance communication.
Payment Initiation Service	(15)	... a service to initiate a payment order at the request of the payment service user with respect to a payment account held at another payment service provider.
Account Information Service	(16)	... an online service to provide consolidated information on one or more payment accounts held by the payment service user with either another payment service provider or with more than one payment service provider.
Account Servicing Payment Service Provider	(17)	... a payment service provider providing and maintaining a payment account for a payer.
Payment Initiation Service Provider	(18)	... a payment service provider pursuing business activities as referred to in point (7) of Annex I in PSD2 (payment initiation service).
Account Information Service Provider	(19)	... a payment service provider pursuing business activities as referred to in point (8) of Annex I in PSD2 (account information service).
Credit Transfer	(24)	... a payment service for crediting a payee's payment account with a payment transaction or a series of payment transactions from a payer's payment account by the payment service provider which holds the payer's payment account, based on an instruction given by the payer.
Strong Customer Authentication	(30)	... an authentication based on the use of two or more elements categorized as knowledge (something only the user knows), possession (something only the user possesses) and inherence (something the user is) that are independent, in that the breach of one does not compromise the reliability of others and is designed in

		such a way as to protect the confidentiality of authenticated data.
Personalized Security Credentials	(31)	...personalized features provided by the payment service provider to a payment service user for the purpose of authentication.
Sensitive Payment Data	(32)	...data, including personalized security credentials which can be used to carry out fraud. For the activities of payment initiation service providers and account information service providers, the name of the account owner and the account number do not constitute sensitive payment data.
Electronic Communication Network	(41)	...a network as defined in article 2 (a) of Directive 2002/21/EC of the European Parliament and of the Council.
Electronic Communication Service	(42)	...a service defined in Article 2 © of Directive 2002/21/EC.
Digital Content	(43)	...goods or services which are produced and supplied in digital form, the use or consumption of which is restricted to a technical device and which do not include in any way the use or consumption of physical goods or services.
Acquiring of Payment Transactions	(44)	...a payment service provided by a payment service provider contracting with a payee to accept and process payment transactions, which results in a transfer of funds to the payee.
Issuing of Payment Instruments	(45)	... a payment service provider contracting to provide a payer with a payment instrument to initiate and process the payer's payment transaction.
Own Funds	(46)	... funds as defined in point 118 of Article 4(1) of Regulation (EU) No 575/2013 where at least 75% of the Tier 1 capital is in the form of Common Equity Tier 1 capital as referred to in Article 50 of that regulation and Tier 2 is equal to or less than one third of Tier 1 capital
Payment Brand	(47)	...any material or digital name, term, sign, symbol or combination of them, capable of denoting under which payment card scheme card-based payment transactions are carried out.
Co-badging	(48)	...the inclusion of two or more payment brands or payment applications of the same payment brand on the same payment instrument.

(European Commission, 2007a, 2015)

Appendix II: Geographical Scope of PSD2



(Adapted from EBF's PSD2 guidance, European Banking Federation, 2016)

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