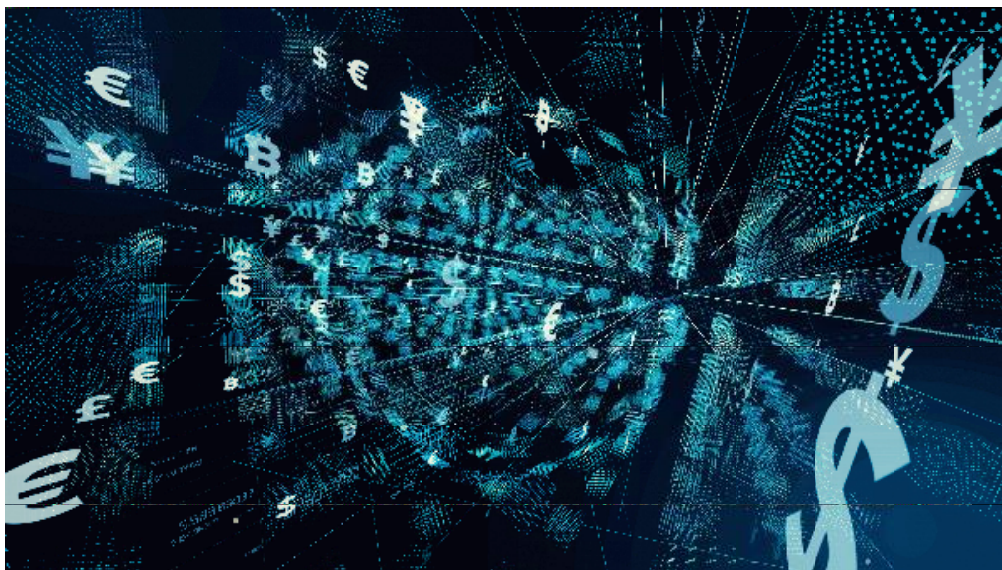


“Master’s Thesis – Master Innovation Sciences”

**Contextualizing Business Model Innovation in
sociotechnical transitions: A systemic understanding of
Fintech Disruption in the Payment Sector.**



Bimpizas Christos (6031242)

Van Vollenhovenlaan

3527JD URECHT

+31629150132

Christos1453@gmail.com

Supervisor:

Dr. Joeri Wesseling

Table of Contents

Table of Contents	2
SUMMURY	4
1. Introduction	6
2. Theory	9
2.1 Sociotechnical systems and Multi-Level Perspective	9
2.2 Symbiotic-competitive relations and stability/change mechanisms.....	10
2.3 Transition pathways	11
2.4 Business Model Innovations	12
2.5 Fit and conform and Stretch and transform	13
3. Methodology	15
3.1 Research Design	15
3.2 Operationalization Table.....	16
3.3 Case description	17
3.4 Data collection.....	17
3.5 Data Analysis	18
4. RESULTS	19
4.1. Technology.....	19
4.1.1. Technology dimension influence in payments BMIs.	19
4.1.2. Competence-enhancing and competence destroying technologies	25
4.2. Market	25
4.2.1. Market dimension and cashless payments BMIs interaction.....	25
4.2.2. Market dimension and blockchain BMIs interaction	31
4.3. Culture	35
4.3.1. Cultural dimension and cashless payments BMIs interaction.....	35
4.3.2. Cultural dimension and blockchain BMIs interaction	36
4.4. Industry.....	37
4.4.1. Industry dimension cashless payments BMIs interaction	37
4.4.2. Industry dimension and blockchain BMIs interaction.....	39
4.5. Policy.....	40
4.5.1. Policy dimension and cashless payments BMIs interaction	40
4.5.2. Policy dimension and blockchain BMIs interaction	42
4.6. Analysis of the influence of BMIs in the fintech transition pathway.....	43
5. Conclusion	48
6. Discussion	52

6.1 Implications for Theory.....	52
6.2 Implications for Industry and Policy.	53
6.3 Limitations.....	53
6.4 Future Research	54
References	55
Appendix	60
A) List and description of Business Model Innovations in Cashless Payments and Blockchain.....	60
B) Fintech firms operating in Cashless payments and blockchain fields in Netherlands. Their description and their BMIs.....	66

SUMMARY

Over the last decade the financial sector is on the verge of an ongoing transformation. New players adopt technological novelties and introduce business model innovations (BMIs) disrupting the industry across the entire value chain. Transitions research on this topic is still lagging. This thesis combines the MLP framework with Business Model Innovation concepts to present the fintech disruption in the areas of cashless payments and blockchain. After that, the thesis uses the findings for explaining the role of BMIs in the unfolding of sociotechnical transitions. For the purposes of this research, qualitative data coming from literature, policy documents, business reports and outlooks were used to understand the changes that take place in the payments regime. The BMIs developed in response, are identified by studying thoroughly the web sites of 136 fintech firms operating in the payment sector in the Netherlands. The findings indicate that the changes in all the five regime dimensions studied (technology, market, culture, industry, policy) trigger to some extent BMIs in the value proposition, the value network and the value capture. The findings also identify two opposing dynamics deriving from the BMIs agency. In the first, the BMIs aim to gain legitimacy and become competitive by fitting and conforming to the established regime institutional arrangements. In the second, the BMIs aim to gain a competitive edge by triggering changes in the established institutional arrangements. The thesis argues, that; a) by adjusting the technological innovations to fit better with the regime institutional environment; and b) by stretching the institutional environment to adjust it to the new technological advancement capacities these opposing forces, in a broader regime level, deploy some kind of “reversed synergy”, by both mitigating the various dimension sociotechnical misalignments.

Abbreviations

AI = Artificial Intelligence

API = Application Programming Interface

BMI = Business Model Innovation

IoT = Internet of Things

IT – Information Technologies

IVR = Interactive Voice Response

FX = Forex

KYC = Know Your Customer

NLP = Natural Language Processing

PSP = Payment Service Provider

SEPA = Single Euro Payment Area

ST = SocioTechnical

WAP = Wireless Application Protocol

1. Introduction

Over the last years, the upbringing of the digital era worked as a catalyst for business model innovation (BMI), as technology transformed entirely how firms operate and provide their services (Pateli & Giaglis, 2011; Wirtz, Schilke, & Ullrich, 2010). In the modern fast-changing competitive landscape, companies relentlessly pursue technology and business innovations to improve their performance (Cucculelli & Bettinelli, 2015; Zott et al., 2019) and secure their growth and survival (Wei, Yang, Sun, & Gu, 2014). The establishment of the global marketplace, increased further this need for novelty from firms to defend against the intensifying international competition (Doz & Kosonen, 2010). Such competitive pressures have led to fast-paced transformations of industry structures across various sectors.

Reflections of such a transformation are largely visible today in the financial services sector. Over the last decade, this fairly stable industry (with limited firm entrances and exits) was overthrown by a huge wave of technological advancements and Business Model Innovations (BMIs) enabled by technology-based start-ups and well-established tech incumbents, see picture 1. In the core of their activities, the new players disrupt the classical Business Models (BM) of financial incumbents by providing alternative customer personalized services; more efficient digitized or highly specialized core business solutions for retailers and other financial institutions; and alternative financial products or services that sidestep the traditional bank intermediation (WEF, 2015). This complex body of novel technological and BM disruption is conceptualized as a fintech scheme, and the firms that exploit this scheme as “fintech-firms”.

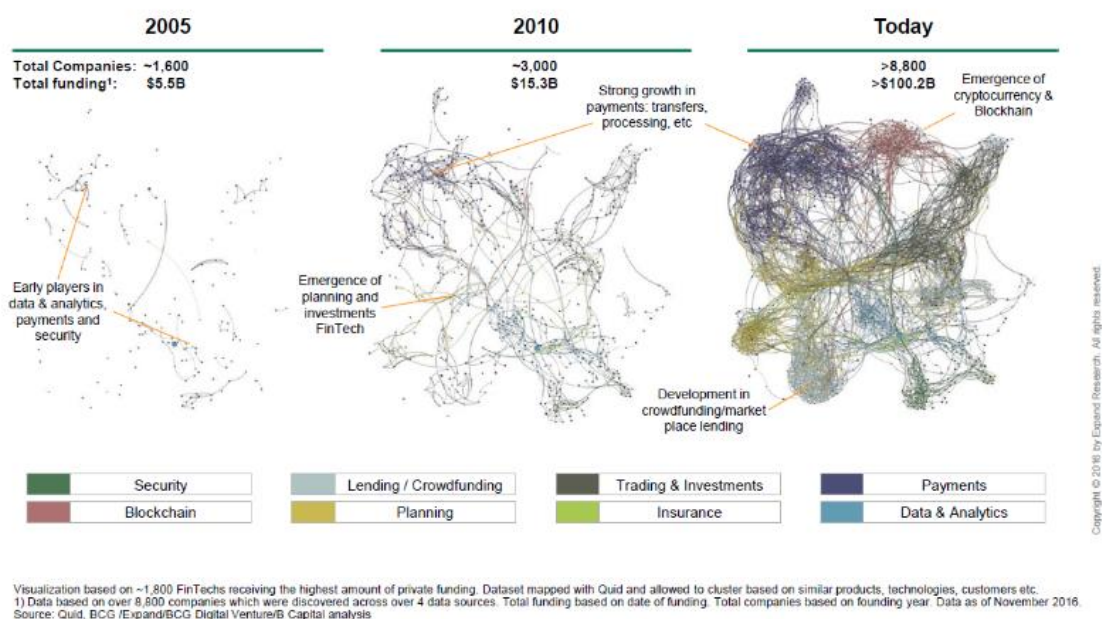


Figure 1: Chronological visualization 2005 - 2015 of fintech firms' emergence across financial sectors. (IOSCO, 2017)

As signs of an upcoming fintech transition in the financial services industry start to become visible, in terms of investment capital (Kpmg, 2017); number of active start-ups (Holland FinTech, 2016; (IOSCO, 2017) and adoption rates (EY, 2016a); the industry turns into new trajectories. New regulations are formed, consumers start to behave differently, incumbent financial institutions reorient their activities and new interpretations regarding the payment services and their function are developed in the public mindset. However, there is still limited understanding about the sociotechnical changes that take place, enabling newcomers to

challenge the established order. Up to this day, it is still unknown which field conditions enabled the new entrant fintech firms to infiltrate in the mature and stabilized environment of the financial sector. It also unexplored what kind of Business Model Innovations (BMI) have the new entrants developed in response to these field conditions and how these BMIs influence the incumbent financial services regime.

From a transition studies perspective, firms' activities are framed in the context of a broader sociotechnical system (Boons, Montalvo, Quist, & Wagner, 2013). The transitions literature provides a fitting framework for analysing the dynamic and complex system interactions that enable and shape sociotechnical transitions. Multi-Level Perspective (MLP), as the transitions studies analytical tool, combines "micro-insights" at the niche level and "macro-patterns" at the landscape level to explain meso-level sociotechnical regime reconfigurations in the face of breakthrough innovations (Geels, 2004; Geels & Schot, 2010). However, literature argues that MLP does not adequately conceptualize the business perspective and is therefore often combined with the BMI literature (Bolton & Hannon, 2016; Smith & Raven, 2012). The combination of an integrated MLP-BMI framework is therefore useful for developing a better understanding of the potential fintech transition. This research elaborates on how landscape arrangements and regime tensions shape BMI opportunities and what reciprocal ramifications this has for the regime and the upcoming transition paths.

For doing this, an MLP-BMI framework is applied for analysing the fintech disruption in financial sector. The WEF (2015), by trying to comprehend the fintech disruption, it identified eleven fields of disruption across six financial sub-sectors; a) payments; b) insurance; c) market provision d) deposits and lending e) investment management, and f) capital raising. Analysing in detail so many sub-sectors and fields of disruption, which are themselves quite extended in terms of complexity, activities and BMIs, it is not possible task to do under the scope of a single thesis. Therefore for the purposes of this research the focus is directed towards the payments subsector. The payments services sector is chosen, as this sector attracts by far the most entrepreneurial activity in investment capital and firms' new entrances ((EY, 2016a; Kpmg, 2017). Two are the main fields of disruption pointed out; a) the cashless payments, where frictionless payment offerings become the medium for the emergence of new firms entrance and for payment services development; and b) the blockchain and alternative value transfer schemes where new emerging fintech firms develop blockchain solutions for disrupting the conventional payment value network chains (WEF, 2015).

In terms of theoretical contribution, the thesis addresses the lack of a coherent research practise on BMI literature (Foss & Saebi, 2017) by proposing the use of MLP analysis for studying the context of the sociotechnical processes that enhance or hinder BMI development. From a transition studies viewpoint, the thesis attempts to showcase how BMIs, arrangements of entrepreneurial agency, are contextualized within the sociotechnical system theoretical framework and identifies how the various BMIs can influence the transition process. Finally, the research aims to address the transition studies literature's empirical gap concerning the highly innovative and disruptive financial sector.

Therefore, for the purposes of this research, the following research question is formulated;

"What field conditions enable the development of various payment-related BMIs and how do these BMIs influence the unfolding of fintech sociotechnical transition in the fields of cashless payments and blockchains, over the last decade?"

For answering this question, the following sub-questions are addressed.

- What sociotechnical field conditions developed over the last years in payment services sector?
- How do the various sociotechnical field conditions trigger various cashless payment and blockchain BMIs?
- How do the payment-related BMIs influence the unfolding of sociotechnical transition in the fields of cashless payments and blockchain?

For the scope of this research, the focus is directed towards the various sociotechnical arrangements that represent the building blocks for the enactment of sociotechnical transitions; in the elements of the BMIs like the value proposition, the value network and the value capture; and in the fit and conform and stretch and transform strategies that influence the unfolding of the cashless payments and blockchain transition pathways.

The findings derived by the fintech disruption in payment sector, can also draw novel insights regarding the broader transition and institutional dynamics developed in the financial sector and create a solid basis for future research. The findings can assist company managers to develop a better understanding of the systemic sociotechnical conditions that influence their business organizational strategies.

The thesis is structured as follows: In the second part of the research proposal, the MLP analysis and the theoretical background of between the MLP-BMI integration is explained. The third section discusses the case studies and outlines the methodological operationalization of the research. In the fourth chapter, the results of the research are presented. As a next step, these results are analysed. The fifth chapter summarizes the findings and answers the research questions. Finally, in the sixth section, further implications and limitations of the findings are discussed and further research is proposed.

2. Theory

This section starts with an introduction of the MLP theory, followed by a presentation of four distinctive transition pathways and an analysis of their characteristics. Thereafter, the linkage between niche entrepreneurial agency and BMIs theory is provided. Finally, the influence of the BMI, as stabilizing or disruptive instrument of agency, in the setting of diverse regime transition pathways is pointed out.

2.1 Sociotechnical systems and Multi-Level Perspective

Following the systemic standpoint of sectoral systems of innovation (Malerba, 2002) MLP proposes a heuristic to explain the transition processes that take place within a sector (Geels, 2004). Change is not only an outcome of knowledge and market structures dynamic interplay but it also embraces sociological sets like heterogenous networks, regulations, users' relations and future expectations (Rip and Kemp, 1998). The theory unifies the conceptualization of Lundvall's (1985) innovation systems to that of "sociotechnical systems", elaborating a broader societal context of systemic processes interaction (Smith, Voß, & Grin, 2010).

MLP points out three analytical levels of a sociotechnical system, the regime, the landscape and the niches (Geels, 2002) that bond together in a "nested hierarchy". Regimes are embedded in landscape and niches to regimes (Geels & Schot, 2007). Dynamics among these levels determine agency and structure among the sociotechnical system and forge trajectories of technological and social development (Geels, 2002; Smith et al., 2010).

The sociotechnical regime is a dominant set of structure, culture, policies and practices (Loorbach & Rotmans, 2010) that enables the institutional realization of a particular societal function (Smith & Raven, 2012). It epitomizes the deep structure of the sociotechnical systems (Geels, 2004). Path-dependent cognitive routines, sunk investments in technologies, infrastructures and competencies and regulations, standards and cultural values, all lock-in the system upon to the existing socio-technical trajectories (Geels & Schot, 2007).

For analytical purposes, we can dismantle the sociotechnical regime in six dimensions. The a) policy dimension reflects financial policies, policy initiatives, laws and regulations in a regime; b) the technology dimension reflects the major innovation developments and their fit in the existing technological infrastructure and standards; c) the industry dimension revolves around the industry stakeholders, the value chain network dynamics and the relationships of competition and collaboration that determine the power dynamic among the firms of the industry; d) the cultural dimension is about the public perceptions, norms and values that legitimize the regime; e) the science dimension refers to cognitive institutions and the guidance of research processes. g) Finally, the market dimension involves user demands, preferences and behavioural (Geels, 2004; Geels & Schot, 2007).

In alignment, these dimensions integrate and co-evolve and the same time provide strong stability in the regime and restraining niche breakthrough. But as these dimensions are also heterogeneous, they preserve internal dynamics. Autonomous developments in the internal of these dimensions can result in tensions inside the regime, de-alignment, loosening and destabilization of the whole structure. The destabilization of an established regime creates windows of opportunities for promising alternatives, to gain access and adjust to the regime or to open-up paths for new regime configurations (Geels, 2002; Smith & Raven, 2012; Smith et al., 2010).

Niches are the micro level structures were novelty first emerges. They work as incubation spaces for radical alternatives and mindful deviation paths unfolding, protecting them from the mainstream selection environment of the dominant regimes. Initially, these structures are less established, compared to regimes and the institutional rules that dictate their dimension interplay, are less articulated and highly unstable (Garud and Karnøe, 2001; Geels, 2004; Schot, 1998). But as they produce promising future expectations prevalent to the regime, they can mobilize a number of dedicated actors. If these actors carry out considerable cognitive, institutional, economic and political agency, novelties can break out of the niche, compete, join or even substitute the former regime (Smith, 2007). As we mentioned earlier, the tensions in the dominant regime provide windows of opportunities for promising niches, but niches can also grow dynamism in response to landscape pressures (Raven, Verbong, Raven, & Verbong, 2010).

The sociotechnical landscape is the exogenous background context which provides the qualities for all the other sociotechnical configurations. A macro-level structural framework encloses a great variety of different regimes and niches (Geels & Schot, 2007). Although usually slow over time, the landscape changes can be catalytic for regimes and niches dynamic interplay. Some landscape changes can reinforce the regime stability towards the existing sociotechnical trajectories, but others might put the regimes under extreme pressures providing windows of opportunities for emerging niche settings (Smith et al., 2010). Macroeconomic and demographic changes, deep social and cultural values, and factors like environmental threats, crises and wars constitute landscape processes (Geels, 2004).

2.2 Symbiotic-competitive relations and stability/change mechanisms

Geels & Schot (2007) describe the unfolding of sociotechnical transitions as the power struggle among symbiotic and competitive relations that take place in a sociotechnical system. As macro-landscape pressures emerge and stress the prevalent regime creating meso-level tensions, symbiotic or competitive relations are developed in the micro-level presenting actors' future expectations in response to these pressures. Symbiotic relations intergrade harmonically and become competitive, providing synergy to the regime selection environment in order to overcome its internal tensions, by adjusting their focus on incremental technological development, limited incumbent reorientation and compliance with the existing institutional framework. On the contrary, competitive relations challenge and disrupt the existing selection environment by developing radical innovations, disrupting the pre-existing institutional framework and displacing the incumbent with new entrants (Geels et al., 2016; Geels & Schot, 2007; Smith & Raven, 2012).

a) The institutional framework; b) the actors; and c) and the technologies are pointed out as the three "stability/change mechanisms" (Geels, 2004; Geels et al., 2016). Technologies differentiate as radical and incremental ones. Radical technologies are breakthroughs which employ a different structure of resources, knowledge and mindsets destroying or challenging the core competences of the dominant design (competence destroying technologies). On the other hand, incremental technologies are technologies which improve the price or the performance of the dominant design, building upon the same core of resources, knowledge and mindsets (competence enhancing technologies), (Tushman & Anderson, 1986).

Firms can be distinguished in incumbents and new entrants. Incumbents are well established actors, positioned centrally in an industry, while the new entrants are firms that entered the industry recently, usually the last 10 years (Chandy & Tellis, 1999). In this thesis, the incumbents represent the established financial institutions that existed before 2008's, while

new entrants are technology related start-ups or incumbent technological firms which entered the financial services industry after the financial crisis.

Finally, the institutional framework encompasses the cognitive, normative and regulatory rules, the industry structure and customer needs. In symbiotic relations the implementation of an innovation fits to and reproduces the established rules and regulations, industry structure of the regime and customer needs providing limited institutional adjustment. On the contrary, in competitive relations the adoption of an innovation is accompanied with the creation of new regulatory frameworks, new consumer needs and unsettling of the existing industry structures (Geels et al., 2016)

2.3 Transition pathways

The dynamic endogenous interplay among the three transition indicators and symbiotic and competitive relations unbends the conceptualization of distinctive transition pathways, see Table 1 (Geels et al., 2016; Geels & Schot, 2007) .

When the landscape tensions enable the overthrow of the established dominant designs from radical niche-innovations developed from new entrants, a substitution pathway takes place (Geels & Schot, 2007). Geels et al., (2016) distinguishes two substitution pathways. In case that these innovations are developed in a way that conforms to the established institutional framework, transform from path breaking (technologically) to incremental in broader institutional terms. In this case they follow a “fit and conform” pattern while if they disrupt the institutional environment they follow a “stretch and transform” pattern (Smith & Raven, 2012). For analytical reasons the first one will be addressed from now on as “fitting substitution pathway” and the second one as “stretching substitution pathway”. While in a stretching substitution, the new entrants will find themselves in a power struggle and counter mobilization against incumbents, in a fitting substitution, the new-entrants might come in terms and establish alliances with incumbents as their implementation does not threaten their position in sociotechnical order (Geels et al., 2016).

In a reversed situation, incremental innovations can be developed from incumbents to address regime tensions or provide add-ons and exploit entrepreneurial opportunities. In that case incumbents become the front runners of a “transformational” transition process which leads to limited institutional change (Geels & Schot, 2007). However, these small technological adjustments might trigger a cascade of incremental technological adaptations that could sequentially result in radical “reconfiguration” of the regime’s broader institutional framework in a “reconfiguration transition pathway”. During reconfiguration incumbents hold their position in the regime establishing alliances with new entrants (Geels et al., 2016; Geels & Schot, 2007).

	Innovation	Actors	Institutional framework
Fitting substitution pathway	Radical	New entrants collaborate with incumbents	Limited change
Stretching substitution pathway	Radical	New entrants	Substantial

Transformation pathway	Incremental	Incumbents	Limited change
Reconfiguration pathway	Incremental	Incumbents ally with new entrants	Substantial

Table 1: Transition pathways

2.4 Business Model Innovations

When the sociotechnical lock-ins restrain novelty creation, they result in firm failures and confine society in inferior technologies (David, 1985) or unsustainable ((Smith et al., 2010) designs. Scholars from various streams acknowledge the importance of explaining the transition and identifying agency instruments to overcome sociotechnical lock-ins.

Here, it is indicated how the regime tensions can influence the development of different BMIs and consequently how these BMIs can work as instruments of agency and shape the sociotechnical transition pathway.

Niches are the spaces where entrepreneurs with future visions, mindfully deviate from the existing practices, establishing new possible trajectories (Garud and Karnøe, 2001). Landscape pressures and regime tensions can provide a shielding space for niche development, but without actors' mobilization, the regime remains protected through the pre-existing selection environment and novelties cannot break through (Geels, 2002; Smith & Raven, 2012; Smith et al., 2010). Therefore, studying actors' agency is necessary for understanding the transition processes. While the role of users and others social actors for the niches' institutionalization is stated in literature, the role of entrepreneurial actors in transition processes through entrepreneurial agency still remains vague (Battilana, Leca, & Boxenbaum, 2009; Smith & Raven, 2012).

Entrepreneurial activities are decisive for the development of a niche, as they exploit existing systemic by-products like new technology and knowledge, networking and customers preferences to generate innovative business opportunities (Hekkert, Suurs, Negro, Kuhlmann, & Smits, 2007). The firms employ Business Model Innovations to take advantage of these business opportunities (Osterwalder, Pigneur & Tucci, 2005). BMI indicates that entrepreneurial value and novelty is not created only through the rare situations of radical technological development. It is also created through creative imitation and adaptation processes of business resources and capabilities. This is how breakthrough competitive advantages for businesses (Bocken, Rana, & Short, 2015) like a change in the distribution channels, a targeting in a specific customer category or an alternative pricing mechanism, are created (Richardson, 2008).

There are plenty different taxonomies of BMIs in the literature counting from three to more than ten categories of BMs. In this thesis, the conceptualization of BMI will be based on Richardson's, (2008) basic categorization. This typology distinguishes three distinctive categories of BMI. The value proposition; the value network (or value creation and delivery system); and the value capture.

The value proposition is related to offerings. In some cases, relies on an added benefit that makes one product better than others in the market, a superior offering in terms of performance, distinctiveness or cost savings. In some other cases this benefit has value only towards a targeted customer segment. People are willing to pay extra in order to obtain some kind of distinctive personal or societal value ((Boons & Lüdeke-freund, 2013; Richardson,

2008). The value network relates to the methods and the network that firms use to deliver their services. Outsourcing processes, key activities, value chains and distribution and partner channels represent the means by which the values (like value proposition) are delivered (Richardson, 2008). The value capture is all about the retaining of some value that firms gain from every offering transaction. This can include alternative pricing mechanisms or new forms of compensation (Bocken et al., 2015; Richardson, 2008). In table 2, it is explained how changes in regime dimensions can give rise to the various value proposition, value network and value capture BMIs.

2.5 Fit and conform and Stretch and transform

As niche innovations (in that case BMIs) gain legitimacy and empower the competitiveness of the niches, Smith & Raven (2012) suggest two different possible paths that the transition process in the regimes can follow. In the first path, niche firms become competitive developing routines that employ some kind of synergy to the regime selection environment (fit-and-conform) through their BMIs. The synergetic fitting and conforming BMIs reproduce or maintain users' behavioral routines as well as cultural norms and values. They also reinforce the incumbent industry structure and harmonize with rules, regulations and requirements, see table 2. BMIs that fit and conform with the regime selection environment work as stability mechanisms against the regime tensions and enhance transitions towards transformative or fitting substitution pathways where the institutional change is limited.

On the contrary, BMIs “stretch-and-transform” the existing regime becoming a change mechanism, when they challenge and transform the selection environment by stimulating new behavioral routines; new norms and values; by breaking down or challenging the established industry structure dynamics and by stimulating new policy initiatives (Smith & Raven, 2012), see table 2. This process of change is not unintended, but an outcome of entrepreneurial niche agency that was implemented through the development of BMIs. Except from the influence of regime tensions in BMIs development, BMIs can influence back the regime dimensions and drive towards new paths. As these BMIs destabilize aspects of the institutional framework, they enhance the transformative substitution and the reconfiguration transition pathways.

Dimension	BMI-related hypothesis	Interpretation of Fit and Conform BMIs	Interpretation of Stretch and transform BMIs
Technology	<p>H1: Value proposition: Technological developments can bring to fruition new offerings (e.g. the developments in streamlined connectivity enable seamless proximity payment offerings via smartphone).</p> <p>Value network: Technological developments can provide new alternative distribution channels, challenging the pre-existing value chains (e.g. the streamlined platforms provide a new channel for services distribution to customers).</p> <p>Value capture: Technological developments can create opportunities for new sources of revenues</p>	<p>BMIs fit and conform to the regime selection environment when they deploy technologies that are incremental or symbiotic to the regime technical infrastructure.</p> <p>BMIs fit and conform to the regime selection environment when they transform path breaking technological innovations to incremental in broader institutional terms</p>	<p>BMIs stretch and transform the regime selection environment when they deploy technologies that are radical to the regime technical infrastructure.</p> <p>BMIs stretch and transform the regime selection environment when they transform incremental technological innovations to radical in broader institutional terms</p>

	(e.g. IOT and Big Data developments give rise to data monetization schemes in financial services sector).		
Market	<p>H2: Value proposition: Market demands can give rise to new offerings (e.g. market demand for convenience, simplicity and speed in transactions trigger payment offerings through telecommunication channels like SMS, email and social media accounts).</p> <p>Value capture: Market demands can define what kind of values can be captured. (e.g. payments services' customers are willing to pay additional fees or subscriptions for value-add services likes advanced analytics or promotional marketing).</p>	BMIs fit and conform to the regime selection environment when they reproduce or seamlessly integrate with standardized behavioural routines	BMIs stretch and transform the regime selection environment when they trigger new behavioural routines
Culture	<p>H3: Value proposition: Public perceptions about the regime's norms and values and the symbolic meaning the relevant technology can legitimize new offerings (e.g. a new culture of openness in business environment legitimizes BMIs based on sharing economies and computing as a Service).</p>	BMIs fit and conform to the regime selection environment when they address or reproduce pre-existing norms and values.	BMIs stretch and transform the regime selection environment when they craft new or reproduce new norms and values.
Industry	<p>H4: Value proposition: The entrance of new players in the industry can give rise to new grounds for competition and offerings differentiation (e.g. the entrance of tech firms in financial services triggers offerings in new grounds like and data collection, advanced analytics and business intelligence).</p> <p>Value creation and delivery: The entrance of new players in the industry can provide new opportunities for collaboration and power redistribution across the value chains (e.g. incumbent can collaborate or acquire new entrants to position themselves across the payments value chain).</p> <p>Value capture: The entrance of new players in the industry can give rise to new sources of income. (e.g. new payment entrants can capture additional revenues from offering value-add services).</p>	BMIs fit and conform to the regime selection environment when they maintain or reinforce; a) the existing value network chain; b) the position of incumbents within those value chains.	BMIs stretch and transform the regime selection environment when; they disrupt or challenge the existing value network chain; b) they reinforce the position of new entrants within those value chains.
Policy	<p>H5: Value proposition: Policy initiatives legitimize new offerings providing niches for BMIs development. Rules and regulations can determine authoritative aspects of the various offerings, outlining the rules that need to be followed for being considered legal (e.g. The first Payment Service Directive requests the maintenance of capital reserves for fintech firms that provide payment processing offerings)</p> <p>Value network: Rules and regulations can authorize the status of new industry players creating opportunities for new forms of collaborations. (e.g. the licensing of tech firms as payment institutions enables them to fragment the traditional payment services distribution channels and cater them through their established platform interfaces.).</p>	BMIs fit and conform to the regime selection environment when they harmonize with rules and requirements.	BMIs stretch and transform the regime selection environment when they trigger new policy initiatives.

Table 2: Hypothesized MLP-BMI integration framework

3. Methodology

This section starts with the research design developed for answering the three sub-questions of the thesis followed by the operationalization table. Then, the case studies are described, and their choice is argued. After that, the procedure of data collection and the strategy of data analysis will be explained.

3.1 Research Design

The aim of this thesis is to explain the role of BMIs within the broader transition process framework. For fulfilling this aim, three sub-questions were formulated. First, the field conditions developed in payments regime are pointed out. Secondly, an attempt is made to explain how these factors influence the shaping of BMIs and thirdly the influence of BMI in the regime unfolding is analysed. To address these questions, various concepts from the MLP and BMIs literature are used.

To answer the first sub-question the context of sociotechnical regime dimensions was used. An attempt was made to identify a) emerging technological streams influencing the technological dimension; b) market demands influencing the market dimension, c) public perceptions about norms and values influencing the cultural dimension, d) firm entrances and exits conditions and changes across industry dynamics influencing industry dimension and e) policy initiatives, rules and regulations influencing the policy dimension. Science dimension is excluded from the analysis as cognitive institutions seem to play limited role in fintech disruption.

For the second sub-question, the sociotechnical regime dimensions were combined with the value proposition, value network and value creation BMI concepts. For responding to this question, I tried to identify what BMIs modalities derive from the changes in each of the five regime dimensions.

Finally, in addressing the third question, the transition pathway context is used. It is examined under which conditions, the BMIs modalities establish synergetic (fit and conform) or competing (stretch and transform) relationships towards the various regime conditions. The stability or competitive nature of these mechanisms helped to differentiate BMIs that drive towards incremental change in the institutional framework and transformative or fitting substitution pathways; or substantial change in the institutional framework and stretching substitution or reconfiguration transition pathways. Further categorization between transformative and fitting substitution pathway; and reconfiguration and fitting substitution pathway, derives from the selection of the two case studies. One of the case studies is driven by radical innovation and the other by symbiotic incremental technical implementations. The concepts, the dimensions and their indicators are presented in the Operationalization table.

3.2 Operationalization Table

Concept	Dimension	Indicators
Sociotechnical Dimensions	Technology	Emerging technological streams
	Market	User demands needs and preferences
	Culture	Publicly shared/perceived norms and values
	Industry	Firms' industry entrances/exits and changes in industry dynamics
	Policy	Financial policies, policy initiatives rules and regulations.
Business Model Innovation	Value proposition	New offerings in terms of performance, distinctiveness or cost saving characteristics
	Value network	Outsourcing processes, partnerships and organization strategies for positioning in the distribution channels
	Value capture	New revenue sources and alternative pricing methods
Fit and Conform/Stretch and Transform	Fit and Conform	Market: reproduce or maintain users behavioural routines
		Culture: reproduce pre-existing norms and values.
		Industry: enhance incumbents' positioning
		Policy: Harmonize with rules, regulations and requirements.
	Stretch and Transform	Market: trigger new behavioural routines
		Culture: address and stimulate new norms and values
Industry: break down or challenge established industry value chain dynamics		
Transition Pathways	Fitting substitution	Technology: Radical Institutional framework: Limited change Actors: new entrants collaborate with incumbents
	Stretching substitution	Technology: Radical Institutional framework: Substantial change Actors: Mostly new-entrants
	Transformation	Technology: Incremental/symbiotic

		Institutional framework: limited institutional change Actors: Mostly incumbents
	Reconfiguration	Technology: Incremental/symbiotic Institutional framework: substantial institutional change Actors: Incumbents ally with newcomers

Table 3: Operationalization Table

3.3 Case description

As mentioned in the introduction, the financial services sector is rarely addressed in transitions literature, despite being on the verge of a dramatic transformation. The fintech disruption, resulted in an outbreak of market investments and a rapidly growing number of fintech start-ups over the last decade (EY, 2016a; Kpmg, 2017). As fintech is a highly complex field with a wide range of business activities, this research focuses on the disruption that takes place in payments sector. Payments sector is one of the first segments that experienced the results of the fintech disruption and the one with the higher firms’ investment and adoption rates (Kpmg, 2017). The cashless payments and the blockchain arrangements indicate the fields of the fintech disruption in payments sector. The cashless payments disruption refers to technologically advanced, seamless methods of value transfer infrastructure (like online and mobile payment solutions), built upon the existing regime bank institutions infrastructure and in complementary services that are developed in line with those value transfer activities (like transaction performance analytics). The blockchain disruption refers to decentralized payment solutions and complementary services based on blockchain technology implementations. Cashless payments and blockchain represent the two case studies analysed in this thesis to understand the role of BMIs in sociotechnical transitions.

3.4 Data collection

During the research process, two sources of data were used. The first source includes qualitative secondary data (desk research) coming from literature and policy documents, business reports and outlooks. The policy documents studied, combine EU directives and documents published as part of a policy discussion in various EU institutions like the European central bank, the Euro Banking Association and the European Commission. The business reports and the outlooks were mostly retrieved by the Internet and the Holland Fintech¹’s digital archive; and include documents published by incumbent research organizations as well as reports and outlooks published by the fintech firms (like the Innopay, the Acapture, the PAYvision) which are part of the sample under consideration and provided a more inner view. In total, around (70) documents were studied.

The second source of data is based on primary desc research. A list was created, contains all the payment and blockchain related fintech firms operating in Netherlands and mentioned in the Holland Fintech Navigator Report (Holland Fintech, 2018), see Appendix table B. The list contains (136) active fintech firms. Their description and data which provide information about their BMIs are collected through their Web sites. Although, it is possible some BMIs not

¹ The Holland Fintech is the biggest fintech network, engaging organisations and fintech firms that aim for fintech development and networking opportunities

being located through their Web sites, the sample is quite big for identifying a quite representative sample of payments BMIs for conducting the research, see Appendix table B.

3.5 Data Analysis

In this section, the data analysis procedure is explained. The data obtained from the desk research are used for answering the first sub-question, describing the broader payments sociotechnical regime and identifying the sociotechnical field conditions. During this phase an iterative approach was followed in order to understand in depth, determine and codify the critical sociotechnical elements that trigger BMIs within each of the five regime dimensions.

The next step followed, was the conduction of the primary research. During the primary research the fintech firms' data were collected and analyzed. Various BMIs schemes were identified in vitro and are presented in the fintech firms list provided in the Appendix, see Appendix table B. After that, the BMIs were concentrated in a new BMI list and taxonomized according to the theory established BMI concepts, see Appendix Table A. For answering the second sub-question, the BMIs where linked to the sociotechnical elements defined during the first phase. In some cases, new sociotechnical elements were identified and codified.

For identifying the influence of the BMIs in the regime, the fit and conform and the stretch and transform dynamics were explored both in the basis of the BMIs and the behavioral routines, the norms and values, the value chains and the compliance they induce back to the institutional regime. Finally, an attempt was made to explain the findings, based on a logic of a reversed synergy.

4. RESULTS

The results are presented per sociotechnical dimension. In the first part of the technology dimension section, the streams of the technological advancements that trigger BMIs are presented altogether, while in the second part it is pointed out which of these advancements and why are incremental or radical towards the conventional currency and payments technical infrastructure. The other four dimensions are split in two parts per case study, one for cashless payments and one for the bitcoin and the various dimension and BMI interactions. In the sixth section, the transition pathway analysis takes place.

4.1. Technology

4.1.1. Technology dimension influence in payments BMIs.

The electronic cashless payment applications first emerged in payment sector, in 1960's. They derived from the tradition paper-based methods (cash-checks) of payments making use of the innovative digitized electronic computing technologies and over the last 60 years witnessed an ongoing development. From the credit cards (1960s), to debit cards (1980s) and e-commerce (1990s) turned to surpass in volume the paper-based payments (WEF, 2015). Instead of cash, people placed their money in banks and received an electronic balance which initially could handle through plastic cards and direct debits.

The core of this early electronic technical infrastructure remained prevalent and relatively uncontested for decades, as the payment sector met limited technological disruption until the early 2000's. The recently emergent technical advancements in the fields of 1) streamlined connectivity; 2) biometrics and location-based identity technologies; 3) smartphones and portable electronic devices; 4) digital transformation of business and user environment, 5) cloud computing and Application programming interfaces APIs; 6) data applications like the Internet of Things (IoT) and the Big Data 7) advanced analytics; 8) and finally blockchain, give rise in a number of novel technical features and implementations for the formation of BMIs. The categorization tries to indicate the major technical streams that formulate the ongoing changes in payment services. In many cases, the technical advancements are outcome of more than one stream. Table 4, presents the influence of the afore mentioned technological developments to the various BMIs found.

Developments in wireless network sensors and transmitters, enhance the **streamlined connectivity** and enable novel contactless methods of data transmittance and payment integration(WEF, 2015). Innovations like Near field communication (NFC) electronic devices and Bluetooth low energy (BLE) beacons make possible the data exchange between two electronic devices brought in close distance through Bluetooth or radio-frequency waves (Deloitte, 2018; Payvision, 2016). NFC technology for example lies behind credit cards and electronic tickets contactless payment methods. The NFC technology when is embedded in POS terminals enable mobile phone and Wearable contactless proximity payment offerings. In terms of terminal POS, proximity payments find significant adoption in various industries value chains. For example, NFC machines can be found in parking or fuel terminals enabling purchases without personnel existence. The data transmittance capacity of the technology though, goes beyond payment function. Beacons can also mine real time geographical proximity data of customers or potential customers connected via their mobile phones. This way, retailers can leverage these data for business intelligence and contextualize messages for marketing uses for example, by processing the data via i-beacon protocols and providing personalized interactive experiences to their customers or providing personalized commerce

push notifications. The data collection and the promotional push capacities can be used for capturing revenues from lead generation, promotional push and other value add services. Under the same line, advancements in streamlined connectivity are made in wireless network connection of smart devices to mobile Internet. Developments in fields like Wireless Application Protocols (WAP) have increased significantly the shares of mobile In-app payments for retail services, combining also In-app administration and push notification offerings (Payvision, 2016). Smartphone users for example, can pre-order their food before reaching their restaurant, see real data like bus timetables or their nearby uber driver, receive push offers and pay for parking through their mobile internet connection.

Advancements in **biometrics** and **location-based identification** reflect Artificial Intelligence implementations and attract increasing aim by mobile payment service providers recently (Deloitte, 2018; PwC, 2017; WEF, 2015). Biometrics refer to digital identity authentication technologies based in biometric modalities like signature, fingerprints, voice or facial recognition rather than code and passwords that can be bridged or stolen. Location based identification refers to digital identity recognition and payment authorization through social media account implementations. Biometrics and location-based identification provide not only an extra value chain layer of security and authentication in payments, but also promote simplification and quicker digital payment authentication reducing the need of remembering multiple codes for your purchases.

The multilevel **smartphone** and **smart device** evolution that takes place in the portable electronic device market over the last decade, has significant influence in the broader payment value chain. In the past, to access information people needed to be physically presented in front of a connected pc desktop. Smartphones support on demand accessibility through a portable device that everyone possesses and carries anyway (Krishnan, 2014). The new smart devices not only offer convenient Internet access at any time and at any place, but also provide new capacities for unique payment and administration services. As analysed above, NFC implementations in smart phones and the supported wireless connectivity, empower mobile proximity and In-app payment BMIs and help users skip ques in pay desks. Developments in smartphone hardware applications like next generation cameras, voice or fingerprint scanners provide the security and convenience in payments authorization. Mobile wallets, personal account and business administration interfaces developed by payment application software developers, embellish the simplicity and the mobility, through all-in-one portable device payment and administration solutions. These solutions not only enhance the on-demand access on services, but also the real-time flow of data, rising additional benefits for marketing and business administration purposes in fields like hospitality and mobility. Finally, applications that allow the potential use of smart phones and tablets as payment terminals and card readers, diminish the cost of POS infrastructure for seamless payments (EY, 2016b; Jesse Mcwaters & Galaski, 2017; Krishnan, 2014; Payvision, 2016; PwC, 2017; WEF, 2015).

The **Digital transformation** refers generally to the digital conversion of the users' experiences and businesses' environment (EY, 2016b). The stream of digital transformation is quite extensive and partly includes all the BMIs that provide a digitized experience to their users. The digital transformation innovations typically co-occurs with improvements in terms of control, productivity and efficiency. For example, mobile payments are part of the digital transformation scheme as far as they substitute cash payments and enable the digital management and administration of expenses and balances. In the same logic, desktop and mobile interfaces, marketplaces and platforms operate as digital channels that enhance users experience. Digital transformation is critical facilitator as far as business environment is

concerned. Digital channels of communication with customers like interactive in-store experiences; digital ordering platforms or augmented reality services; payment interfaces; customer Interactive Voice Response (IVR) services substituting calling centres, are some examples of front-end implementations of digital transformation in business environment (Martin, 2017). Digital billings and invoicing; disclosure services; business intelligence and automation software tools are also examples of middle and back-end digital transformation offerings.

Except from the value proposition, the digital transformation challenges also the industry structure and the power dynamic among financial players, resulting in the shaping of value network BMs. The digital platforms become the main channel of financial services delivery, substituting the delivery networks of the conventional value chains (Jesse Mcwaters & Galaski, 2017; Sachin & James, 2016). This integration is analysed further in the industry section.

Cloud computing and **APIs** are part of digital transformation, but also represent the rise of the sharing economy as far as software and data, hostage and integration is concerned (EY, 2016b). Cloud implementations provide storage spaces and computing services at any time, place and device as a service, through Internet. The technology provides numerous benefits in the whole payment value chain, reinforcing the digitization of payment services (EY, 2016b; Filippov, 2018; WEF, 2015). Cloud can be used for storing, safekeeping processing and distributing great volumes of data inside a company business environment. Respectively, cloud works as a great solution for financial institutions with high volumes of digital data, especially when these data need to be shared between branches, partners or customers. Payment Service Providers use cloud computing for sharing and providing access to their databases and services to their retail clients. These services can include software, real time data, advanced analytics etc. Retailers can use cloud for providing data or communication services in their customers, host payment gateways, send digital billings or promotion notification, save invoices, sale reports or customer data. Individuals can access cloud through their digital mobile wallets. In the cloud interfaces, users can administrate their account balance, their expenses or create shared accounts for split payments. Cloud computing also reduces the barriers of upfront capital intensity and scalability as far as computing infrastructure is concerned, providing benefits for fintech start-ups and professionals. This topic will be addressed further in the Industry dimension.

APIs further revolutionize the shaping of the payment BM logic, working as access portals for software integration and third-party program development. Financial institutions, PSPs and payment software providers often hand over APIs options, enabling their customers to create tailor-made programmable interfaces based on their own set of preferred services (Accenture, Avanade & Microsoft, 2017). By giving access in their data and system, they also provide the opportunity in third-party developers, usually start-ups, to integrate their prototype innovations in their payment service system accelerating innovation and gaining market benefits. These offerings enable the customization of the payment solutions according to customer needs and enhance the composition of tailor-made services (EY, 2016b; Global Payment Innovation Jury, 2017).

Being constantly on the verge of technological focus, data advancements in payment ecosystem are not restrained only in storage, access and sharing functions of cloud and API technologies, but reach new heights after breakthroughs in fields like **Big Data** and **IOT**. Developments in IoT sensors and smart devices enhance the continuous monitoring and tracking of real time data from capital markets, social networks or broader physical world environment. Novel POS terminal and software systems can capture streamlined payment

flows of credit and customer data. At the same time, Internet and smartphone pervasiveness makes possible not only the instant transfer of data, but also the collection of data from sources and groups through all over the world. BMIs are based on big data software implementations for providing business and customer reports and records; track customer data; track transactions points of pain; and optimize business activities enhancing strategical decision making (EY, 2016b; Filippov, 2018; WEF, 2015).

Developments in various data sets visualization and sophistication software tools determine the **advanced analytics** step-up in payment BMI offerings. Advanced analytics aim to enhance strategical decision making and optimize business activities through functions like the better visualization of structured or unstructured data, the provision of forward-looking predictive analytics and data driven business and investment insights. In payments, applications that surround predictive analytics, reinforce business administration and optimization offerings like sale reports, customer, business and credit intelligence. Their implementation also mitigates business, currency and investments risks, while integrated in user interfaces can provide investments projection and simulations (EY, 2016b; Filippov, 2018).

Developments in cryptographic protocols, public distributed ledgers and tokenization, define the core components of **blockchain** underlined technology (Cermeño, 2016; WEF, 2015). The public distributed ledgers are types of databases or records, where important data is stored and replicated across various digital network nodes. The database is public and there is not an assigned central administration party. The data is shared and copied in a P2P distributed network (Cermeño, 2016; Hileman & Rauchs, 2017b). Being the most typical distributed ledger, blockchain comprises data transaction records into blocks. These blocks are orderly linked from the first to the last transaction in a “chain of blocks”. The ledger contains information regarding every past transaction, enhancing the authenticity and the security among its users even when there is lack of trust among them (Cermeño, 2016; FCA, 2017; Hileman & Rauchs, 2017b; WEF, 2015). Distributed ledgers play critical role in the shaping of offerings surrounding P2P transactions monitoring, administration and record keeping like cryptocurrency user administrative interfaces.

Blockchain encryption technologies enhance the security, confidentiality and integrity regarding sensitive data exchange in open access environments. Blockchain users can take advantage of novel cryptographic protocols to encrypt and securely transmit selected information globally and cost-effectively online (Cermeño, 2016; Oliver Wyman, 2016). Firms embed encryption technologies in their BMs, providing offerings around identity authentication and data security. Smart governance and online voting; smart contracts and partial payments; and personal data encryption BMIs rely on blockchain encryption implementations. Finally, the development of asymmetric cryptographic protocols supports an alternative pay-per-use for connected house appliances revenue BM. The advantages deriving from distributed ledgers and cryptographic protocols link the blockchain value network not only with the payments but also with value chains in the fields of Information Technologies (IT) and ticketing.

Tokenization is the final core component of blockchain technologies. In terms of tokenization, blockchain implementations enable the conversion of assets into a digital equivalent of computing bits. Commodities, equities, securities, currencies and all kinds of assets, can be referred to as a token when they are digitally demonstrated (Cermeño, 2016; Europe Central Bank, 2012; IOSCO, 2017). Offerings such as cryptocurrency brokerage; cryptocurrency value transfer rails; asset digitization services (smart property); and Document Digitization services rely on these tokenization attributes. The asset and currency conversion to tokens function,

works as a common value capture BMI, while the asset and data digitization attribute forms links with the value chains of speculative trading; capital market and liquidity; Payment and AI Integration; and Payment and Propriety Adjudication Integration value chains.

	Streamlined connectivity	Cloud computing and APIs	Digital transformation	Smart phones/devices	Data applications (IoT, Big Data)	Advanced analytics	Biometrics and location-based identification	Blockchain
Value proposition								
Payment processing		X						
Omnichannel payment solution		X	X					
Subscription processing		X						
Multidirectional settlements processing		X						
Cryptocurrency payment processing		X						
Cross-border settlements		X						
Global card issuing			X					
FX trading services		X						
FX trading platform		X	X		X			
FX transfer platform aggregator		X			X			
FX currency risk mitigation					X	X		
Sales analytics		X	X		X	X		
Business intelligence analytics		X	X		X	X		
Transactions Performance analytics		X	X		X	X		
Customer Data mining	X	X			X	X		
Electronic Billing (authorization) service		X	X					
Disclosure services		X	X					
Multibank administration interface			X					
Debt management		X	X					
Customization services for businesses and professionals		X	X					
Mobile app interfaces for businesses		X	X	X				
POS terminals	X			X	X			
POS software	X	X	X	X	X			
In App-payments	X		X	X			X	
TELE-Communication channel payments	X		X	X			X	
Sign2pay	X		X	X			X	
Transfer slip scan or photo	X		X	X				
QR codes scan	X		X	X				
Selfie payment	X		X	X			X	
Wearable payments	X		X	X				
Mobile phone proximity payments	X		X	X				
Mobile payment administration app	X		X	X				
Virtual account management		X	X	X				
Child account		X						

Customization and Personalization		X						
Split payment		X						
Virtual bank account			X	X				
Digital mobile wallets		X	X	X				
Giftcard/voucher			X	X				
Digital mobile cards	X	X	X	X				
Digital Loyalty rewards		X	X					
Interactive in-store experience	X	X	X	X				
Smart accounts		X						
Smart contracts		X						
Smart Governance								X
Multilingual support			X					
(IVR) solution		X	X				X	
Digital navigation services			X					
Cryptocurrency value transfer rails								X
Integrated bank account cryptocurrency transfers								X
Cryptocurrency Brokerage Services								X
Cryptocurrency trading platform			X		X			
Match and exchange			X					
Cryptocurrency Wallets		X	X	X				
Blockchain Document Digitization services			X					X
Blockchain business administration		X	X					X
Cryptocurrency administration interface		X	X	X				X
Cryptocurrency Investment management services		X	X		X	X		
Asset digitization services (smart property)			X					
Smart investment services								X
Real time data provision	X	X	X	X	X			
Digital payment security services		X	X				X	X
Smart tickets services			X					
Personal Data encryption service								X
Consultancy services and knowledge Sharing		X						
Value Network								
Platform set-up by new-entrants			X	X				
Platform set-up by financial services incumbents			X	X				
Payment services outsourcing		X	X	X	X	X	X	
Outsourcing cryptocurrency exchange services								X
Value Capture								
Lead generation	X	X	X	X	X			
Promotion fee	X		X	X				
Commercial software/application development		X	X	X	X	X		
Value-add services subscription	X	X			X	X		
Pay per use for (non) connected devices		X						X

TABLE 4: THE INFLUENCE OF TECHNOLOGICAL STREAMS IN THE CASHLESS PAYMENTS AND BLOCKCHAIN BMIs.

4.1.2. Competence-enhancing and competence destroying technologies

After presenting the major technological developments that disrupt today's payment and currency ecosystem, the necessity of pointing out the competence-enhancing or the competence-destroying character of these innovations within the payment ecosystem emerges. It goes without saying that all these developments are revolutionary in a broader sense and optimize considerably the performance, the efficiency and the capacity to use of older implementations. But for the payments case study, a distinction is made between blockchain and the rest of the technologies.

The conventional electronic currency and payment ecosystem is technically based on central banks and bank cash and reserve deposits infrastructure. The banks provide bank accounts where credits can be placed and issue cards, direct debits and credit transfers solutions. When transactions take place, banks and automated clearing houses undertake the balance change between the buyer and the seller accounts (The Paypers, 2017). Technologies like streamlined connectivity, payment platforms, smartphones for mobile payments, and biometrics, although they make these transactions seamless and more convenient, they are based in the same centralized clearing infrastructure. In these terms, these technologies are competence enhancing. The same applies for the innovations in the fields of digital transformation, cloud, data applications and analytics. The technologies enhance the conventional payment ecosystem embedding additional capacities and services in the existing payment value chain network.

On the other hand, the innovation displayed in digital blockchain cryptocurrency implementation, based on distributed ledgers, cryptographic protocols and tokenization, diversifies radically from the established central bank cash and reserve deposits core technical infrastructure of the conventional currency and payment ecosystem (Committee, 2018). The payment function fundamentally alters, taking place in a decentralized distributed fashion, through P2P networks and trading platforms outside the incumbent financial institution infrastructure (Hileman & Rauchs, 2017b; WEF, 2015). The blockchain implementation of payment services represent a competence destroying character making core building blocks like branches, deposits, cards and clearing processes obsolete for payment function. Respectively and for the purposes of the transition pathway analysis, blockchain is addressed as a competitive technology and radical innovation following a technological substitution logic, while the other technological streams reflect symbiotic incremental implementations and a more transformative logic.

4.2. Market

4.2.1. Market dimension and cashless payments BMIs interaction

Pointing out the market conditions that influence the BMI development, focus will be given in two distinctive categories of market demands. a) BMIs offerings and revenue models are developed that aim to reduce the barriers or inefficiencies that render the diffusion of payment novelties. b) BMIs that take advantage of technological advancement opportunities to address pre-existing market demands or improve their services in a more competence-enhancing logic.

As far as opportunities are considered, BMIs address demands regarding: 1) Online and International payment processing; 2) financial inclusion; 3) banking and business administration; 4) convenience, simplicity and speed of payments; 5) specialized or personalized information 5) value add services; 6) and credibility.

The rise of Internet and e-commerce brought to spotlight the applicability difficulties that face the conventional card, credit transfer and direct debit payment methods in online environment. Core payment attributes include features like the payment request from merchants; the sending of payment authorization from the buyer to its account provider; the acquiring of the credit from buyer's bank account; the reconciliation to the merchants account; invoicing as well as in some cases returns and refunding. All these features were undertaken by clearing financial institutions in the past, but the processing required time, was rooted through many banks and was possible only during branches working hours. As technology progresses and in line with the SEPA agreement, established bank institutions have improved their solutions (iDeal, SEPA payments) (The Paypers, 2017). But as e-commerce goes global and the various novel payment solutions keep increasing, the payment processing becomes complex even for the established clearing institutions. E-commerce requires the processing of transnational payments, made with foreign currencies, alternative or regional-based payment methods. These regions are often out of banking infrastructure reach and are characterized by different regulatory and compliance rules. As a result, e-commerce merchants; multinational enterprises; established financial institutions; as well as private individuals request faster, secure and cheaper **payment processing** and value transfer options (IMF, 2017). In response, payment and subscription processing are the most common BMI offerings provided from fintech firms not only for merchants but also as an outsourcing activity for established bank institutions and subscription based businesses. Other processing offerings include; the multidirectional settlements processing for big multinational enterprises that require multidirectional shipment distribution; cross-border settlement offering for international value transfers like payrolls and remittances for businesses and individuals; FX trading services for the consolidation of transnational payments; localized processing which enables professionals who operate in various FX markets (for example have branches or departments) to process their payments locally and avoid currency conversion costs); Other e-commerce related BMI drivers are related with the demand for currency conversion and currency fluctuation security. Offerings like FX trading platforms and FX currency mitigation address this type of needs.

The **financial inclusion** is an important concern for great population segments. People who live or work in developing countries have limited or no access in banking infrastructure and payment services. The technological advancement in fields like streamlined connectivity smartphones and cloud enable the formulation of BMIs in response to these demands (Castilla-Rubio, Zadek, & Robins, 2016; Krishnan, 2014). Fintech firm develop offerings like virtual accounts and Ibans, global card issuing and cross-border settlements aiming to satisfy these needs. In line with the financial inclusion for developing countries, entrepreneurs provide also financial inclusion to other unbanked segments like children. Child accounts offerings are shared accounts among parents and their children and aim to provide banking experience to younger unbanked population segments. Finally, invoice finance offerings illustrate a different form of financial inclusion, providing an alternative lending option for businesses which might have no access in capital markets or need small short-term liquidity. Businesses which need finance can exchange invoices that have not been paid yet for liquidity.

Having cards and bank accounts though is not enough. People want to be in control anywhere and at anytime. Advancements in streamlined connectivity, smartphone and smart device applications enable the development of **personal banking** and **business administration** BMIs (EY, 2016b; Innopay, 2018; Krishnan, 2014). For individuals, offerings like virtual banking interfaces, enable features like balance and expenses administration, payment arrangement and budget management tools. For professionals, multibank administration interface

offerings, enable the simplification and control of various bank activities through a single interface. Mobile-app interfaces for businesses and professionals enable real time access to business and customer data, through a mobile application for professionals. Finally, POS software offerings support tools for synchronization and management of multiple POS devices.

The technological advancements in streamlined connectivity and smartphone implementations gain even bigger importance when address typical customer preferences like **convenience, simplicity and speed** in payments (Bill Briggs, 2017; Krishnan, 2014; WEF, 2015). Avoiding queues and paying on demand are typical attributes of mobile payment BMIs. Offerings like In-app payments and digital wallets enable seamless payments on demand from within a smartphone application; similarly, transfer slip scan payments make possible by scanning invoices transfer slips; sign2pay through signatures in mobile phone screens; proximity payments and payment through QR codes enable faster payment at the checkout; Telecommunication payments refer to payments through SMS, email and social media accounts. The coming of age of millennials and younger tech-savvy population, gives rise not only to social media payments but also to more fun offerings like payments through wearable glasses, wristbands or by taking a selfie. Other convenience related BMIs include split payment offerings for digital wallets and digital card replacements.

In order to attract a greater spectrum of users, other offerings combine the payment capacity with user demands for **specialized or personalized information** content (Accenture, 2017). Integrated mobile App offerings, enable their users to receive real time valuable information (Krishnan, 2014). For example, a mobility integrated App can provide information about the prices of nearby fuel stations, parking spaces availability, public transportation schedules as well as integrated payment and booking options. Similarly, a hospitality integrated app, can provide booking options, ordering options, consumption and expenses information as well as payment and split options for two or more people. In terms of personalization, account customization and personalization offering, provides open API implementations that enable users to choose or tailor their preferred banking services. For example, users can receive real time data like FX currency rates, receive emails before conducting recurrent payments, install budget management tools, even design their own preferred interface. Customization services for businesses and professionals provides payments services customization capabilities for professionals. Businesses and other fintech firms can integrate the programs to their business environment or connect them with their tailor made payment solutions (Martin, 2017).

As professionals seek to improve their business' performance and efficiency, the digital transformation as well as the advancements in data applications and advanced analytics, give PSPs opportunities to compete and increase their customer shares by providing business-related **value-add services** to their customers (Merchants, professionals and other PSPs) (BCG, 2017; Bill Briggs, 2017; EY, 2016b; WEF, 2015). Categorizing the nature of the various value add services, BMIs related to: 1) data and analytics services for business optimization (like sales analytics; business intelligence analytics; transaction performance analytics; customer data mining ; consultancy); 2) Back-office services for business automation and digitization (like electronic billings; debt management; and closure services); 3) Customer support and services that enhance customer experience, (like IVR solutions; digital navigation; Multilingual support; and Interactive In-store experiences); 4) Promotion and advertisement services (like digital loyalty rewards, digital mobile cards; and interactive In-store experiences for promotional purposes) are pointed out. The development of value-add services creates new sources of revenues for PSPs like lead generation and promotion rate fees.

Finally, lack of trust is a typically addressed issue of financial activities which can restrain upscaled purchases/investments (PwC, 2014). Some fintech firms, have developed BMIs to address the demand for **credibility**. BMI offerings like smart accounts and smart contracts are addressing this need by leveraging trusted intermediation. In one case intermediation is achieved through blockchain legal agreements and partial payments and in the other through shared safe accounts providing visibility, tracking and safekeeping among all parties.

In terms of barriers: 1) the dispersion of various payment methods; 2) the security of digital transaction; 3) the system legacy issues; 4) the POS infrastructure cost; 5) and the lack of financial motives for users to use new payment methods instead of cards and cash are indicated.

The **dispersion** of payment methods common complexity matter for online merchants and professionals. A number of different banks provide a variety of payment solutions, while the number of electronic platform payment methods (older like Paypal and Alibaba or new ones like Klarna and Afterpay) and alternative payment methods like blockchains keep increasing. Although merchants want to support their customers' preferred payment method, it is inefficient in terms of costs and time to retain and manage various deposits, accounts or payment processing providers (Bill Briggs, 2017; Jesse Mcwaters & Galaski, 2017). To address this problem, PSPs firms provide Omnichannel solutions offerings in their BMIs. These are consolidated platform solutions which enable various payment methods processing through a single interface (some PSP support even 40 payment methods).

Concerns about **the security of digital transactions** reflects another pain point for the broader adoption of novel online payment methods (Tsiakis & Sthephanides, 2005). Both businesses and individuals are worried about fraud and credit loss during transactions or storage. PSPs often provide digital payment security offerings through their BMIs by including authentication and fraud detection software; and by utilizing biometrics and granular payment permission services. Some payment firms have developed so advanced solutions, that also capture value by selling the security and authentication software as a commercial application to other financial institutions.

The integration of novel payment services and software with the **legacy systems** (the preexisting business as usual digital environment) is another one restricting factor of adoption not only for incumbent firms but also for merchants (Jesse Mcwaters & Galaski, 2017). PSPs take advantage of APIs and cloud implementations to provide integration gateways and shared Computing (Software, Platform or Infrastructure) as a Service offerings (Bill Briggs, 2017).

The old In-store POS ecosystem cannot support modern mobile or seamless payment methods. The high **costs of new POS terminal** infrastructure is a barrier for the further diffusion of these solutions (Jesse Mcwaters & Galaski, 2017). Addressing this issue, PSPs and POS fintech firms provide more advanced POS terminal offerings. For example, new offerings enable the use of smart phones or smart devices as POS. Other firms capture value by renting or leasing POS infrastructure. These solutions are convenient also for events or short-term needs.

The final barrier is related to the **lack of financial motives** for individuals to utilize alternative payment methods for their purchases. In Credit card payments, the credit cards work as mediums for short-term loans for their users. People prefer credit card payment methods for making purchases taking advantage of the late payment feature (Jesse Mcwaters & Galaski, 2017). In response, fintech firms have deployed post-pay instalment payment offerings in

their platforms like late and spread payment or subscription usage for paying in instalments for leasing a product. These loan offers provide and an alternative interest revenue source from spread payments loaning. Loyalty rewards are rewards like offers or coupons provided to customers that make often purchases in stores. Fintech firms have developed similar offerings for digital purchases.

For identifying the reciprocal consequences that entrepreneurial BMI agency brings back to the payment ecosystem, focus is given on the influence that the BMIs have in the user behavioral routines. When an offering is integrated seamlessly in the users' payment system routines or addresses established regime malfunctions or inefficiencies without resulting in behavioral change, then the BMIs are fitting and conforming towards the established regime trajectories. On the other hand, when the new offering implementations result in or promote behavioral change and new user routines, then the BMIs stimulate stretching and transforming influence on the market.

The empirical findings present that the opportunity driven BMIs in cashless payments, fit and conform to the regime without resulting in users' behavioral change when:

- They aim to address problems of financial inclusion providing solutions such as bank accounts, cards, payroll services, banking interfaces and liquidity to unbanked population segments, like youths or people living and working in developing countries with lagging bank infrastructure.
- They aim to address payment regime inefficiencies in global, online and alternative payment methods by outsourcing or consolidating payment attributes like processing, collection, compliance and security. These offerings provide broader customer penetration and payment conveniences to businesses, while imitate the conventional card, direct debit and bank transfer processing services of the established clearing bank institutions for local payments.
- They aim to simplify, speed up and reduce the costs of established back-office and front-end business routines like invoicing, calling center support, accounting and disclosure services by automating and integrating them with novel payment solutions. These offerings promote the new payment solutions by integrating common business routines as value-add benefits of these solutions.

The barrier driven BMIs in cashless payments, fit and conform the regime without resulting in users' behavioral change when:

- They aim to address the infrastructural upfront costs and system integrity inefficiencies of the new payment solutions by reducing POS terminal costs with offerings like smart device configurations, POS leasing and computing as a Service solution. These offerings promote the new payments solutions intergrading them in the pre-existing infrastructure and routines.
- They aim to address complexity and security issues rising for the new payment schemes.
- They aim to provide short-term loaning services similar to credit cards.
- They aim to provide conventional loyalty reward services commonly similar to those met in In-store payments.

The payments BMIs stretch and transform the regime, exclusively through opportunity driven offerings. BMIs stimulate new behaviors and routines when:

- They aim to change the buyers’ payment patterns by promoting seamless and on demand (anyplace, anytime, anyway) payments. These new payment solutions aim to persuade users to conduct payments through their mobile phones, without waiting to return home for desktop payments, without waiting in queues in stores and without carrying wallets or cards.
- They provide access and visibility to new data-sets through their payment solutions, aiming to persuade merchants and retailers to use payment-related data in their business as usual routines for the optimization of the businesses administration and their decision making.
- They promote interaction services among customers and professionals. These new offerings aim to persuade professionals to interact with their customers in order to develop personalized customer-based products and services and enhance customer loyalty.
- They promote users’ integration in the design of new payment products and services. These new offerings aim to change users’ behavior transforming them from consumers to prosumers.

In overall, the BMIs developed in payment sector change the behavioral routines of buyers triggering them to ask for on demand and seamless payment solutions, personalized costumer-based product and services offerings and the opportunity to tailor their own interfaces. Respectively, merchants and retailers ask for data-related services for optimizing their business and assist their decision making, services providing greater interaction with customers for enhance customer loyalty and increase their sales and finally for opportunities to develop their own tailor-made services in response to their business environment. In Table 5, the stretching and fitting influence of the various BMIs towards the payment regime is illustrated.

	No behavioral change (FIT)	New behaviors/routines (STRETCH)
--	----------------------------	----------------------------------

Opportunities	<p>-Offerings that aim to provide financial inclusion services to unbanked segments or to developing countries with limited conventional banking infrastructure: Global card issuing; Child account; Virtual bank accounts (for unbanked); Cross-border settlements; virtual banking interfaces; invoice finance.</p> <p>-Offerings that aim to outsource or consolidate the payment services like processing, collection, compliance and security: Payment processing; Subscription Processing; Multidirectional settlements processing; FX trading services; Localized processing; Debt Management; FX currency risk mitigation; Processing/exchange transaction rate fee.</p> <p>Offerings that aim to automate and integrate in payment services, back-office and front-end common business routines; Electronic Billing; Disclosure services; (IVR) solution.</p>	<p>-Offerings that aim to change payment patterns, by promoting seamless and on-demand payments: In App-payments; TELE-Communication channel payments; Sign2pay; Transfer slip scan or photo; QR codes scan; Selfie payment; Wearables; Mobile phone proximity payments.</p> <p>-Offerings that aim promote new data-oriented payment services and routines for business optimization and decision-making., by enhancing access and visibility to new data-sets: Sales analytics; Business intelligence analytics; Transactions Performance analytics; Customer Data mining; Smart accounts; Mobile app interfaces for businesses; Platform aggregators POS software; Real time data; value-add subscription; Lead generation.</p> <p>-Offerings that aim to promote customer-based services by promoting interaction routines among customers and professionals: Integrated payment App; digital mobile card offerings; Smart Contracts; Digital Loyalty rewards; Interactive in-store experience; Digital navigation services; PSP Platform aggregator; promotion rate fees.</p> <p>Offerings that aim to promote a prosumer customer behavior, by enhance customers' integration in the design of new payment products and services: Account Customization and Personalization; Customization services for businesses and professionals.</p>
Barriers	<p>-Offerings and revenue models that aim to reduce the costs and enhance the integrity of new solutions infrastructural ecosystem: POS terminals (smartphone configurations); POS Terminal leasing/renting; Computing as a Service.</p> <p>-Offerings that aim to address complexity compliance and security issues deriving from the new payment solutions: Omnichannel solutions; Digital payment security</p> <p>-Offerings that imitate the Short-term loaning services of credit cards: Spread Payments; Late payment; Subscription usage; Interest from spread payments loaning.</p> <p>- Offerings that imitate the conventional loyalty reward services; Digital Loyalty rewards.</p>	

TABLE 5: CATEGORIZATION OF THE PAYMENTS BMIs ACCORDING TO THEIR FITTING OR STRETCHING INFLUENCE IN THE MARKET DIMENSION

4.2.2. Market dimension and blockchain BMIs interaction

Blockchain technology provides opportunities not only for its uses as an alternative value transfer rail and payment method, but also for broader technology intrinsic characteristics. Respectively, blockchain BMIs address market demands for a) faster and cheaper cross-border payments; b) payments on demand, portable and easily accessible; c) profits and speculative activities; d) liquidity allocation; e) business and document automation; f) trust; g) monitoring, transparency and security; h) and anonymity.

The globalization and e-commerce landscape developments give rise to demand for **faster, cheaper, cross-border** payment and value transfer methods (Europe Central Bank, 2012). The cryptocurrency decentralized distributed networks can operate as payment rails providing global, almost real-time value transfers, in lower costs than the established centralized financial institutions networks (Euro Banking Association, 2017; Hileman & Rauchs, 2017b, 2017a). Because of the lack of intermediation, the cost of the transaction process decreases, making the cryptocurrency value transfers cheaper (Committee, 2018; WEF, 2015). In response, cryptocurrency-related firms provide cryptocurrency value transfer rail offerings. In these offerings, the cryptocurrencies are used as a mean to an end addressing the demand for cheaper, cross-border value transfers.

The digital transformation and the growing role of data in payments, stimulate another one opportunity for cryptocurrencies. Their digital composition makes them **portable and easily accessible** on demand from desktops, smartphones and other electronic devices responding in preferences of tech savvy users (Committee, 2018; Hileman & Rauchs, 2017a). Transfer

offerings like Tele-communication payments, enable users to make cryptocurrency transfers via email or SMS, while user administrative interfaces offerings enable administration options like balance checking; history of transactions; and arrangement of reoccurring or future payments or direct payments.

The rapid increase of bitcoin monetary value during the past few years (reached historical high in 2017), provided outsized returns to its early adopters and worked as a broader landscape condition for its further diffusion. The demand for **speculative activities and profits** made strategic high-risk investors, but also individuals to ride the cryptocurrency wave and cryptocurrency investments turned into an alternative form of high risk portfolio investment (Committee, 2018; Hileman & Rauchs, 2017a; ING, 2018; Tasca, Hayes, & Liu, 2018)(Hileman & Rauchs, 2017a). Fintech firms capitalize in demand for speculation providing various BMIs. Trading platform offerings address the users' infrastructural demands for cryptocurrency speculative trading, providing marketplaces where the cryptocurrency and cryptocurrency derivative exchanges can take place. Investment management offerings assist cryptocurrency adopters in their investment decision making, providing cryptocurrency related features like advanced analytics; charts; technical indicators; and forecast predictions. Smart investment offerings generate cryptocurrency pools for the carrying out of speculative high-volume trading. On the other hand, alternative lending offering, enables cryptocurrency users to allocate interest by funding institutional traders, for carrying out margin speculative trading (IOSCO, 2017). Additionally, the tokenization attribute of blockchain technology builds linkages between demands for alternative investment or speculative trading and **liquidity allocation** market needs. Asset digitization offerings (smart properties), revolve around the digitization of non-currency assets like real estate, fractions of art pieces and company shares. Creators or propriety owners can raise capital by selling fractions of their ownership, while acquirers can keep the tokens (fractions) of propriety as asset investments or use them in trading platforms for speculative activities.

The tokenization capacity of blockchain technology though, provides also new opportunities for digital transformation and AI (Committee, 2018; Hileman & Rauchs, 2017a). Document digitization offering, makes possible the conversion of documents and data, like intellectual properties and propriety rights; contracts; and rental agreements; into digital computer-read scripts. These data and document digitization services reinforce Natural Language Processing (NLP), the ability of the machines to read and understand documents in human language, providing benefits for business and document automation (EY, 2016b). Smart Contracts offerings are based on contract digitization implementations for improving **trust** among parties by automating partial payments in line with proof of concepts.

The trust and transparency attributes, deriving from the intrinsic distributed ledgers records' verifiability and audibility, allow the use of blockchain technology for addressing broader **monitoring, transparency and security** related demands (EY, 2016b; Hileman & Rauchs, 2017b). Open source data administration offering, takes advantage of cryptographic protocols and distributed ledgers for distribution, sharing, storage and encryption of data in a business environment or through an open network. Smart governance offering, makes possible a secure community voting in a distributed network. Finally, smart ticketing offering, enables the monitoring and validation of tickets especially for the cases of fraud detection in secondary market.

Anonymity feature used to be an important facilitator for cryptocurrency adoption during the early days of Bitcoin. Individuals related with "sin activities" like black market trade; gambling; money laundering; tax evasion; who desired their identity to remain hidden used Bitcoin as a

medium of exchange. Although these activities have been almost disappeared today (Committee, 2018; Tasca et al., 2018) , the anonymity feature remain through personal data encryption offering in some cases.

As far as cryptocurrencies and payments is concerned though, blockchain technology faces a number of barriers. a) The lack of pre-existing cryptocurrency infrastructure; b) the lack of cryptocurrency economy; c) the high volatility of cryptocurrencies prices; and the lack of adoption motives are the main adoption barriers specified.

The **lack of pre-existing cryptocurrency infrastructure** is one of the main barriers encountered by the early Bitcoin adopters. The majority of cryptocurrency engaged start-ups discovered market opportunities in this gap directing their activities in the development of infrastructural offerings (Hileman & Rauchs, 2017b; WEF, 2015). Cryptocurrency brokerage service offerings respond to the demand for bitcoin provision developing gateways for cryptocurrency into national currencies exchange. Cryptocurrency exchange fee is the most common revenue model of the cryptocurrency firms. Cryptocurrency wallet offerings provide digital storage spaces for saving, sending or receiving cryptocurrencies. Trading platform offerings operate as marketplace platforms for cryptocurrency P2P transfers and exchanges, while match and exchange offerings are trading platform aggregator offerings which lean P2P transfers. In these platforms buyers and sellers place their selling and buying price orders and the exchange take place automatically when these prices are met.

Except from the lacking infrastructure, cryptocurrencies also find significant difficulties in accomplishing the conventional currency functions in operating as medium of exchange because of the **lack of a mature cryptocurrency economy** (Committee, 2018; Hileman & Rauchs, 2017a)(Kruh, 2017). People can acquire cryptocurrencies but can not use them to make purchases because businesses do not accept them. In response, PSPs and cryptocurrency firms have developed cryptocurrency processing in line with other payment processing option for e-commerce businesses. The offerings include not only cryptocurrency POS and invoicing systems but also services like payment tracking and invoicing notifications. In case that the merchants do not possess cryptocurrency wallets, integrated bank account transfer offerings undertake also the conversion of cryptocurrencies to local currencies and the distribution to merchants' bank accounts. Although the cryptocurrency processing allows the embeddedness of cryptocurrencies payment options in e-commerce, in the physical in-store payments, the cryptocurrencies remain largely unaccepted (Committee, 2018; Hileman & Rauchs, 2017a). Aiming to mitigate this issue, fintech firms convert cryptocurrencies to conventional currency items like digital vouchers or gift cards via cryptocurrency giftcard and voucher offerings. The users can turn their bitcoins to digital vouchers or gift cards and make in-store or online purchases at will. Another offering is the provision of Linked debit cards. Cryptocurrency users can purchase a connected with cryptocurrency wallet visa card and use it for purchases in places where visa is accepted. Once again, cryptocurrency firms can capture value fees from cryptocurrency exchanges and transactions.

The use of currencies as a unit of value storage represent the second basic function of currencies. Cryptocurrencies' high **price volatility** though, constitutes them high risk option for long-term storing (Committee, 2018; Hileman & Rauchs, 2017a). To address the high volatility concern for users, offerings like real time price and trade volume data and price alerts were developed. Although, these implementations do not address the problem of long term storing and are mostly directed for speculative purposes, they reduce volatility concerns for cryptocurrency adoption. Finally, for providing **financial motives** for new yet unknown

cryptocurrencies, issuers or fintech firms that operate trading platforms provide credit rewards for new cryptocurrency orders or referrals.

Focusing on the reciprocal consequences of the various blockchain BMIs pointed out, opportunity driven BMIs fit and conform the regime when:

- They aim to address the demand for cheaper cross-border value by promoting a non-visible use of cryptocurrencies as a mean to an end. In these cases, PSPs and cryptocurrency firms administrating the value transfer undertake the conversion of national currencies to cryptocurrencies and back to national currencies without affecting the payment routines of the sender or the receiver.
- They copy comforts and conveniences provided for the conventional payments, like administrative interfaces, payment through telecommunication channels and lending.

Barrier driven blockchain BMIs fit and conform the broader payment regime without resulting in behavioral change when:

- They aim to limit the need of cryptocurrency infrastructure for e-commerce cryptocurrency payments by converting cryptocurrencies to national currency and enabling storage in conventional bank accounts. In these cases, merchants and retailers can receive cryptocurrency payments and store the value in their bank accounts without needing to open and maintain cryptocurrency wallets.
- They aim to support the cryptocurrency market by copying and imitating conventional payment patterns. For example, cryptocurrency users can conduct payments by purchasing giftcards and electronic vouchers with cryptocurrencies or by acquiring credit cards connected with cryptocurrency wallets. Merchants and professionals can receive cryptocurrency payments by integrating cryptocurrency processing offerings in their omnichannel payment solutions. Finally, cryptocurrency users can exchange cryptocurrencies for national currencies like converting national currencies for FX currency through brokerage offerings.

Opportunity driven BMIs stretch and transform the regime stimulating new behaviours and routines when:

- They promote additional blockchain functionalities, for implementations beyond value exchange, like the monitoring attribute for ticketing or the digitization of documents for IT uses. These solutions aim to stimulate new routines for blockchain users.
- They promote the speculative character of cryptocurrencies. These new offerings aim to change the behavior of people towards currencies from medium of exchange to speculative assets.
- They promote user anonymity feature for cryptocurrency transfers. This offering aim to stimulate new routines of hidden identity for cryptocurrency users.

Finally, barrier driven BMIs stretch and transform the regime when:

- They aim to promote P2P decentralized forms of value exchange and value storage. Cryptocurrency users change their behavior conducting their transfers and saving their credits outside the conventional infrastructure.

- They also, promote the speculative character of cryptocurrencies. Offerings like price alerts or real-time price and trade volume data can stimulate speculative behaviors for cryptocurrency users.
- They aim to promote cryptocurrency adoption by providing rewards for users that change their routines adopting new cryptocurrencies.

In table 6, the corresponding impact of the various blockchain BMIs towards the market dimension is presented.

	Incremental change in behaviors/routines(FIT)	Substantial change in behaviors/routines (STRETCH)
Opportunities	<ul style="list-style-type: none"> - Offerings that aim to reduce cross-border transaction costs by making the use of cryptocurrencies in transfers hidden or non-visible for users: cryptocurrency value transfer rail. - Offerings that copy comforts and conveniences provided for the conventional payments: Tele-communication payments; user administrative interfaces; alternative lending. 	<ul style="list-style-type: none"> - Offerings that aim to promote new blockchain functionalities for use-cases beyond payments: Document digitization; Smart Contracts; Open source data administration; Smart governance; Smart ticketing. - Offerings that aim to promote a speculative character of cryptocurrencies: Trading platform (for speculation); Investment management; Smart investment; Asset digitization. Offering that promote anonymity feature: personal data encryption.
Barriers	<ul style="list-style-type: none"> - Offerings that aim to decrease the need of cryptocurrency infrastructure for e-commerce cryptocurrency payments: Integrated bank account transfers. - Offerings that mimic conventional payments solutions for cryptocurrency payments: cryptocurrency processing; giftcard/ voucher; linked debit card; Cryptocurrency Brokerage; Cryptocurrency exchange/transaction fee. 	<ul style="list-style-type: none"> - Offerings that promote a P2P decentralized form of value transfer and storage: Trading platform (for P2P transfers); Match and Exchange; Cryptocurrency Wallets. - Offerings that promote the speculative character of cryptocurrencies: Real time price and trade volume data; price alerts. - Offerings that aim to provide rewards for cryptocurrency adoption: credit rewards.

TABLE 6: CATEGORIZATION OF THE BLOCKCHAIN BMIs ACCORDING TO THEIR FITTING OR STRETCHING INFLUENCE IN THE MARKET DIMENSION.

4.3. Culture

4.3.1. Cultural dimension and cashless payments BMIs interaction

For the cultural dimension and its influence in BMIs development, focus is given on the public perceptions about the symbolic meaning of the conventional payment schemes. BMIs fit and conform with the regime when they are directed to address the pre-existing payment values and perceptions. On the other hand, when the BMIs aim to become attractive to public by promoting new values and perceptions about payment function, then the BMIs legitimize new payment schemes by stretching and transforming the regime.

In terms of pre-existing values, the conventional payment services schemes are strongly affiliated with the values of trust and security. The trust and security derived from the status and the position of the established bank institutions which used to be the major providers of financial services in payment ecosystem. Being under central government authorization and oversight, the bank institutions provided financial services which cultivated the feeling of security and trust to their users. Digital payment security offerings, provided by the new emergent PSPs and fintech firms, fit and conform the pre-existing values aiming to cultivate the same trust and security feelings to their payment solution users.

A second conceptualization of trust and security value commonly met in payment services, relates closer to the feeling or reliance. The established financial bank and clearing institutions stimulated a feeling of reliance to their users by providing solidified (consolidated) payment services. Banks as trust institutions undertook the whole payment process end-to-end and assured the users for the collection and distribution of the payments. Payment and subscription processing offerings provided by the fintech firms, fit and conform with the pre-existing values when they aim to promote a feeling of reliance in their users. In that case,

fintech firms symbolize themselves as trusted intermediators that guarantee security of payments.

In comparison to the conventional in-house payment services development and consolidation of the established bank institutions, BMIs of fintech firms stretch and transform the regime by cultivating a culture of openness in their clients' or partners' (individuals, merchants, professionals or other financial institutions) minds. This openness consensus emphasizes the importance of developing a sharing and collaboration culture in a business environment for expanding and improving payment services or reducing costs. This openness derives from BMIs that foster the shared access and integration in data, infrastructure, software and services in a business (Francioni & Schwartz, 2017). Respectively, BMIs like customization services for businesses and professionals; and customization and personalization offerings for individuals stimulate an openness culture enabling customers, retailers and financial services providers to integrate various payment services in their systems and share their own developed solutions through APIs. Computing as a service offering, opens up platforms, software, infrastructures and databases among customers, merchants, professionals and PSPs stimulating openness and shared economy mindset. Similarly, smart accounts stimulate openness when they enable shared access and vision in credit data for the realization of big investments.

Another cultural change driven by payment BMIs is related to the symbolic meaning of payment act as a function. While in the past, payment in the public mindset was all about the act of the value exchange (or credit transfer), the recent BMI implementations foster a new data-centric perception of payments (Francioni & Schwartz, 2017). Offerings like sales analytics, business intelligence analytics, transaction performance analytics and customer data mining, focus on valuable business-data exposure, having as result merchants, professionals and financial institutions to think differently (or broader) about the symbolic meaning of payment act as a data exchange function. Payments, from only value centric become also data centric stimulating an IT business culture. For financial institutions and PSPs, this translates into their transformation from payment institutions to IT service providers.

The cultural changes relate also to the conceptualizations of autonomy crafted to the public for adopting the new payment methods. BMIs offerings like Inn-App payments; Telecommunication channel payments; QR codes or transfer slip scan; stimulate the autonomy value when they are presented as payment solutions. People can use them on demand, without being restrained in front of their computer desktop interface in their homes or having to be present in a physical store. These offerings provide mobility and a feeling of autonomy following a logic of doing something through your portable device instead of going somewhere. Based on the same logic, mobile payment administration app offering provides a consensus of autonomy regarding the credit and expenses administration. Offerings like digital mobile wallets, digital vouchers and digital mobile cards symbolize autonomy from wallets and conventional plastic cards. They symbolize also autonomy from conventional bank intermediation and bank deposits. Table 7, presents the stretching and fitting influence of the cultural norms and values in the cashless payment BMIs development.

4.3.2. Cultural dimension and blockchain BMIs interaction

Similarly, to the aforementioned cashless payments reasoning, blockchain BMIs fit and conform to the pre-existing cultural regime when they promote trust, security and reliance values. Respectively cryptocurrency processing offering fits and conforms as aims to address these values for users of cryptocurrency payments. On the other hand, core components of

blockchain technology, like the shared access; transmittance; storage and verifiability; of records or data among the users of a distributed network, when embedded in BMIs, promote an openness consensus in users mindset. (Committee, 2018; Hileman & Rauchs, 2017b; Holland FinTech, 2018; Nakamoto, 2008). Consequently, open source data administration offering stretch and transform the payment services regime by enhancing the data access, sharing, and storage inside a business or an open network. These networks can operate as hubs for example for ideas sharing or open software development and find broader implementation in business environment of sharing economies.

The blockchain BMIs stimulate a different conceptualization of the autonomy value, related to the autonomy from hierarchical authorities. This autonomy lies closer to **decentralization and democratization values**, based on the inherently decentralized and self-regulated structure of the distributed ledger protocols (Committee, 2018; Holland FinTech, 2018; Nakamoto, 2008). BMIs that enhance P2P transactions or external to banks value storage spaces, like trading platforms and cryptocurrency wallet offerings, exclude the requirement of the third-party centralized authorization for value exchange and storage (Francioni & Schwartz, 2017). The fact that these BMIs can run outside of the central government authorization has as a result to reflect a feeling of independence and can gain support from people and visionaries who are critical to governments and central institutions (Committee, 2018). The consensus of independence from centralized authoritative structures though, finds implementations beyond the cryptocurrency P2P transactions. Smart contracts, smart government and smart propriety offerings promote a broader decentralized, non-authoritative intermediation among counterparties in a logic of democratization of everything (Francioni & Schwartz, 2017). The smart contracts enable self-executed instalment payments or business actions without hierarchical bureaucratic third-party intermediation. The smart government offerings promote secure voting and democratic decision making in a network without hierarchical authoritative bodies. Finally, smart propriety (mentioned also as asset digitization offering) promote the segmentation and management of proprietary assets without bureaucratic intermediation based on a consensus of a decentralized ownership logic. In table 7, the cultural norms and values that influence blockchain BMIs are illustrated.

	Fit and Conform	Stretch and Transform
Cashless Payments	- Trust, Security and Reliance	-Openness -IT business culture -Autonomy
Blockchain	- Trust, Security and Reliance	-Openness -Decentralization and democratization (autonomy from hierarchical authorities).

TABLE 7: CATEGORIZATION OF THE STRETCHING OF FITTING INFLUENCE OF THE CULTURAL NORMS AND VALUES IN CASHLESS PAYMENTS AND BLOCKCHAIN FIELDS.

4.4. Industry

4.4.1. Industry dimension cashless payments BMIs interaction

Before 2000s the emergence of new players in financial services industry was limited. In order to gain authorization for offering financial services and entering the industry, the newcomers had to address strict regulation-derived complexities and compliance requirements. Built upon the established institutional structure, the outline of these

requirements was beneficial to the competitive edge of the incumbent financial institutions (PwC, 2017). Over the last years though, this situation has been reversed. The incumbent financial institutions face difficulties to deal with the growing number of new complexities, rules and requirements being introduced. They need to expand their services towards broader global and online scope; and towards new technological fields and value chains. At the same time, they have to remain under central government oversight, risk averse and compliant with the demanding new regulations (derivatives of the economic crisis) (PwC, 2017; The Paypers, 2017; WEF, 2015).

On the contrary, these new landscape, technological and institutional conditions, create windows of opportunities for 1) ICT incumbent tech firms; 2) intra-industry partners and participants in the pre-existing payment service value chain (like firms providing digital billings, transaction monitoring, ATMs and POS terminals, credit acquiring or credit management services); 3) established firms in fields like marketing or logistics; 4) firms providing broader e-commerce solutions for retailers in industries like hospitality, mobility, telecommunications, travels etc.; and 5) new adaptive start-up fintech firms, to obtain new payment authorization statuses, enter and compete the payment services domain (Innopay, 2012; Jesse Mcwaters & Galaski, 2017).

The entrance of these new players influences how BMIs are shaped in regard to value proposition, value network and value capture. As new competitors emerge across the whole payment service value chain and the value chains of other tech and e-commerce related industries, the competition among them increases. Fintech firms try to attract new customers proposing new values and establishing new grounds for offerings differentiation. Offerings related to business intelligence analytics, promotional marketing, business automation and disclosure services become part of the cashless payment services scheme (Jesse Mcwaters & Galaski, 2017). A direct effect, in the face of the growing competition is the declined profitability of the traditional financial services revenue models. Competitive pressures reduce the margins of transaction or loan caps. The fintech firms redistribute their revenue models focusing on new sources of income. The provision of value-add services (like analytics or promotional marketing), lead generation (and in general data monetization) as well as commercial software/application development for retailers, businesses and other financial institutions represent typical value capture BMIs that are developed in response (Jesse Mcwaters & Galaski, 2017). In terms of value network, the entrance of new players in the payment services ecosystem results in changes in industry dynamics and the positioning of the established and new firms within this ecosystem. Alternative payment services channels bypass or fragment the traditional value chains, while links with other industry value chains are shaped. Value network BMIs revolve around new collaborations and forms of partnerships among the industry players as well as strategic shifts and positioning within the payment value chain.

For analyzing the reciprocal influence of the value network BMIs towards the broader payment regime, focus is given towards the incumbents' and new entrants' organizational strategies for their positioning within the payment services value chain. Answering what is the best value chain position for exerting agency in today's payment system, defines what power positioning means for the analysis. In literature, a big shift is identified to take place over the last years in many industries. The power redistributes from the service or product manufacturers towards the platform providers who become the owners of the customers experience (Zizzerini, 2016; Jesse Mcwaters & Galaski, 2017; Sachin & James, 2016). By taking advantage of the direct customer engagement, the platform providers can increase their market power a) by leveraging their branding against the often non-visible manufacturers; b)

by orchestrating the provided services, making recommendations and steering customers towards specific choices/services; c) by accessing, controlling and distributing data across the whole payment value chain, from customers to manufactures and vice-versa (Jesse Mcwaters & Galaski, 2017; Sachin & James, 2016).

Respectively, when fintech firms opt to collaborate with other established financial institutions by outsourcing payment services (or infrastructure) in terms of licensed collaborations and B2B solutions, implemented in pre-existing incumbent services value chains, a fitting and conforming strategy is followed. On the other hand, when the fintech firms aim to strategically position themselves in payment services value chain by setting-up new payment services distribution platform/interface levels, substituting past incumbent distribution channels, then a stretch and transform relationship is developed across the whole payment value chain. These new entrants shape a competitive relationship with the existing value chains. A similar stretch and transform relationship is developed through the service expansion of segment platforms towards payments services. Tech firms operating in other sectors and providing other forms of business services, take advantage of their established platform and customer network and engage also payment services offerings in their BMI value network. This way, they position themselves within payment services value chain developing pressuring and competitive relationships with the established distribution value chains. In response to these schemes, intra-industry financial services institutions deploy a number of value network BMIs strategies to maintain and enhance their position in the platform distribution level. Incumbents often procure platform (or other payment services) solutions by establishing incubator programs, start-up accelerators and subsidizing spinoff fintech firms. Payment services manufacturers and established financial institutions of the traditional financial services value chain, set-up platforms for expanding or for distributing their services themselves. In other cases, the financial institutions merge or acquire platforms (or other payment service) from fintech firm providers in order to gain access and power in platform distribution channels. As these value network BMI strategies maintain or enhance the pre-existing financial players and their position dynamic, represent a fit and conform relationship. Table 8, presents the fitting or stretching influence of the various cashless payments value network BMIs.

4.4.2. Industry dimension and blockchain BMIs interaction

The early development and expansion of decentralized value transfer distributed schemes is largely driven by new entrants (Cermeño, 2016; Europe Central Bank, 2012; FCA, 2017). In our sample the oldest firm was founded in 2011. People with past experience in financial businesses spotted the market gap and business opportunities in the upcoming cryptocurrency trend and rode the cryptocurrency wave by developing a number of start-ups, that were initially related with cryptocurrencies and later on, with broader blockchain implementations (Holland FinTech, 2018; WEF, 2015).

As traditional financial incumbents do not participate in cryptocurrency schemes and the start-up fintech firms are outsiders of the conventional payment services value chains, the cryptocurrency payment and value transfer ecosystem is built upon a new-built value chain network running outside to the incumbent banks and automated clearing houses infrastructure (Hileman & Rauchs, 2017b; WEF, 2015). These industry dimension conditions influence fintech firms BMIs in value proposition. The majority of cryptocurrency engaged start-ups develops infrastructural offerings like cryptocurrency wallets/interfaces, exchange gateways and trading platforms (Hileman & Rauchs, 2017b; WEF, 2015).

Accordingly, the industry conditions influence the shaping of value network BMI strategies. Operating in alternative P2P decentralized value chains, the cryptocurrency fintech firms bypass the conventional value chain structure and the intermediate role of the centralized financial institutions. The new entrants position their value network strategies across the whole payment services value chain. For example, cryptocurrency start-ups that initially had as only activity the conversion of physical world currencies to digital cryptocurrencies, progressively, develop additional infrastructure and services like cryptocurrency storage spaces, cryptocurrency trading platforms and vice versa. This way cryptocurrency fintech firms attempt to strategically consolidate the whole cryptocurrency value chain. Accordingly, other cryptocurrency firms opt to consolidate their cryptocurrency services establishing partnerships with other start-ups or by merges and acquisitions. These value network strategies described, enhance the competitiveness of the alternative cryptocurrency value chain and the power of cryptocurrency firms against the conventional payment value chain. Hence, they stretch and transform the broader payment services industry.

Partnerships with established financial institutions on the other hand are not commonly met. Some collaborations are established as some PSPs want to include cryptocurrency solutions in their payment services. In these cases, the cryptocurrency fintech firms outsource cryptocurrency exchange services for the PSPs platforms fitting and conforming with the cashless payment services regime.

Finally, value network BMIs related to the entrance of blockchain fintech firms in non-payment related sectors, like ticketing and IT, has stretching and transforming influence for these industries' value chains and not for the financial sector. For this reason, they are not analyzed further.

	Fit and Conform	Stretch and transform
Cashless Payments	<ul style="list-style-type: none"> -Outsourcing payment services -Procured platform spinoffs -Platform set-up by financial services incumbents -Platforms acquisitions by incumbents 	<ul style="list-style-type: none"> -Platform set-up by new-entrants -Segment Platforms
Blockchain	<ul style="list-style-type: none"> -Outsourcing cryptocurrency exchange services 	<ul style="list-style-type: none"> -Infrastructural consolidation -Start-up collaborations -Start-ups merges and acquisitions

TABLE 8: CATEGORIZATION OF THE FITTING OR THE STRETCHING INFLUENCE OF THE VARIOUS CASHLESS PAYMENTS AND BLOCKCHAIN VALUE NETWORK BMIs.

4.5. Policy

4.5.1. Policy dimension and cashless payments BMIs interaction

Focusing on the influence of policy dimension in the shaping of the payment BMIs, notice is given in the broader political context and the recent payment-relevant rules and regulations present at the EU area.

Over the last years, landscape developments like the globalization; the establishment of the EU single market scheme; the e-commerce; the recent economic crisis—in line with the emergence of fintech firms deploying new financial technologies (like virtual currencies;

machine learning; customer data analytics; etc.) resulted in the establishment of an increasing and complex body of rules, policies and regulations in the financial (PwC, 2017).

Over the last years, landscape developments like the globalization and the establishment of the EU single market scheme; the e-commerce; and the recent economic crisis, as well as the emergence of fintech firms deploying new financial technologies not addressed from the past regulatory frameworks in fields like virtual currencies; machine learning; customer data analytics; etc. result in the establishment of an increasing and complex body of rules, policies and regulations in the financial sector (PwC, 2017).

These rules, policies and regulations revolve around two rationales of thought. The first, relates to the policy target of **wealth creation**. Under this logic, the policy makers aim to dispose the regulatory barriers that hamper the development of entrepreneurial activities and form a legal framework for supporting payment innovation, having principally in mind the positive impact in real economy (Europe Central Bank, 2012; European Parliament and Council, 2012). The globalization; the raise of e-commerce; the establishment of EU single-market; and technological advancements in payments financial sector and enhance government expectations regarding wealth creation opportunities (PwC, 2017). Regulators and central government bodies, respond to these developments and introduce supportive policy initiatives and regulations, aiming to invite and legitimize entrepreneurial activities and gain competitive advantages for their economies.

The second rationale relates to policy concerns about **security** and **risk aversion**. The growing online and global setting of payments, the emergence of new unregulated tech-related payment services and the emergence of fintech firms which operate outside central government oversight, make the payment system more complex and bring about concerns regarding the security of the new payment schemes. The recent economic crisis and its consequences in broader financial stability, extended the inclination of government bodies for policies that foster compliance, security and the decline of risks. Respectively, the recent payment regulations reflect these concerns by introducing arrangements which aim to protect the users of the new payment services and the financial institutions from threats like fraud, credit or personal data breaches and the broader financial ecosystem from systemic risks (Arner, Barberis, & Buckley, 2017; Paypers, 2017; PwC, 2017).

The combined target of fostering innovation and entrepreneurial activities for economic welfare and improving compliance, security and authoritative oversight, is evident in the recent EU Payment Services Directive (PSD), the revised Payment Services Directive 2 (PSD2), and the Anti-Money Laundering Directives (AMLD) regulatory schemes (Committee, 2018). The PSD regulatory frameworks open the payment services industry for non-bank fintech firms, that comply in risk and security rules; and requirements, enabling them to enter, compete and collaborate with the financial institutions operating in the payments value chain. Value network BMIs are driven by such changes in policy dimension. Additionally, the PSD1 certifies the Payment Service Providers PSPs as a new non-bank category of payment institutions, authorizes them to officially initiate and execute payment transactions within EU and outlines the rules for BMI offerings related with payment processing. The PSPs fit and conform to these rules by establishing a number of capital, risk, transparency and customer protection processes in their BMIs. For example, they fall under the supervision of central banks, maintain specific capital reserves, provide their users transparent information about exchange costs, further charges, maximum transfer execution time, and refund rights (European Parliament and Council, 2018).

The Payment Services Directive 2 (PSD2) represent a revision of PSD1 in response to the new payment sector developments. The directive aims to enhance the entrance of tech and data-oriented firms, the collaboration and the payment innovation, by licensing a new category of payment institutions, the third-party providers (TPP) and by requiring from established bank institutions to provide data access to TPPs. PSD2 extends the legal framework regarding online and mobile payments and introduces regulations that shape the regulatory framework for payment services related to customer data access and management. The ongoing BMIs revolving around online or mobile payment and payment authorization, and transaction data for analytics and business intelligence, banking as a service (personal banking; credit administration, APIs integrations) are regulated by the PSD2 scheme (Elsenga, Olga; Huiskes, 2017) (Accenture, Avanade & Microsoft, 2017). The PSPs and the new TPPs payment institutions, in order to receive authorization, have to fit and conform to the PSD2 rules by implementing in their BMIs security and authentication procedures, like protocols followed in case of safety breach incidents; risk analysis of their payment services; insurances and liabilities for damages; strong customer authentication requirements. Finally, the Anti-Money Laundering Directives (AMLDs) published regularly, give emphasis mainly in the security issues regarding money laundering and terrorism funding (European Parliament and Council, 2018). The implementation of Anti-Money Laundering and Know Your Customer practices in their BMI offerings, indicate another one example of fitting and conforming reaction towards the policy dimension.

The regulatory complexity represents an additional indirect influence of policy dimension in BMIs development. As the broader policy environment becomes more complex and compliance and security requirements increase, payment institutions find difficulties to endorse security solutions and comply to the new requirements (PwC, 2017). Some Payment-related fintech firms take advantage of these complex policy requirements to introduce security-focused BMI offerings like digital payment security services and new streams of revenues from outsourcing the compliance requirements for other payment institutions.

On the other hand, it can be argued that new BMI offerings can stretch and transform the policy regime and become facilitators of policy initiatives, especially when developed outside authoritative oversight, like it happened for example with the non-institutional payment solutions (PayPal, TransferWise) emerged in early 2000s. The authorities became concerned about customer security and financial stability and devoted efforts to introduce new rules and regulations in order to integrate and formalize these solutions to the broader legal and regulatory framework (Europe Central Bank, 2012). The PSD1 represents a policy scheme enacted, to introduce and standardize security rules and requirements in payment processing offerings. As the payment services undergone towards customer data management over the years, the EU authorized the PSD2 which formulates data related rules and requirements. The transforming influence of BMIs in the policy dimension is not an outcome of entrepreneurial institutional work but an unintended after effect that influences the decision making of policy (Europe Central Bank, 2012).

4.5.2. Policy dimension and blockchain BMIs interaction

As far as blockchain and cryptocurrencies is concerned, the discordance between the consensus built upon the idea of wealth creation and the concerns about security and risk is more evident. In one hand, regulators in European Parliament and European Commission recognize and are willing to explore the potentials of blockchain technologies and cryptocurrencies for real economy. On the other, the financial-related European supervisors

like European Central Bank, European Banking Authority and European Securities and Markets Authority, point out the systemic risks deriving from the lack of a centralized access point for supervision and governance, the instability of cryptocurrency schemes, the unclear global distribution of the technology and the lack of authorized global jurisdiction authority. Consequently, although they realize the need for cryptocurrency users protection, they remain skeptical to implement similar formalization-as-payment-institution strategy for cryptocurrency firms, as such a strategy is expected to legitimize and further reinforce the cryptocurrency related entrepreneurial expectations and activities (Cermeño, 2016; Committee, 2018; Euro Banking Association, 2017). Nonetheless, the judiciary decision for the exception of Bitcoins from value-add tax (VAT) and cryptocurrency related constellations described in 5AMLD represent some contextual changes in policy dimension that influence the development of cryptocurrency BMIs. In October 2015, the European Court of Justice decided that bitcoins should be excepted from VAT. This decision is critical for cryptocurrencies as it judiciary indicates that cryptocurrencies should not be treated as commodities, but as forms of currency (Cermeño, 2016; Court of Justice of the European Union, 2015). In broader terms, the decision provides regulatory legitimacy for cryptocurrencies and allows their inclusion as payment methods in various commerce payment schemes enhancing the development of cryptocurrency payment processing offerings.

Taking under consideration the lagging authoritative oversight and the potential use of Bitcoins and other cryptocurrencies for money laundering and other illegal activities, EU published the EU Money Laundering Directive (5AMLD), in 2018. The directive is a response against the anonymity feature and attempts to supervise the gateways where digital cryptocurrencies are exchanged and enter the formal currency economy as well as the digital wallets where they are getting stored (Committee, 2018; Court of Justice of the European Union, 2015; Holland FinTech, 2018). In compliance cryptocurrency exchange and wallet provider firms need to adopt "Know your customer" (KYC) policies in their BMs. For example, for opening an account or making a first exchange higher than 150-euro limit, verification through a conventional bank institution account is required.

4.6. Analysis of the influence of BMIs in the fintech transition pathway.

The cashless payments and blockchain case studies addressed in the research, provide empirical findings for understanding the unfolding of the sociotechnical transitions in payments sector. In this section, I aim to analyze and explain how the BMIs influence the overall sociotechnical transition process by fitting and conforming or by stretching and transforming to the regime selection environment.

The cashless payments disruption began back in 1960's with the emergence of the first electronic card payment schemes. Until the early 2000s, the transition process followed a transformative pathway. Novel cashless payment implementations were slowly introduced by incumbent financial institutions. These implementations were based on and enhanced the incumbent central banks' and reserve deposits' infrastructure, being incremental and competence enhancing in broader institutional terms. Gradually, developments in the landscape (like the amplification of globalization and global market influence, the rise of e-commerce; the spreading of Internet; the digital transformation that takes place in broader business and user environment; and the recent economic crisis) and the regime dimensions (like the demand for cross-border payment processing, the rise of a new openness and shared business culture, the new payments policy schemes, and the entrance of new tech players)

created windows of opportunities for entrepreneurial agency. The Entrepreneurs take advantage of broader technological advancements in streams like streamlined connectivity, cloud computing and APIs, etc. for developing cashless payment related BMIs.

The BMIs developed, are built upon two opposing paths. The first path follows a fit and conform logic towards the established institutional regime. Under this logic, the cashless payments BMIs turn into an agency instrument that fits and conforms the advancements that take place in the broader technology dimension to the established institutional environment by steering them to address regime tensions and inefficiencies, see force A in figure 2. This happens by; reproducing the established behavioral routines (e.g. providing rewards offerings for online purchases similar to In-store payments); reproducing the pre-existing norms and values (e.g. trust security and reliance); maintaining the incumbent industry power structure (e.g. through spinoffs and acquisitions); and the harmonization with the *standardized compliance rules and requirements (e.g. maintain specific capital reserves)*.

Such fit and conform BMIs adjust the incremental or symbiotic cashless payments-related innovations enhancing the established institutional payments environment. This process develops forces that drive the transition towards a transformative pathway.

The second path follows a stretch and transform logic. The BMIs take advantage of the various technological advancements and the new capacities/features that these advancements can provide and try to become competitive by stretching the established institutional regime towards new technology derived institutional arrangements, see force B in figure 2. This happens when the BMIs; trigger new behavioral routines (e.g. promoting users' integration in the design of new payment products); shape or follow new norms and values (e.g. shaping IT business culture within payment services); and redistribute the industry power dynamics (e.g. setting up new platform distribution value chain levels) changing the regime institutional framework. The BMIs can also stretch the institutional framework leading to new policy initiatives by rising concerns about the system or users security but this is not an intended agency interaction.

Such stretch and transform BMIs, stretch the established payments institutional framework adjusting it to the new capacities of the cashless payments' technological advancements. This process converts the incremental or symbiotic innovations to radical in broader institutional environment terms, developing forces that drive the transition towards a reconfiguration pathway.

The blockchain disruption is more technology oriented and quite more recent as a phenomenon. Blockchain underlined technology emerged in 2009 taking advantage of novel implementations in the fields of distributed ledgers, cryptographic protocols and tokenization. Blockchain and cryptocurrency implementations were introduced by start-up blockchain fintech firms and the inherently radical/competence-destroying nature of the technology (which fragments and substitutes the established payment regime incumbent banks, clearing houses and reserve deposits technical infrastructure) held back the conventional financial institutions from operating in the blockchain field. Respectively the blockchain transition process unfolded following a technological substitution path logic.

The BMIs agency though, drives once again towards two distinctive substitution pathways logic. In the first path, the blockchain BMIs follow a fit and conform logic. The BMIs turn into an agency instrument, that conforms the blockchain underlined technology to established payment institutional regime arrangements, see force A in figure 2, when they reproduce

established payment regime behavioral routines (e.g. imitating payment comforts and conveniences provided in conventional payments like payments through telecommunications channels); reproduce the pre-existing norms and values (e.g. trust security and reliance); reinforce the position of the incumbents in blockchain value network (e.g. outsourcing cryptocurrency exchange services for PSPs); and harmonizing with the standardized compliance rules and requirements (e.g. adopting Know Your Customer policies).

Such fit and conform BMIs adjust the blockchain technology to the established payments institutional framework. This process converts the blockchain breakthrough technology to incremental in broader institutional environment terms developing forces that drive blockchain transition towards a fitting substitution pathway.

The second path revolves around a stretch and transform logic. The BMIs exploit the blockchain capacities for establishing new institutional arrangements. Under this logic, the payments institutional regime is stretched and brought in alignment with the blockchain technology capacities, see forces B figure 2. The BMIs develop stretching and transforming influence by triggering new behavioral routines (e.g. promoting P2P decentralized forms of value exchange and storage); by shaping or following new norms and values (e.g. promoting decentralization and democratization values through autonomy from hierarchical authority structures); by bypassing the conventional value chains and establishing new ones (e.g. collaborating for consolidating the whole cryptocurrency value chain) ; by triggering policy initiatives (e.g. the anonymity feature triggered the 5AMLD and the implementation of Know Your Customer policies for cryptocurrency exchange providers). Although this is an unintended influence, the 5AMLD Directive brought in alignment the payment regulatory framework to the anonymity feature of blockchain technology.

Such stretch and transform blockchain BMIs stretch the broader payments institutional environment adjusting it to blockchain technology capacities/features. This process develops forces that drive the transition towards a stretching substitution pathway.

The findings argue that stretch and transform and fit and conform forces are two extremes. In real-world sociotechnical transitions, both dynamics compete and synergize at the same time, outlining the characteristics of an ongoing transition process of adjustments which can be more stretching in institutional terms in some dimensions or time periods; or more fitting in others. The same resonance applies for interpreting the unfolding of sociotechnical pathways. There are sociotechnical constellations (in our case BMIs) that drive transitions towards a transformative pathway and others that drive them towards a reconfiguration pathway (or accordingly towards a fitting substitution pathway and a stretching substitution pathway) at the same time.

Figure 2, illustrates how fit and conform and stretch and transform BMIs influence the transition process working as agency instruments. Market, cultural, industry and policy misalignments often render the diffusion of novel technical implementations in a regime. The BMIs can mitigate those misalignments a) by adjusting the technological innovations to fit better with the regime institutional environment b) by stretching the institutional environment to adjust it to the new capacities of the technological innovations. The fit and conform and stretch and transform dynamics, deployed by the BMIs arrangements, although seem antagonistic, they develop a synergy in bringing in alignment, from different directions, the regime institutional environment with the novel technological advancements.

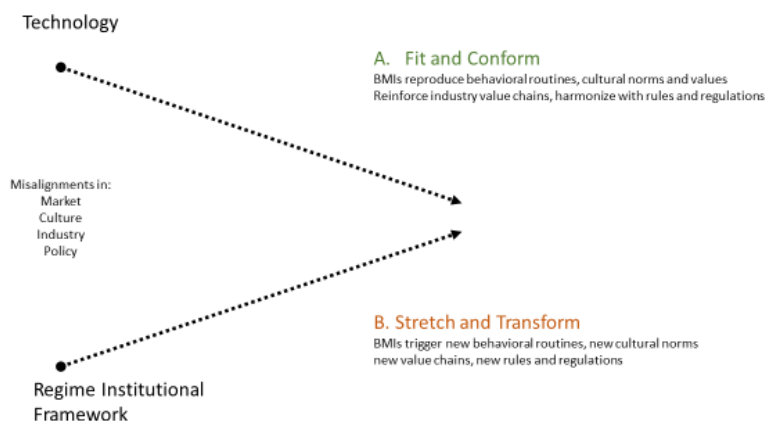


FIGURE 2: THE BRIDGING INFLUENCE OF FIT AND CONFORM AND STRETCH AND TRANSFORM BMIS IN ST TRANSITION PROCESS.

At this point, the difference between the substitution dynamics deriving from radical innovations and the transformative dynamics deriving from incremental or synergetic innovations in a ST transition needs to be pointed out. The cashless payments transition is driven by competence-enhancing technologies which are built upon the pre-existing bank and reserve deposits technical infrastructure, resources, knowledge and mindsets. On the other hand, the blockchain implementations are built upon a radically new to the regime distributed P2P network technical infrastructure, resources, knowledge and mindsets. Further misalignments in the technical infrastructure, resources, knowledge and mindsets increase the distance that needs to be bridged between technological innovations and the institutional regime environment. Hence, in radical innovation driven substitutional transitions like blockchain, the agency actors need to start from the scratch and apply considerably more institutional agency for constructing and legitimizing new technical infrastructure and knowledge adjustment arrangements. Respectively, greater time is required for the fulfillment of such ST transitions and greater are the chances of failure in breaking out of the niches, see figure 3.

These propositions are in line with the empirical findings in blockchain case study. The early cryptocurrency BMI offerings a) revolve around infrastructural arrangements, like gateways towards the conventional currency ecosystem through BMIs like brokerage offerings, or alternative infrastructural arrangements like P2P trading platform offerings and new value storage space like digital wallet offerings. Accordingly, cryptocurrency consultancy and knowledge sharing offerings aim to mitigate the knowledge gap with the institutional environment.

In overall, the blockchain ST transition, it is evident that remains largely at a niche-level. The traditional financial institutions remain outside the cryptocurrency industry, the regulatory bodies avoid legitimizing cryptocurrency schemes and firms, while the share of blockchain payments remain a margin of the conventional ones (Jesse Mcwaters & Galaski, 2017). On the other hand, the cashless payment ST transition break out from the niche level and reconfigured the whole payment industry. The number of payment providers increase gradually, while the conventional financial institutions adopt collaborative, acquiring or

subsidizing model is trying to better position themselves in the cashless payment new value chains. Regulatory bodies undertake supportive policy initiatives aiming to enhance the cashless payment fintech firms, their services and create new payment value chains. Individuals increasingly adopt seamless payment solutions (like mobile payment solutions) while the retailers ask for new value-add services from their payments' services provider.

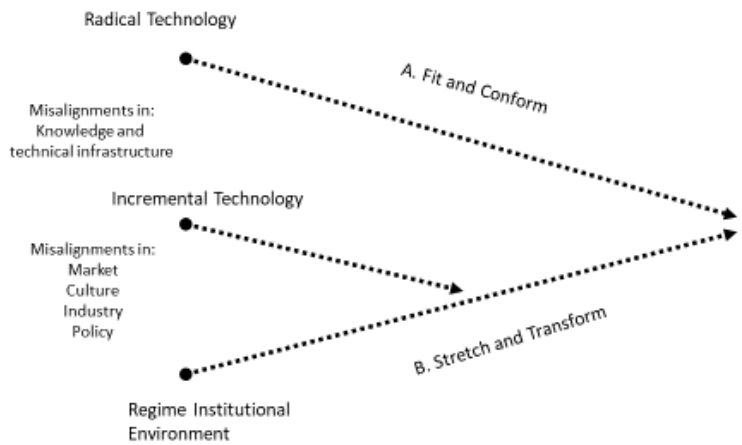


FIGURE 3: INSTITUTIONAL REGIME ENVIRONMENT AND TECHNOLOGY MISALIGNMENTS FOR RADICAL AND INCREMENTAL TECHNOLOGICAL ADVANCEMENTS.

5. Conclusion

The aim of this thesis is to answer, “*What field conditions enable the development of various payment-related BMIs and how these BMIs influence the sociotechnical transitions in the fields of cashless payments and blockchains, over the last decade?*”. In providing an answer to that, first the influence of the various regime conditions in BMIs development is presented, per dimension. After that, how the various BMIs develop fit and conform or stretch and transform forces against each dimension of the institutional regime is described. Finally, it is explained how these forces influence the sociotechnical transition within cashless payments and blockchain fields.

In technological dimension, various incremental and symbiotic technological advancements (e.g. streamlined connectivity; Cloud computing and APIs; etc.) trigger the shaping of BMIs in cashless payments field. On the other hand, the BMIs in blockchain field are triggered predominately by the blockchain path-breaking technology. From the findings derives that the new offerings in value proposition BMIs are largely based on novel implementations in the technological dimension. For example, advancements in biometrics and digital identity authentication enhance new mobile payment authorization offerings via fingerprints, signature, voice or facial recognition. Developments in blockchain and tokenization enable asset digitization and document digitization offerings. Developments in technological dimension make also possible the capturing of revenues from alternative sources more technologically oriented, like data and commercial software development. Finally, the digital transformation creates new digital platform distribution channels which challenge the established value chains and trigger new entrances and collaborations across the value network. The findings confirm the proposition H1 that:

H1: The technological advancements provide entrepreneurial opportunities for all the value proposition, the value network and the value capture BMIs arrangements.

In market dimension, the users’ demands, needs and preferences shape the status of BMIs in the value proposition. For example, BMI offerings like the provision of virtual bank accounts, i-banks and the issuing of global credit/debit cards for cashless payments addresses the need for financial inclusion in developing countries with lagging financial infrastructure. Accordingly, offerings like real time price and trade volume data and trading platforms address the speculative demands of blockchain users. The entrepreneurs focus also on the demand side, in order to discover new sources of revenues. For example, the merchants demand for value-add services from their payment providers, trigger new value capture BMIs lead generation and promotion rate fees. Respectively, H2 hypothesis is confirmed:

H2: Market demands give rise in value proposition and value creation BMIs.

In cultural dimension, the entrepreneurs try to take advantage of pre-existing or new common symbolic meanings and public perceptions around payment services and business environment for legitimizing their offerings. The values of trust, security and reliance trigger the offering of consolidated payment processing solutions. At the same time new values, related with openness, autonomy, decentralization and democratization of business environment are co-evolving with the various BMIs offerings. For example, the APIs customization and personalization offerings, are responses to a new consensus of openness in business environment, but the same they further cultivate this way of thinking. This confirms the hypothesis H3.

H3: Publicly shared norms and values legitimize value proposition BMIs.

In industry dimension, the sociotechnical conditions that trigger BMIs among the two fields vary. In cashless payments sector, new entrants from all directions (ICT tech firms; established firms in fields like marketing and logistics; intra-industry partners; e-commerce services providers; and fintech start-ups) take advantage of the cashless payment stream to access and overthrow the industry. In blockchain field the emerging firms are start-ups and run outside the incumbent payment value chain infrastructure. The new entrants try to differentiate, expanding their offerings towards new grounds, where they hold a competitive edge triggering new value proposition offerings. For example, in cashless payments, the new tech entrants develop offerings like business intelligence analytics and mobile app interfaces; the hospitality related start-ups integrate POS software with store management and administration solutions; and accounting software providers integrate disclosure offerings in the payment processing solutions. At the same time, the increased industry competitiveness reduces the profitability of the conventional revenue models and makes the payment providers to seek and develop new value capture BMI like subscriptions from value-add services or lead generation. Finally, the entrance of new players determines changes in power dynamics across the traditional industry value chains. New value network BMIs partnerships; outsourcing activities; and strategical arrangements like merges and acquisitions value network BMIs are exploited as industry stakeholders reposition themselves across the new value chains. This confirms hypothesis H4.

H4: The entrance of new players in industry dimension can drive changes in all value proposition, value network and value capture BMIs.

Finally, in policy dimension the rationales of a) wealth creation and b) security and risk aversion, stimulate policy initiatives rules and regulations like the PSD and the AMLD5 schemes. These schemes outline the setup of the BMI offerings by introducing various capital, risk, transparency and customer protection rules like the keeping of specific capital reserves and KYC policies. Furthermore, it is pointed out that policy dimension influences also the industry environment. The provision of PSP licenses authorized the operation of new entrants in payment related business activities triggering new collaborations and strategic arrangements in value network. This confirms the hypothesis H5.

H5: Policies, rules and regulations can legitimize new value networks BMIs and outline the setup of value proposition BMIs.

For analysing the influence of entrepreneurial agency in the regime market dimension, the impact that the BMIs have in users' behavioural routines was examined. Two different influences are presented. a) In some cases, entrepreneurs opt to conform to institutional rationalities adopting and reproducing standardized behavioural routines for gaining legitimacy. For example, the fintech firms that operate in digital payment platforms, adopt and reproduce short-term loaning routines for online payments (similar to the credit cards) by integrating payments and late payment solutions to their BMs. b) Hence, in other cases, the entrepreneurs opt to stretch the institutional environment triggering new behavioural routines for obtaining competitive edges in possible future trajectories. For example, offerings like tele-communication channel payments or phone proximity payments aim to change the routines that people conduct payments.

A similar logic follows the impact of BMIs in the cultural dimension. a) In some cases, the fintech firms opt to conform to and reproduce the established norms and values for gaining legitimacy. For example, there are fintech firms that develop digital payment security and compliance services for retailers and other financial institutions. Such offerings emphasize and reproduce the security and trust values of conventional banks in digital payments. b) In other cases, the fintech firms through their BMIs aim to cultivate new norms and values for increasing the legitimacy of their offerings. For example, offerings like Smart contracts, smart governance and smart propriety cultivate a culture of democratization and autonomy from central authorities which addresses the decentralized capacity of blockchain technology.

In industry regime, the focus is given in the value network BMI arrangements and their influence in the payment services value chains. The emergence of a new platform distribution level indicates a swift in dynamics in cashless payments field. a) Some value network arrangements enhance the positioning of incumbents in the new value chains reflecting a conforming influence. Such arrangements are the procuring activities or the acquisitions of start-ups by incumbents. b) Some other value network arrangements, like the setup of platform distribution levels by new entrants, stretch and transform the industry structure. In blockchain, the fintech firms run outside the incumbent value structure. a) in this case, the most value network arrangements stretch and conform the industry by enhancing the new value chains. b) There were also found some fit and conform value network arrangements when the cryptocurrency fintech firms outsource cryptocurrency exchange services for established financial institutions.

Finally, when specific rules and regulations are set in the policy framework, a) the fintech firms have to fit and conform in order to keep operating legally. The firms (re)-organize their BMIs and adopt the required risk and security standards. For example, the blockchain fintech firms had to adopt and harmonize with the KYC standards for keep operating legally. However, b) an indirect stretch and transforming influence was identified, when the BMIs rise security concerns for the users or the broader system financial stability.

Respectively, the BMIs operate within the sociotechnical context as two opposing transition forces. In cashless payments field, the BMIs that; reproduce behavioural routines; reproduce cultural norms and values; reinforce or maintain the established industry value chains; and harmonize with rules and regulations, drive the payment services transition towards a transformative path by conforming the incremental and symbiotic innovations to the established institutional environment. On the other hand, the BMIs that; trigger new behavioural routines; new cultural norms and values; challenge the established value chains; and stimulate new rules and regulations, drive the transition towards a reconfiguration path by stretching the established institutional framework towards new technological advancements' capacities.

In blockchain field the BMIs that; reproduce behavioural routines; reproduce cultural norms and values; integrate with established industry value chains; and harmonize with rules and regulations, drive the blockchain transition towards a fitting substitution path by conforming the blockchain breakthrough innovation to the established institutional environment. Similarly, the BMIs that; trigger new behavioural routines; new cultural norms and values; challenge the established value chains; and stimulate new rules and regulations, drive the transition towards a stretching substitution path by stretching the established institutional framework for addressing the new blockchain capacities.

While antagonistic in nature, the fit and conform and stretch and transform forces, deployed by the various BMIs arrangements, develop a reversed synergy by mitigating the

sociotechnical misalignments between technological novelties and the established institutional environment.

6. Discussion

6.1 Implications for Theory

Main purpose of this thesis is to contextualize the BMI entrepreneurial agency within the sociotechnical transition process. In this section, four areas of interest are pointed out, where the findings can contribute to the broader insight for the transition studies theoretical context.

Sociotechnical transitions and Institutional theory: The integration of the BMI concept with sociotechnical transition context brings closer the streams of institutional theories with the transition's studies. This relationship is addressed often in literature. Battilana et al. (2009), link institutional entrepreneurship with BMIs and the process of institutional change. They claim, that entrepreneurs become institutional entrepreneurs and pressure towards institutional change when they mindfully introduce diverging to established regime BMIs. This description resembles the stretching and transforming entrepreneurial agency forces described in our result. Under the same line of resonance, BMIs that develop fitting and conforming pressures reproducing behavioural routines, norms and maintaining the established value chain structure reflect isomorphic activities. The thesis findings indicate that the same regime conditions can lead both in stretching/divergent (when entrepreneurs expect to gain competitive advantages from change) and fitting/non-divergent (when expect to gain legitimacy benefits) BMI agency. Future research can try to understand whether the choice between the two paths is based in individual (knowledge, competencies, capital), behavioural (risk aversion) or other characteristics. Hence, the findings propose that even the fitting/non-divergent BMIs agency can drive to institutional change by bridging the institutional environment with novel implementations this can gradually lead to sociotechnical transition following a reconfiguration logic.

Sociotechnical co-evolution: Geels et al. (2016) describe the sociotechnical transition as a gradual process of interaction and co-evolution between the technology and the broader social context. *“The process of societal embedding is conceptualised as a co-construction process that entails mutual adjustments between the innovation and wider contexts... Behaviours, organization and society have to re-arrange themselves to adopt, and adapt to, the novelty. Both the technology and social context change in a process that can be seen as co-evolution”*. The thesis argues that BMIs are not to be seen only as instruments of entrepreneurial agency, but also contextualized in sociotechnical transition framework, they turn into arrangements that facilitate sociotechnical adjustments between the technologies and the institutional context enabling the co-evolution of the regime.

The Synergy of the Antonyms: The thesis also discusses, the synergy developed from both fit and conform and stretch and transform opposing dynamics for the realization of sociotechnical transitions. It is suggested, that while in a micro-level of analysis these forces seem antagonistic, in a systemic, macro-level scope they become synergetic enabling a sort of conformity between the new and the old. The existence of both forces mitigates the distance that needs to be covered, increases the variation and provides flexibility in the transition unfolding.

Transition pathways: Finally, the thesis reflects the limitations of the transition pathway analysis. As the transitions are enacted by a variety of actors, it is misleading to think that a transition unfolds towards one sort of a path. Opposing dynamics contest across various paths, as actors struggle over technologies and institutions. In this context, it is difficult to

define the direction of an ongoing transition in terms of dichotomies like new entrants and incumbents; radical or incremental innovations; substantial or incremental institutional change which represent extremes. For example, there are BMIs that change the institutional framework triggering behavioural changes and at the same time BMIs that fit to the institutional framework reproducing established behavioural routines. Similarly, there are BMIs that stretch the institutional order in one dimension and fit in another. The thesis argues to better define the unfolding of the ongoing sociotechnical transitions as a temporal alignment between opposing path dynamics.

6.2 Implications for Industry and Policy.

The findings of this research in the various dimensions, enable the development of some useful market and organizational strategy insights for the fintech firms. The field of cashless payments has reached in a stage of maturity. Under the PSP status, various firms have entered the industry increasing the competition and pressuring the profit margin of traditional services like payment processing. Incumbents and new-comers have to reorient their offerings and revenue models towards value-add services and new sources of income. Data seems to be the new prominent area of competition and differentiation for the PSPs as new streams of data become available (e.g. real time data, social network data). All data collection, ownership and analytics are expected to become decisive for competitiveness and for the development of new sources of income. Therefore, it is suggested to fintech firms to expand their BMs over various information and data sets and services. The PSD2, opens the access for PSPs to bank institutions' customer data sets, providing except from manifestation of policy support also new opportunities for partnerships among tech firms and bank institutions. Finally, the shift from branches to smartphone interfaces signals the rise of new distribution channels and new grounds of customer engagement. This provides the suggestion to incumbents and new entrants to extent their operation at some extent in the platform level.

As far as blockchain and cryptocurrency field is concerned, the 5AMLD provides some early policy legitimization in cryptocurrency schemes, harmonizing them with the conventional financial institutions security and compliance standards. However, for the time being, the cryptocurrency ecosystem as an alternative currency scheme is almost non-existent. While the value of cryptocurrencies has risen significantly, only a few goods or services can be purchased with cryptocurrencies. As a result, offerings that enhance the cryptocurrency penetration in the market and enable their use for purchases are proposed for the blockchain fintech firms. Collaborative schemes with PSPs, for including cryptocurrencies in their offered payment methods and linked digital wallets with credit/debit cards are suggested as promising inroads to the conventional market ecosystem. On the other hand, the revolutionary character of blockchain technology and the lack of a single standard in the broader blockchain applications, provides opportunities for experimentation in fields like monitoring, digitization and tokenization.

6.3 Limitations

Here, needs to be pointed out that in the initial planning of this research was aimed at conducting a number of interviews with financial sector experts for triangulating the desc-research findings and gain further insights in topics of interest. Due to misestimation, in the beginning, of the scope and size of a master thesis research (For several months focus was given in all eleven fields of fintech disruption, far exceeding the feasibility to be addressed in

one thesis and one researcher) and as the completion of the thesis far exceeded the projected time-schedule the interviews part was omitted. This represents a limitation to this research.

6.4 Future Research

Over the last decade, the financial sector undergoes a period of radical change. The fintech disruption influences almost all the areas of financial services, as tech firms and start-ups challenge the traditional financial institutions. This thesis focuses on the payments sector and attempts to explain the field conditions and the BMIs that drive the transition in cashless payments and blockchain. Further transition researches in other fields of financial disruption like insurances, digital banking, lending, capital rising etc. can assist in a more comprehensive understanding and verify the broader changes that take place in the financial sector. This can be used to complement this research.

The research here focusses upon field conditions BMIs that are present in a developed financial ecosystem. Another research therefore could focus on sociotechnical analysis of business model innovations in developing countries where the financial ecosystem is lagging. Pointing out the differences that are present in the various socio technical field conditions could give more emphasis on the regional characteristics surrounding BMIs and ST transitions.

Focusing upon the theoretical aspects of the entrepreneurial agency and ST transition process, further research can be directed towards alternative ways that entrepreneurs use to deploy agency to the unfolding of ST transition processes. The research gave emphasis on the BMIs constellations of entrepreneurial agency. Further research can examine other methods that entrepreneurs utilize to guide legitimacy, increase their competitiveness and how these can provide a smooth path for the transition process, bringing in alignment the technological novelties with the broader institutional environment.

References

- Accenture, Avanade & Microsoft. (2017). PSD2 and Open Banking Using regulation to kick-start the transformation of banking. Retrieved from https://info.microsoft.com/rs/157-GQE-382/images/PSD2%20and%20Open%20Banking%20Whitepaper_Microsoft_Avanade_Accenture.pdf
- Accenture. (2017). Meet Customer Demands ? Shifting Consumer Trends Create New. Retrieved from https://www.accenture.com/t20170125T114252Z__w_/us-en/_acnmedia/Accenture/next-gen-3/DandM-Global-Research-Study/Accenture-Banking-Global-Distribution-Marketing-Consumer-Study.pdf
- Arner, D. W., Barberis, J., & Buckley, R. P. (2017). FinTech and RegTech in a Nutshell, and the Future in a Sandbox. *Research Foundation Briefs*, 3(4), 1–20. Retrieved from <http://www.cfapubs.org/doi/abs/10.2470/rfbr.v3.n4.1>
- Battilana, J., Leca, B., & Boxenbaum, E. (2009). The Academy of Management Annals 2 How Actors Change Institutions : Towards a Theory of Institutional Entrepreneurship, (November 2014), 37–41. <https://doi.org/10.1080/19416520903053598>
- BCG. (2017). Global Capital Markets 2017: Mastering the Value Migration. *Global Capital Markets*. Retrieved from http://image-src.bcg.com/Images/BCG-Mastering-the-Value-Migration-May-2017_tcm9-153443.pdf
- Bill Briggs, C. H. (2017). Tech Trends 2017 | The kinetic enterprise, 140.
- Bocken, N. M. P., Rana, P., & Short, S. W. (2015). Value mapping for sustainable business thinking. *Journal of Industrial and Production Engineering*, 32(1), 67–81. <https://doi.org/10.1080/21681015.2014.1000399>
- Bolton, R., & Hannon, M. (2016). Governing sustainability transitions through business model innovation : Towards a systems understanding. *Research Policy*, 45(9), 1731–1742. <https://doi.org/10.1016/j.respol.2016.05.003>
- Boons, F., & Lüdeke-freund, F. (2013). Business models for sustainable innovation : state-of-the-art and steps towards a research agenda. *Journal of Cleaner Production*, 45, 9–19. <https://doi.org/10.1016/j.jclepro.2012.07.007>
- Boons, F., Montalvo, C., Quist, J., & Wagner, M. (2013). Sustainable innovation, business models and economic performance: An overview. *Journal of Cleaner Production*, 45, 1–8. <https://doi.org/10.1016/j.jclepro.2012.08.013>
- Castilla-Rubio, J. C., Zadek, S., & Robins, N. (2016). Fintech and sustainable development. Assessing the implications, (December), 90.
- Cermeño, J. S. (2016). Blockchain in financial services: Regulatory landscape and future challenges for its commercial application. *BBVA Research*, 16/20(December). Retrieved from https://www.bbvaesearch.com/wp-content/uploads/2016/12/WP_16-20.pdf
- Chandy, R. K., & Tellis, G. J. (1999). The Incumbent ' s Curse, 1–17.
- Committee, E. (2018). Requested by the ECON Committee ECON Thesaurus on Brexit, (July).
- Court of Justice of the European Union. (2015). Court of Justice of the European Union PRESS RELEASE No 128 / 15 The exchange of traditional currencies for units of the 'bitcoin'

- virtual currency is exempt from VAT, (128), 1–2.
- Cucculelli, M., & Bettinelli, C. (2015). Business models, intangibles and firm performance: evidence on corporate entrepreneurship from Italian manufacturing SMEs. *Small Business Economics*, 45(2), 329–350. <https://doi.org/10.1007/s11187-015-9631-7>
- David, P.A., 1985. Clio and the Economics of QWERTY. *American Economic Review* 75, 332–337.
- Deloitte. (2018), Innovate.Collaborate.Elevate Paynext 2018 Retrieved from <https://www2.deloitte.com/content/dam/Deloitte/in/Documents/financial-services/in-fs-paynext-2018-noexp.pdf>
- Doz, Y. L., & Kosonen, M. (2010). Embedding Strategic Agility A Leadership Agenda for Accelerating Business Model Renewal. *Long Range Planning*, 43(2–3), 370–382. <https://doi.org/10.1016/j.lrp.2009.07.006>
- Elsenga, Olga; Huiskes, A. (2017). Payment Services Directive 2 for FinTech & Payment Service Providers Accelerate your growth journey, 7.
- Euro Banking Association. (2017). Cryptotechnologies in international payments: Information Paper, (March). Retrieved from <https://www.abe-eba.eu/downloads/thought-leadership/EBA-Cryptotechnologies-in-international-payments-March-2017.pdf>
- Europe Central Bank. (2012). *Virtual Currency Schemes*. *European Central Bank*. <https://doi.org/ISBN: 978-92-899-0862-7> (online)
- European Parliament and Council. (2012). REGULATION (EU) No 260/2012 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 14 March 2012 establishing technical and business requirements for credit transfers and direct debits in euro and amending Regulation (EC) No 924/2009. *Official Journal of the European Union*, 94(260), 22–37. Retrieved from <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:094:0022:0037:EN:PDF>
- European Parliament and Council. (2018). 19.6.2018, 2018(648), 43–74.
- EY. (2016a). EY FinTech Adoption Index. *Ey*.
- EY. (2016b). EY FinTech Adoption Index. *Ey*, 1–5. Retrieved from <http://www.ey.com/GL/en/Industries/Financial-Services/ey-fintech-adoption-index>
- FCA. (2017). DP17/3: Discussion Paper on distributed ledger technology, (April).
- Filippov, S. (2018). Financial Services in the Digital Age, (February 2016).
- Foss, N. J., & Saebi, T. (2017). Fifteen Years of Research on Business Model Innovation. *Journal of Management*, 43(1), 200–227. <https://doi.org/10.1177/0149206316675927>
- Foss, N. J., & Saebi, T. (2017). Fifteen Years of Research on Business Model Innovation. *Journal of Management*, 43(1), 200–227. <https://doi.org/10.1177/0149206316675927>
- Francioni, R., & Schwartz, R. A. (2017). *Equity Markets in Transition*. <https://doi.org/10.1007/978-3-319-45848-9>
- Garud, R., Karnøe, P., 2001. Path creation as a process of mindful deviation. In: Garud, R., Karnøe, P. (Eds.), *Path Dependence and Creation*. Lawrence Erlbaum Associates Publishers, Mahwah, NJ, pp. 1–38.

- Geels, F. W. (2002). Technological transitions as evolutionary reconfiguration processes: a multi-level perspective and a case-study. *Research Policy*, 31(8–9), 1257–1274. [https://doi.org/10.1016/S0048-7333\(02\)00062-8](https://doi.org/10.1016/S0048-7333(02)00062-8)
- Geels, F. W. (2004). From sectoral systems of innovation to socio-technical systems: Insights about dynamics and change from sociology and institutional theory. *Research Policy*, 33(6–7), 897–920. <https://doi.org/10.1016/j.respol.2004.01.015>
- Geels, F. W., Kern, F., Fuchs, G., Hinderer, N., Kungl, G., Mylan, J., ... Wassermann, S. (2016). The enactment of socio-technical transition pathways: A reformulated typology and a comparative multi-level analysis of the German and UK low-carbon electricity transitions (1990-2014). *Research Policy*, 45(4), 896–913. <https://doi.org/10.1016/j.respol.2016.01.015>
- Geels, F. W., & Schot, J. (2007). Typology of sociotechnical transition pathways. *Research Policy*, 36(3), 399–417. <https://doi.org/10.1016/j.respol.2007.01.003>
- Geels, F. W., & Schot, J. (2017). *The Dynamics of Transitions : A Socio-Technical Perspective Transitions to*.
- Global payment innovation jury. (2017). An Insiders' View To Payments. Retrieved from <https://www.aciworldwide.com/-/media/files/collateral/trends/payments-innovation-jury-report.pdf>
- Hekkert, M. P., Suurs, R. A. A., Negro, S. O., Kuhlmann, S., & Smits, R. E. H. M. (2007). Functions of innovation systems : A new approach for analysing technological change, 74, 413–432. <https://doi.org/10.1016/j.techfore.2006.03.002>
- Hileman, G., & Rauchs, M. (2017a). 2017 Global Cryptocurrency Benchmarking Study. *SSRN Electronic Journal*, 44(0). <https://doi.org/10.2139/ssrn.2965436>
- Hileman, G., & Rauchs, M. (2017b). Global blockchain benchmarking study. *Cambridge Centre for Alternative Finance, University of Cambridge*, 122. <https://doi.org/http://dx.doi.org/10.2139/ssrn.3040224>
- Holland FinTech. (2018). Dutch FinTech Landscape, 1.
- IMF. (2017). Fintech and Financial Services: Initial Considerations. *Imf*, 49. Retrieved from <https://www.imf.org/~media/Files/Publications/SDN/2017/sdn1705.ashx>
- ING. (2018). Cracking the code on cryptocurrency, (June), 1–17. Retrieved from https://think.ing.com/uploads/reports/ING_International_Survey_Mobile_Banking_2018.pdf
- Innopay. (2018). Book of Insights 2018. Everything Transaction.
- Innopay, P. (2012). How to reduce the complexity Payment Service Providers face in a global e-commerce market.
- IOSCO. (2017). 74. IOSCO Research Report on Financial Technologies (Fintech). *International Organization of Securities Commissions*, (February).
- Jesse Mcwaters, R., & Galaski, R. (2017). Beyond Fintech: A Pragmatic Assessment Of Disruptive Potential In Financial Services. *Deloitte's/ World Economic Forum*, (August), 197. Retrieved from http://www3.weforum.org/docs/Beyond_Fintech_-_A_Pragmatic_Assessment_of_Disruptive_Potential_in_Financial_Services.pdf
- Kpmg. (2017). Global analysis of investment in fintech, (February), 1–97.

- Krishnan, S. (2014). *The Power of Mobile Banking*. <https://doi.org/10.1002/9781118932025>
- Kruh, W. (2017). The truth about online consumers. *KPMG International*, 1–40. <https://doi.org/10.1038/scientificamericanmind0509-54>
- Loorbach, D., & Rotmans, J. (2010). The practice of transition management : Examples and lessons from four distinct cases. *Futures*, 42(3), 237–246. <https://doi.org/10.1016/j.futures.2009.11.009>
- Lundvall, B.-Å., 1985. Product Innovation and User–Producer Interaction. Aalborg University Press.
- Malerba, F. (2002). Sectoral systems of innovation and production*1. *Research Policy*, 31(2), 247–264. Retrieved from <http://www.sciencedirect.com/science/article/B6V77-459H02Y-5/2/805c2d6a3af53b43a33f2a221520a7f0>
- Martin, D. (2017). Key Business Drivers and Opportunities in Cross-Border Ecommerce 2017, 91.
- Nakamoto, S. (2008). Bitcoin: A Peer-to-Peer Electronic Cash System. *Www.Bitcoin.Org*, 9. <https://doi.org/10.1007/s10838-008-9062-0>
- Oliver Wyman. (2016). Block chain in capital markets: the prize and the journey. *Euroclear*, (February), 24. Retrieved from <http://www.oliverwyman.com/content/dam/oliver-wyman/global/en/2016/feb/BlockChain-In-Capital-Markets.pdf>
- Osterwalder, A., Pigneur, Y., Tucci, C.L., 2005, Clarifying business models: origins, present, and future of the concept. *Communications of the Association for Information Systems*, 16 (2005), pp. 1-25
- Pateli, A. G., & Giaglis, G. M. (2011). Technology innovation-induced business model change : a contingency approach. <https://doi.org/10.1108/09534810510589589>
- Paypers, T. (2017). Open Banking & APIs Report 2017 A new era of innovation in banking Open Banking & APIs Report 2017.
- Payvision, K. M. (2016). THE MOBILE PAYMENTS REPORT 2016.
- PwC. (2014). How financial services lost its mojo – and how it can get it back.
- PwC. (2017). FinTech 's growing influence on Financial Services. *PwC Global FinTech Report 2017*. Retrieved from <https://www.pwc.com/jg/en/publications/pwc-global-fintech-report-17.3.17-final.pdf>
- Raven, R., Verbong, G., Raven, R. O. B., & Verbong, G. (2010). Multi-Regime Interactions in the Dutch Energy Sector : The Case of Combined Heat and Power Technologies in the Netherlands 1970 – 2000 Multi-Regime Interactions in the Dutch Energy Sector : The Case of Combined Heat and Power Technologies in the Netherlands 1970 – 2000, 7325. <https://doi.org/10.1080/09537320701403441>
- Richardson, J. (2008). The business model: an integrative framework for strategy execution. *Strategic change*, 17(5-6), 133-144.
- Rip, A., & Kemp, R. (1998). Technological change (pp. 327-399). Battelle Press.
- Sachin, M., & James, L. (2016). The Rise of FinTech in China, (November), 15–21.
- Schot, J.W., 1998. The usefulness of evolutionary models for explaining innovation: the case of The Netherlands in the nineteenth century. *History of Technology* 14, 173–200.

- Smith, A., 2007. Translating sustainabilities between green niches and sociotechnical regimes. *Technology Analysis & Strategic Management* 19 (4), 427–450.
- Smith, A., & Raven, R. (2012). What is protective space? Reconsidering niches in transitions to sustainability. *Research Policy*, 41(6), 1025–1036.
<https://doi.org/10.1016/j.respol.2011.12.012>
- Smith, A., Voß, J. P., & Grin, J. (2010). Innovation studies and sustainability transitions: The allure of the multi-level perspective and its challenges. *Research Policy*, 39(4), 435–448.
<https://doi.org/10.1016/j.respol.2010.01.023>
- Tasca, P., Hayes, A., & Liu, S. (2018). The evolution of the bitcoin economy: Extracting and analyzing the network of payment relationships. *Journal of Risk Finance*, 19(2), 94–126.
<https://doi.org/10.1108/JRF-03-2017-0059>
- The Paypers. (2017). Online payments and ecommerce market guide 2017. Retrieved from <https://www.ecommercewiki.org/wikis/www.ecommercewiki.org/images/5/5b/OPMG.pdf>
- Tsiakis, T., & Sthephanides, G. (2005). The concept of security and trust in electronic payments, 10–15. <https://doi.org/10.1016/j.cose.2004.11.001>
- Tushman & Anderson. (1986). Technological Discontinuities and Organizational Environments Author (s): Michael L . Tushman and Philip Anderson Source : *Administrative Science Quarterly* , Vol . 31 , No . 3 (Sep . , 1986), pp . 439-465
 Published by : Sage Publications , Inc . on beh, 31(3), 439–465.
- WEF. (2015). The Future of Financial Services - How disruptive innovations are reshaping the way financial services are structured , provisioned and consumed. *World Economic Forum*, (June), 1–178. <https://doi.org/10.1108/14636680410562972>
- Wei, Z., Yang, D., Sun, B., & Gu, M. (2014). The fit between technological innovation and business model design for firm growth : evidence from China.
- Wirtz, B. W., Schilke, O., & Ullrich, S. (2010). Strategic Development of Business Models Implications of the Web 2 . 0 for Creating Value on the Internet, 43, 272–290.
<https://doi.org/10.1016/j.lrp.2010.01.005>
- Zizzerini. (2016). FROM PIPELINES TO PLATFORM : How platforms ’ innovation creates a new business model and how they bring companies to success.
- Zott, C., Amit, R., Constance, B. De, Cedex, F., Zott, C., & Amit, R. (2019). Business Model Design and the Performance of Entrepreneurial Firms Organization Science infnuuM Business Model Design and the Performance of Entrepreneurial Firms, 18(2), 181–199.

Appendix

A) List and description of Business Model Innovations in Cashless Payments and Blockchain

Cashless Payments	
Value Proposition	
Payment Processing Services	Payment processing: Payment processing offerings for online purchases with particular transaction methods (credit or debit cards, SEPA direct pay, Ideal online banking, PayPal and other alternative payment methods).:
	Omnichannel payment solution: A single channel digital platform or interface offering, which seamlessly enables the processing of various payment methods for professionals. Customers pay with their preferable payment method and the platform converts and connects them to professionals' bank accounts.
	Subscription processing: Subscription processing offering for professionals including mandate creation and provision and recurrent payments collection.
	Multidirectional settlements processing: A digital platform interface offering that enables a multidirectional distribution of payment settlements. Split payments, multidirectional shipments, safekeeping and refund processing services are included. This is a service for big international firms or firms with a lot of suppliers and brunches where the payments need to be distributed in various bank accounts.
Oversee trading services	Cross-border settlements: International B2B transfers, Payrolls, remittances offerings for businesses and individuals.
	Global card issuing: Card offering (usually in collaboration with VISA or Mastercard processors) linked with physical or virtual accounts. These offerings enhance payrolls and purchases for unbanked population segments, usually in developing countries.
	FX trading: End2end payment collection, reporting, risk management, currency conversion and delivery offerings for professionals. The PSP undertake and consolidates the FX trading.
	Localized processing: A hub offering that enables professionals operating and selling in FX markets to manage their credit and payment processing locally with local PSPs reducing costs like FX conversion.
	FX trading platform: Platform offering for conversion among different currencies.
	FX transfer platform aggregator: A platform aggregator offering for comparing and discovering the cheapest and more suitable money transfer solution or PSP for its users.
	FX Currency risk mitigation: Offerings that decrease the fluctuation risk for enterprises and professionals doing businesses with FX currencies.
Business Intelligence and administration services	Sales analytics: Stats and sales report offerings for professionals.
	Business intelligence analytics: value add offerings for informed business management and decision making (advanced business data like order details, time and location; data administration software tools like data import and export gateways for integration with new streams of data and complex search queries; advanced and predictive analytics).
	Transactions Performance analytics: Data offerings for the optimization of the transaction process. (like points of pain and fraud detection in the transaction chain; smart routing and preferable payment methods; and algorithms in terms of cost-savings and authorization rates).
	Customer Data mining: Customer data offerings for professionals (regarding customer behaviour, identity preferences, gender, age but also creditworthiness), for the optimization of their solutions.
	Electronic Billing (authorization) service: Billing offerings for professionals (like invoices simplification, digitization and authorization; and recurrent billings automation and administration).

	<p>Disclosure services: Business disclosure software and management services like accounting and enterprise resource planning (ERP) offerings for professionals.</p>
	<p>Multibank administration interface: Simplification various banks and banking services administration through a single interface/platform hub consolidation offering for multinational and big enterprises.</p>
	<p>Debt management: Debt management and administration offerings for professionals with recurrent or late payments (like Email or sms reminders; links provision for easier payments; and transfers to debt collection agencies in case of payment rejection).</p>
	<p>Integration services for businesses: APIs software integration and customization offerings for businesses. Professionals can intergrade the offered solution or customize their own in their business as usual software environment.</p>
	<p>Mobile app interfaces for businesses: Mobile app interfaces offerings that enable professionals to access, manage and administrate real time, their businesses and customers data</p>
Point of sale	<p>POS terminals: POS terminal offerings (including standalone-devices; connected for franchises; in a smart phone configuration; and NFC readers for contactless checkout).</p>
	<p>POS software: POS software offering, (like software for In-app or single interface payments; and synchronization and management of multiple POS devices for ins-store sales).</p>
	<p>Cash online payments: Cash payment method and infrastructure offering for digital billings and online purchases.</p>
Post-pay Solutions	<p>Spread Payments: Instalment payment offerings for purchases via the payment platform. The customers pay in short-term instalments while retailers receive instant payments from the intermediate payment platforms.</p>
	<p>Late payment: Late payment offerings for purchases via the payment platform. The customers try before buy and pay in a short period after they receive their purchase while retailers receive instant payments from the intermediate payment platforms.</p>
	<p>Subscription usage: Instalment payment offering for the use of a leased product via the payment platform. The customers pay in instalments for leasing a product while the intermediate payment platform buys the product from the retailer and retains its ownership.</p>
Mobile Payment Methods	<p>In App-payments: purchasing offerings of physical and digital products or services from within a mobile app option.</p>
	<p>TELE-Communication channel payments: Billings and payment authorization offerings through email, sms, social media accounts and chat-boxes (Payment links, TAN codes etc.)</p>
	<p>Sign2pay: payment authorization offering by signing the screen of a mobile device.</p>
	<p>Transfer slip scan or photo: Payment authorization offering through scanning or taking photo the transfer slip of the invoice.</p>
	<p>QR codes solutions: Payment authorization offering through QR code scanning.</p>
	<p>Selfie payment: Authorization payment offering through selfies facial recognition</p>
	<p>Wearable payments: Wearables (like wristbands and glasses) offerings for contactless NFC payment authorization.</p>
	<p>Mobile phone proximity payments: Contactless in store Mobile phone payment offerings for contactless NFC payment authorization.</p>
Personal credit	<p>Mobile payment administration app: Mobile app offering that through its interface, enables its users options like; ordering; payments arrangement and automation; expenses administration;</p>
	<p>Virtual account management: Administration offerings for virtual account holders like balance and transaction checking and budget management tools.</p>

	<p>Child account: Connected account offering for children. Parents can instantly send money and have overview and administration of the account and the expenses.</p>
	<p>Customization and Personalization services: Personalized offering and API integration allowing users and developers to build tailor made software environment and financial services according to their preferences.</p>
	<p>Split payment: Platform or application offering that splits the cost of purchases, invoices or subscriptions between friends and relatives.</p>
Digital value storage	<p>Virtual bank account: Virtual bank account and Iban offerings.</p>
	<p>Digital mobile wallets: Portable digital value storage offerings replacing real wallets. Users can top-up them via bank accounts, cards and other methods and make payments and value transfers.</p>
	<p>Giftcard/voucher: physical or virtual cards with a pre-determined balance offering.</p>
Digital Loyalties and Rewards	<p>Digital mobile cards: digital replacements (in a form of barcodes, or QR codes) of professional plastic and paper cards offerings. These digital cards can include debit and credit cards; logos; information; tickets; customer IDs; photos and loyalty offers. Professionals can manage these digital interfaces making marketing promotions, loyalty rewards or contact users for driving traffic in their store or webshops.</p>
	<p>Digital Loyalty rewards: seamless loyalty reward interface offering for webshops and their customers that make frequent purchases.</p>
	<p>Interactive in-store experience: Offerings like (beacons and wireless devices) that enhance traffic and the in-store experience for customers through localized promotion pushes or loyalty rewards</p>
Trust building	<p>Smart accounts: Account offerings that enable the sharing, tracking, processing and safekeeping of money for enhancing trust in payment or investments.</p>
	<p>Smart contracts: contract offerings that enhance credibility between buyer and seller including arrangements for conditional payments and delivery payments. These contracts are based in smart accounts run by a third party or blockchain technology</p>
Customer support	<p>Multilingual support: multilingual interface offerings that enable professionals to better approach cross-border buyers in their native language.</p>
	<p>(IVR) solution: Telecom Interactive Voice Response offerings substitutes the need of Calling centre and include services like the automated collection of phone payments; Session Initiation Protocol (SIP); recording; voice recognition; multilingual support.</p>
	<p>Digital navigation services: marketplaces and online catalogue offerings that enhance the experience of the online shoppers (like hyper-local relational product navigation; VR gear and virtual webshop).</p>
Broader	<p>Invoice finance: Liquidity offering for professionals in exchange for invoices that have not been paid yet.</p>
	<p>PSP Platform aggregator: Platform offering for comparing and discovering PSPs</p>
	<p>Consultancy services and knowledge Sharing: Consultancy; networking; workshop; and training offerings regarding payment implementations for businesses and individuals.</p>
	<p>Real time data provision: Real time information offerings: This might include analytics, payment notification, transaction tracking, stock checking, customer creditworthiness, price alerts, currency and cryptocurrency rates and trade volume data.</p>
	<p>Digital payment security services: Including security; authentication; compliance; biometrics; granular online payment permissions; and fraud detection offerings.</p>

Value Capture	
	Lead generation: Value capture from data monetization. Firm collect user's data – often in exchange for a product, service, or information, and then reselling that data to companies for value add or marketing uses.
	Processing/payment rate fee: Value capture from rates payed for each payment processing or currency conversion
	POS Terminal leasing/renting: Value capture from renting or leasing POS terminal infrastructure for seamless payments.
	Commercial software/application development: Value capture from payment software and application provision for financial institutions or professionals.
	Consultation: Value capture from consultation services provision regarding novel payment implementations.
	Interest from short term loaning: Value capture from spread payment loaning for ecommerce purchases.
	Subscription for value-add services: Value capture from subscriptions and licence fees for value add services instead of transaction rate fees .

Value network	
	Platform set-up by new-entrants: New entrants like tech start-ups strategically position themselves in the payment services value chain by establishing new B2C digital platform/interface levels for engaging different payment institutions or distributing payment services through a single channel.
	Segment Platforms: Owners of pre-existing platforms, previously used as B2C business services distribution channels in other sectors (non-financial), integrate payments services in their value chain, strategically positioning themselves in financial services industry.
	Platform set-up by financial services incumbents: Incumbents from within financial services value chain (intra-industry players like payment services manufacturers) , strategically reposition themselves by establishing B2C platforms for operating also in the payment services platform level.
	Procured platform spinoffs : Platform spinoffs derived via financial services incumbents' innovation procurement strategies like incubator programs, start-up accelerator programs, or subsidizing.
	Platforms acquisitions by incumbents: Incumbents or players from within financial services industry, strategically position themselves in platform distribution channels by acquiring or merging with platform providers.
	Payment services outsourcing: New entrants strategically position themselves and their offerings in the payment services value chain through outsourcing infrastructure or their consolidated solutions B2B to incumbents' and their services/product value chain.

BLOCKCHAIN	
	Value Proposition
	Brokerage Services: Offerings that enable the exchange (buying or selling) of cryptocurrencies on relevant national currency prices.

	Trading platforms: Platforms or interface offerings that operate as marketplaces for various cryptocurrencies and cryptocurrency derivatives trading.
	Match and exchange: Automated exchange platform offerings where buyers and sellers of cryptocurrencies can place their selling and buying price orders. The exchanges take place peer-to-peer through automation software/engines.
	Cryptocurrency Wallets: Value storage space offerings for saving, sending or receiving cryptocurrencies.
	Cryptocurrency payment processing: Payment processing offerings for professionals and financial institutions for payments made with cryptocurrencies.
	Cryptocurrency value transfer rails: Cryptocurrency rail offerings for cross-border value transfer, payments, billings or payrolls for businesses and individuals. In this case cryptocurrency is the mean to an end for faster and cheaper transactions.
	Integrated bank account cryptocurrency transfers: Cryptocurrency payment and value transfer offerings. The cryptocurrency payments are exchanged in local currencies and stored in conventional bank accounts. Users do not need cryptocurrency wallets/accounts for receiving payments or transactions with cryptocurrencies.
	Administration interface: Mobile app or desktop administration interface offerings that enable cryptocurrency administration like balance checking, seeing history of transactions or automated transactions arrangement in desired time.
	Voucher/gift card: Offerings that convert cryptocurrencies into a conventional currency items like a digital voucher (something like prepaid card) or gift card.
	Linked Debit Card: Debit/Credit cards offerings connected with cryptocurrency accounts/wallets.
	Tele-communication payments: cryptocurrency value transfer offerings via email and sms.
	Credit rewards: credit offerings referrals or ordering of new cryptocurrency schemes.
	Investment management services: Advanced analytics, charts, technical indicators and forecast predictions offerings provided to users for their cryptocurrency trading decision making.
	Asset digitization services (smart property): Propriety assets tokenization offerings that enable the digitization of non-currency property or investment assets (such as real estate assets, fractions of art pieces and company shares) via blockchain technologies. The tokens can be traded for capital rising purposes.
	Document Digitization services: Blockchain document digitization offerings that enable the conversion of physical world documents or data (like intellectual properties and propriety rights, contracts and rental agreements) in protocols read by machines.
	Alternative Lending: Alternative cryptocurrency lending offerings for high volume trading. Cryptocurrency Users allocate interest by lending their cryptocurrencies to traders for high volume trading speculative investments.
	Price alerts: Price alerts offerings for their cryptocurrency users
	Real-time price and trade volume data: Real-time cryptocurrency price and trade volume data offerings
	Smart Governance: Blockchain community voting offerings that enable smart governance and decision making inside a distributed network.
	Smart investment: cryptocurrency pool offerings for high volume trading.
	Smart ticketing: Blockchain offerings that enhance the validation, administration, transparency and monitoring of tickets.
	Personal Data encryption services: Identity encryption offerings that enable anonymity for cryptocacy exchanges.






	Open source data administration: Blockchain and cryptographic protocol offerings that enable data distribution, sharing, storage and encryption inside a business or an open network/environment.
	Consultancy services and knowledge Sharing: Consultancy, workshop and training offerings regarding blockchain applications for businesses and individuals.

Value Capture	
	Exchange/transaction rate fee: Value capture from rates paid for each cryptocurrency exchange or transaction.
	Commercial software/application development: Value capture from blockchain related software development
	Voucher Shipment: Value capture from voucher shipment.
	Consultation: Value capture from from consultation services provision regarding cryptocurrencies and blockchain technologies.
	Promotion fee: Revenues for promotional activities
	Pay per use for (non) connected devises: Value capture from electronic micro-payment given per use of micro devices like home appliances

Value Network	
	Infrastructural consolidation: Start-ups strategically position themselves across the whole cryptocurrency value chain infrastructure by internally expanding their cryptocurrency offerings.
	Start-ups collaborations: Start-ups strategically position themselves across the cryptocurrency value chain by collaborating with other start-ups for consolidating their cryptocurrency solution offerings.
	Start-ups merges and acquisitions: Start-ups strategically position themselves across the cryptocurrency value chain by acquiring or merging other start-ups for consolidating their cryptocurrency solution offerings.
	Outsourcing cryptocurrency exchange services: Start-ups strategically position themselves in the conventional payment value chain by outsourcing cryptocurrency exchange and processing offerings for PSPs.

B) Fintech firms operating in Cashless payments and blockchain fields in Netherlands. Their description and their BMIs.

Cashless Payments		
 <p>https://www.about-payments.com/</p>	<p>About-Payments</p> <p>Launch Date: 2011 Type: Platform Aggregator Provider</p> <p>Description: Provides an open digital platform which helps merchants to compare and choose between emerging technologies, endpoints, channels, and alternate currencies PSP for their e-commerce business.</p>	<p>Value Proposition: PSP platform aggregator</p> <p>Value network: Platform set-up by new-entrants</p> <p>Value capture: Lead generation</p>
 <p>https://www.acapture.com/</p>	<p>Accapture</p> <p>Launch Date: 2015 Type: PSP</p> <p>Description: Acapture provides payment services for merchants and e-commerce. (spinoff of Payvision)</p>	<p>Value Proposition: Omnichannel payment solution Payment processing Global card issuing POS software POS terminals Sales analytics Transactions Performance analytics Customer Data mining: Multidirectional settlements processing Digital navigation services</p> <p>Value Network: Procured platform spinoff</p>
 <p>https://www.accepteasy.com/us</p>	<p>Accept Easy</p> <p>Launch Date: 2007 Type: Payment facilitator</p> <p>Description: Accept Easy provides billing and payment solutions by email, sms and social media portals.</p>	<p>Value Proposition: TELE-Communication channel payments Payment processing Electronic Billing (authorization) service</p>
 <p>https://www.aciworldwide.com/</p>	<p>ACI Universal Payments</p> <p>Launch Date: 1975 Type: PSP and Financial institutions service provider</p> <p>Description: Offers FX payments for merchants and established financial institutions.</p>	<p>Value Proposition: Omnichannel payment solution Payment processing Transactions Performance analytics Electronic Billing (authorization) service Cross-border settlements</p> <p>Value Network: Platform set-up by FX payments incumbent Outsources FX banking services for financial institutions</p>
 <p>https://activeants.nl/en/</p>	<p>Active Ants:</p> <p>Description: Provides product storage, packaging, and shipment of e-commerce products. Not directly related with payment but with e-commerce.</p>	
 <p>https://www.adyen.com/</p>	<p>Adyen</p> <p>Launch Date: 2006 Type: PSP</p> <p>Description: PSP which provides services for merchants and ecommerce professionals.</p>	<p>Value Proposition: Omnichannel payment solution Payment processing POS software Sales analytics</p> <p>Value capture: Processing/payment rate fee</p>
	<p>AfterPay</p>	<p>Value Proposition: Spread payments</p>

https://www.afterpay.com/index	<p>Launch Date: 2010 Type: Payment Platform</p> <p>Description: Mobile payment platform which enables the spread of online purchase for customers while provide instant payments for retailers.</p>	<p>Value Network: Platform set-up by new-entrants Value capture: Interest capturing from short term loaning.</p>
 https://www.amdocs.com	<p>Amdocs</p> <p>Description: Amdocs is a software and services provider which outsources services for media and communication companies. The company provides some billing and payment collection services for these firms, but payment is not its core activity</p>	
 https://www.b2bpay.co/	<p>B2BPAY</p> <p>Launch Date: 2013 Type: Virtual banking provider</p> <p>Description: B2Bpay offers virtual EU bank accounts and IBAN based for non-EU companies. It enables also cross-border settlements from these accounts through blue-chip banks</p>	<p>Value Proposition: Virtual bank account Cross-border settlements Value capture: Processing/payment rate fee</p>
 https://www.bankingcircle.com/	<p>Banking Circle</p> <p>Launch Date: 2013 Type: Financial institutions service provider</p> <p>Description: Banking Circle outsources FX banking services for banks, other financial institutions and their clients. Offers services like global virtual bank accounts, trading platforms for currency exchanges and cross-border payments, and liquidity for SMEs</p>	<p>Value Proposition: Virtual bank account FX trading platform Cross-border settlements Value Network: Payment services outsourcing.</p>
 https://www.billink.nl/	<p>Billink</p> <p>Launch Date: 2011 Type: Payment platform</p> <p>Description: Billink is a payment platform solution for late online payments. Purchasers pay in a 14day period after they receive their online order.</p>	<p>Value Proposition: Late payments Value network: Platform set-up by new-entrants</p>
 https://www.bizcuit.nl/	<p>Bizcuit</p> <p>Type: mobile software provider</p> <p>Description: Bizcuit provides a mobile solution for payment administration, planning and automation.</p>	<p>Value Proposition: Mobile payment administration App</p>
 http://www.brainpoint.nl/over-brainpoint.php	<p>Brain Point:</p> <p>Type: ATM rent</p> <p>Description: Provides cash dispenser renting solutions.</p>	<p>Value Proposition: POS terminals Value capture: POS Terminal leasing/renting</p>
 https://www.buckaroo.nl/	<p>Buckaroo</p> <p>Launch Date: 2005 Type: PSP</p> <p>Description: Billing & Payment Service provider for businesses and online retailers</p>	<p>Value Proposition: Omnichannel payment solution Payment processing Transactions Performance analytics Electronic Billing (authorization) service POS software POS terminal Giftcard/voucher Subscription processing</p>

		Business intelligence analytics Value Network: Platform set-up by new-entrants
 https://www.bunq.com/	Bunq Launch Date: 2013 Type: Virtual bank Description: Provides virtual banking services, cards, accounts, Iban etc.	Value Proposition: Global card issuing Virtual bank account Electronic Billing (authorization) service Customization and Personalization services QR code payments Virtual account management TELE-Communication channel payments
 BUYRELY https://www.buyrely.nl/#/overview	BuyRely Launch Date: 2015 Type: Trusted accounts provider Description: Buy Rely provides specialized shared bank accounts for enhancing the trust for high value-capital purchases. These shared accounts enable the visibility, tracking and safekeeping of the purchases like solar panel (spinoff of ING).	Value Proposition: Smart accounts Value Network: Procured platform spinoff
 https://www.capayable.com/	Capayable Launch Date: 2013 Type: Payment platform Description: Billink is a payment platform solution for late and spread online payments .	Value Proposition: Late payments Spread Payments Value Network: Platform set-up by new-entrants Value capture: Interest capturing from short term loaning.
 https://www.cardgate.com/	CardGate Launch Date: 2016 Type: PSP Description: PSP which provides services for online merchants and web shops	Value Proposition: Omnichannel payment solution Payment processing Customer Data mining Business intelligence analytics TELE-Communication channel payments Value Network: Platform set-up by new-entrants
 http://cashlessevent.com/cashless-event/hoe-werkt-het/	Cashless Event Type: Alternative mobile payment method provider Description: Cashless event provides alternative modular contactless method of payment for events. In its services its own POS systems, NFC devices and contactless chargeable cards and wristbands are included.	Value proposition: POS terminal Mobile phone proximity payments Wearable payments Electronic Billing (authorization) service Value capture POS Terminal leasing/renting
 https://www.cashly.nl/	Cashly Launch Date: 2017 Type: Payment provider Description: Cashly provides an alternative cash payment method. Users can receive a digital voucher for their online purchases or for their bills and pay with cash (or pin) in the Cashly payment points	Value proposition Cash online payments Value capture: Processing/payment rate fee
 https://www.cashr.nl/	Cashr Launch Date: Type: Software provider Description Cashr provides back-office and payment software for retailers and hospitality sector.	Value Proposition: Disclosure services POS software Split payment Value capture: Subscription for value-add services

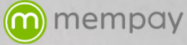






 https://www.ccv.eu/nl/	<p>CCV</p> <p>Launch Date: 1958 (2011 for payments) Type: PSP and payment terminal Provider</p> <p>Description: CCV operates as PSP and provides POS terminal solutions and customer and transaction data to merchants.</p>	<p>Value Proposition: Omnichannel payment solution Payment processing Customer Data mining POS terminal QR code payments</p> <p>Value Network: Platform set-up by new-entrants</p>
 https://www.cm.com/nl-nl/	<p>CM.</p> <p>Launch Date: 1999 Type: Telecommunication PSP services provider.</p> <p>Description: Property of CM Group. Cm. provide among other services payment processing for telecommunication firms.</p>	<p>Value Proposition: Omnichannel payment solution Payment processing QR code payments</p> <p>Value network: Segment Platforms</p>
 https://www.cobase.com/	<p>Cobase</p> <p>Launch Date: 2017 Type: Software Provider</p> <p>Description: Cobase provides financial complexity solutions. Through its platform, companies can administrate and manage their various accounts via a single interface. Spinoff of ING</p>	<p>Value Proposition: Business intelligence analytics Mobile app interfaces for businesses Multibank administration interface</p> <p>Value Network: Platform set-up by new-entrants</p>
 http://www.connectivepayments.com/	<p>Connective payments</p> <p>Launch Date: 2014 Type: Consultancy</p> <p>Description: Connective Payments provides consultancy and networking services to companies operating around payments industry</p>	<p>Value Proposition: Consultancy services and knowledge Sharing</p> <p>Value capture: Consultation</p>
 https://countrhq.com/	<p>CountR</p> <p>Launch Date: 2016 Type: Software Provider</p> <p>Description: CountR provides a cloud-based point of sale software platform and POS terminals for hospitality, e-commerce and events industry.</p>	<p>Value Proposition: POS software POS terminal Disclosure services Real time data</p> <p>Value network: Segment Platforms</p> <p>Value capture: Subscription for value-add services</p>
 https://creditclick.eu/	<p>CreditClick</p> <p>Launch Date: 2017 Type: Payment Platform</p> <p>Description: Mobile payment platform/method based on responsible lending. The customers can take a loan and spread their purchases through the platform while retailers are getting paid instantly.</p>	<p>Value Proposition: Spread Payments</p> <p>Value capture: Interest capturing from short term loaning.</p> <p>Value Network: Platform set-up by new-entrants</p>
 https://www.curopayments.com/	<p>Curo Payments</p> <p>Launch Date: 2012 Type: PSP</p> <p>Description: PSP that offers online payment solutions for retailers.</p>	<p>Value Proposition: Omnichannel payment solution Payment processing Transactions Performance analytics Business intelligence analytics</p> <p>Value Network: Platform set-up by new-entrants</p>

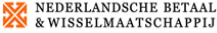







 <p>CURRENCE</p> <p>https://www.currence.nl/</p>	<p>Currence</p> <p>Launch Date: 2005 Type: Payment collector and platform</p> <p>Description: Currence is an incumbent organization responsible for the running of national payment solutions like iDeal and Acceptgiro . The organization is initiative of various Dutch incumbent banks.</p>	<p>Value Proposition: Payment processing</p> <p>Value Network: Procured platform spinoffs TELE-Communication channel payments</p>
	<p>Daalder</p> <p>Launch Date: 2014 Type: Digital wallet Provide</p> <p>Description: No data available. Company closed</p>	
 <p>https://www.dialxs.com/</p>	<p>Dialxs</p> <p>Launch Date: 2000 Type: PSP</p> <p>Description: PSP that offers online payment solutions for retailers.</p>	<p>Value Proposition: Omnichannel payment solution Payment processing Real time data Sales analytics</p> <p>Value Network: Fintech start-up partnerships</p>
 <p>https://www.dimebox.com/</p>	<p>Dimebox</p> <p>Launch Date: 2014 Type: PSP</p> <p>Description: PSP that offers customizable payment solutions for retailers</p>	<p>Value Proposition: Omnichannel payment solution Payment processing Sales analytics Business intelligence analytics Transactions Performance analytics Electronic Billing (authorization) service Integration services for businesses:</p> <p>Value Network: Platform set-up by new-entrants</p> <p>Value capture: Subscription for value-add services</p>
 <p>https://www.docdatapayments.com/</p>	<p>Docdata Payments</p> <p>Launch Date: 2000 Type: PSP</p> <p>Description: PSP that offers online payment solutions for retailers. (Acquired by CM.group)</p>	<p>Value Proposition: Omnichannel payment solution Payment processing QR code payments: POS software Subscription processing TELE-Communication channel payments Multidirectional settlements processing Business intelligence analytics Sales analytics</p> <p>Value network: Segment Platforms</p>
 <p>https://www.doorbetalers.nl/</p>	<p>Doorbetalers</p> <p>Launch Date: 2000 Type: PSP</p> <p>Description: Doorbetalers provides a Sepa Debt Collection Tool for automation of recurrent payments</p>	<p>Value Proposition: Debt management Electronic Billing (authorization) service</p>
 <p>http://dopay.com/en</p>	<p>Dopay</p> <p>Launch Date: 2014 Type: Payroll services provider</p> <p>Description: Dopay through its cloud-based application, provides payroll services for companies and visa debit cards connected with dopay digital accounts for the unbanked employees</p>	<p>Value Proposition: Global card issuing Digital mobile wallet Cross-border settlements</p>

 https://www.betaalvereniging.nl/	<p>Betaalvereniging</p> <p>Launch Date 2011 Type: Association for all payment providers in Netherlands.</p>	
 https://paywitheaze.com/	<p>Eaze</p> <p>Launch Date: 2014 Type: Software Provider</p> <p>Description: Eaze connects wearable Google Glass with the Bitcoin wallets - Coinbase and Blockchain- and provides “Nod to Pay” software for frictionless bitcoin payments through the use of gestures.</p>	<p>Value Proposition: QR code payments Wearables payments Bitcoin Payments Payment administration software</p> <p>Value Network: Start-ups collaborations</p>
 https://ease2pay.nl/	<p>Ease2pay</p> <p>Type: Mobility payment provider</p> <p>Description: Ease2Pay provides a mobile payment application for seamless fuel, parking and EV charging payments.</p>	<p>Value Proposition: Mobile payment administration app QR code payments</p> <p>Value network Platform set-up by new-entrants</p>
 https://www.ebury.com/	<p>Ebury</p> <p>Launch Date: 2009 Type: FX payments facilitator</p> <p>Description: Ebury supports end to end outsourcing of international payment or value transaction for large companies and organizations</p>	<p>Value Proposition: Cross-border settlements FX trading services</p> <p>Value Network: Payment services outsourcing</p>
 https://emspay.nl/nl	<p>EMS</p> <p>Launch Date: 2005 Type: PSP</p> <p>Description: PSP that offers online payment solutions for retailers (Spinoff of ABN Ambro).</p>	<p>Value Proposition: Omnichannel payment solution Payment processing POS software POS terminal Sales analytics Business intelligence analytics Transactions Performance analytics</p> <p>Value Network: Procured platform spinoff</p>
 https://www.franx.com/nl-nl	<p>Franx</p> <p>Launch Date: 2017 Type: Financial service provider</p> <p>Description: Franx provides a platform for FX currency exchanges and cross-border payments (Spinoff/subsidiary of ABN Ambro).</p>	<p>Value Proposition: Cross-border settlements FX trading platform FX trading services</p> <p>Value Network: Payment platform intermediation</p>
 https://www.gemalto.com/	<p>Gemalto</p> <p>Launch Date: 2006 Type: Software Provider</p> <p>Description: Provides identity authentication, compliance, security and fraud detection services for various fields including banking and payment services.</p>	<p>Value Proposition: Digital security services</p> <p>Value Network: Payment services outsourcing</p> <p>Value capture: Commercial software/application development</p>
 https://www.gingerpayments.com/	<p>Ginger</p> <p>Launch Date: 2014 Type: PSP Provider</p> <p>Description: PSP that offers customizable payment solutions for retailers, financial institutions and large companies related with payments.</p>	<p>Value Proposition: Omnichannel payment solution Payment processing Multibank administration interface Integration services for businesses: Transactions Performance analytics Business intelligence analytics Sales analytics Cross-border settlements Subscription processing</p> <p>Value Network:</p>

		<p>Payment services outsourcing</p> <p>Value capture: Commercial software/application development</p>
 https://www.gocredible.nl/	<p>Gocredible</p> <p>Launch Date: 2016 Type: Exchange Provider</p> <p>Description: Gocredible provides a platform for arranging smart contracts like conditional or after delivery payments for marketplaces and webshops.</p>	<p>Value Proposition: Smart contracts</p> <p>Value Network: Procured platform spinoff</p>
 https://icepay.nl/	<p>Icepay</p> <p>Launch Date: 1999 Type: PSP</p> <p>Description: PSP that offers online payment solutions for retailers.</p>	<p>Value Proposition: Omnichannel payment solution Payment processing POS software POS terminal Sales analytics Business intelligence analytics TELE-Communication channel payments Disclosure services Integration services for businesses</p> <p>Value network: Platform set-up by financial services incumbents</p>
 https://www.ingenico.com/	<p>Ingenico</p> <p>Launch Date: 1980 Type: PSP</p> <p>Description: PSP that offers online payment solutions for retailers, financial institutions, hospitality transportation and other fields.</p>	<p>Value Proposition: Omnichannel payment solution Payment processing POS software POS terminal Sales analytics Business intelligence analytics Transactions Performance analytics Customer Data mining Disclosure services Integration services for businesses</p> <p>Value network: Platform set-up by financial services incumbents</p>
 https://in-vista.nl/	<p>Invista</p> <p>Launch Date: 2015 Type: Software provider</p> <p>Description: Invista provides software applications and platforms for hospitality, leisure and events industry.</p>	<p>Value Proposition: POS software POS terminal Electronic Billing (authorization) service Sales analytics Disclosure services QR code payments Mobile phone proximity payments Real time data Split payment</p> <p>Value network: Platform set-up by new-entrants</p> <p>Value capture: Commercial software/application development</p>
 https://www.justgiving.com/	<p>Just Giving</p> <p>Type: Charities</p> <p>Description: Just Givings provides software and platform applications for capital rising for charities . Not directly related with cashless payments.</p>	
 https://www.kedin.nl/	<p>Kedin</p> <p>Launch Date: 2015 Type: Payment solution provider</p>	<p>Value Proposition: Late payment Spread payments Subscription usage Subscription processing Invoice Finance</p> <p>Value network:</p>

	<p>Description: Kedin provides flexible payment solutions for individuals and businesses. Users can benefit from late, spread and usage subscription payments of products or services, while businesses receive instant payments, invoice finance or subscription collection services from Kedin.</p>	<p>Platform set-up by new-entrants Value capture: Interest capturing from short term loaning.</p>
 https://www.klarna.com/nl/	<p>Klarna Launch Date: 2005 Type: Payment Platform</p> <p>Description: streamlined payment platform which enables the spread or late online purchases for customers while provides instant payments for retailers.</p>	<p>Value Proposition: Late payments Spread Payments Value network Platform set-up by new-entrants Value capture: Interest capturing from short term loaning.</p>
 http://www.koomalooma.com/	<p>Koomalooma Launch Date: 2015 Type: loyalty services Provider</p> <p>Description: Koomalooma provides loyalty programs and customer rewards services for webshops and retailers.</p>	<p>Value Proposition: Digital Loyalty rewards</p>
 https://www.lightspeedhq.nl/	<p>Lightspeed Launch Date: 2005 Type: Software Provider</p> <p>Description: Lightspeed provides hardware, software and backoffice solutions for e-commerce, retailers and hospitality.</p>	<p>Value Proposition: POS software POS terminal Sales analytics Customer Loyalty Disclosure services Customization services for businesses Real time data</p>
	<p>Liqidt No data</p>	
 https://liquix.eu/	<p>Liquix Launch Date: 2004 Type: PSP for prepayment services</p> <p>Description: PSP that offers prepaids; top-up reloads; and gift cards services for telecom and energy supply companies.</p>	<p>Value Proposition: Omnichannel payment solution Customer Data mining Giftcard/voucher Value Network: Segment Platforms</p>
 https://www.m2cpayments.com/en/	<p>M2C payments Launch Date: 2014 Type: PSP</p> <p>Description: M2C payments facilitates Instant payment solutions for financial institutions and insurers and their clients.</p>	<p>Value Network: Payment services outsourcing</p>
 https://www.magnius.com/en/	<p>Magnius Launch Date: 2015 Type:PSP</p> <p>Description: PSP that offers online and in-store payment solutions, software and POS terminals for retailers and professionals in the fields of transport, hospitality, logistics, leisure events etc.</p>	<p>Value Proposition: Omnichannel payment solution POS software Payment processing POS terminal Sales analytics Business intelligence analytics Transactions Performance analytics: Customer Data mining Integration services for businesses: Value Network: Platform set-up by new-entrants:</p>

 https://mempay.com/nl	<p>Mempay</p> <p>Launch Date: 2014 Type: Subscription service provider</p> <p>Description: Mempay provides subscription processing services for businesses.</p>	<p>Value Proposition: Subscription processing</p> <p>Value Network: Payment services outsourcing</p>
	<p>Mobbr</p> <p>No data found</p>	
 http://www.mobiwallet-project.eu/	<p>Mobiwallet</p> <p>Launch Date: 2015 Type: Digital wallet PSP</p> <p>Description: Mobiwallet provides seamless digital wallet interfaces and payment schemes for a number of transport operators across Europe.</p>	<p>Value Proposition: Mobile wallets</p> <p>Value Network: Segment Platforms</p>
 https://www.mollie.com/en/	<p>Mollie</p> <p>Launch Date: 2004 Type: PSP</p> <p>Description: PSP that offers online payment solutions for retailers and big enterprises.</p>	<p>Value Proposition: Omnichannel payment solution Subscription processing Payment processing</p>
 https://moneytis.com/	<p>Moneytis</p> <p>Launch Date: 2017 Type: Platform for FX transfers.</p> <p>Description: Moneytis provides a platform aggregator that helps its users to discover and use real time the cheapest money transfer solution available.</p>	<p>Value Proposition: FX trading services FX transfer platform aggregator</p> <p>Value Network: Platform set-up by new-entrants:</p> <p>Value capture: Lead generation</p>
 https://www.multicards.com/en/	<p>Multicards Internet Billing</p> <p>Launch Date: 1995 Type: PSP</p> <p>Description: PSP that offers online credit and debit card payment processing solutions for retailers.</p>	<p>Value Proposition: Payment processing</p>
 https://www.multisafepay.com/	<p>Multisafepay</p> <p>Launch Date: 1999 Type: PSP</p> <p>Description: PSP that offers online payment solutions for retailers and insurance providers.</p>	<p>Value Proposition: Omnichannel payment solution Payment processing Business intelligence analytics Multidirectional settlements processing Subscription processing Customization services for businesses</p>
 http://mycardwallet.eu/	<p>MyCardWallet</p> <p>Launch Date: 2014 Type: Digital wallet provider</p> <p>Description: Mycardwallet provides digital wallet and digital card schemes.</p>	<p>Value Proposition: Digital mobile wallets Digital mobile cards In App-payments</p> <p>Value capture: Lead generation</p>
 http://nappkin.nl/	<p>Nappkin</p> <p>Launch Date: 2014 Type: Hospitality software provider</p>	<p>Value Proposition: POS software Sales analytics Disclosure services</p> <p>Value Network: Real time data</p>

	Description: Nappkin provides POS and administration software for hospitality industry.	Value capture: Subscription for value-add services
 https://www.nbwm.nl/nl/	NBWM Launch Date: 2013 Type: FX payment and trading provider Description: NBWM provides FX trading platform; cross-border payment solutions and risk compliance.	Value Proposition: FX trading platform FX trading services FX Currency risk mitigation Real time data Value Network: Platform set-up by new-entrants
 https://www.newgenpayments.com/	Newgen Launch Date: 2014 Type: PSP Description: PSP that offers payment solutions for retailers and other financial institutions.	Value Proposition: QR code payments Customization services for businesses Electronic Billing (authorization) service TELE-Communication channel payments Business intelligence analytics Omnichannel payment solution Transactions Performance analytics Customization services for businesses. Value Network: Outsources payment services
 https://www.nowinnovations.com/	Now!Innovations Launch Date: 2003 Type: Parking and Mobility payment provider Description: Now!Innovations through its platform, provides seamless digital billing and payment services for parking and EV charging mobility.	Value Proposition: Mobile payment and payment administration Real time data Mobile phone proximity payments QR code payments TELE-Communication channel payments In App-payments Value Network: Platform set-up by new-entrants
 http://nuvopos.com/	Nuvopos Launch Date: 2017 Type: POS software provider Description: Provides POS services for hospitality industry.	Value Proposition: POS software Sales analytics Disclosure services Value capture: Subscription for value-add services
 https://okit.com/nl/	OK Launch Date: 2012 Type: Digital wallet provider Description: OK provides the OK-app. A digital mobile wallet	Value Proposition: Digital mobile wallets Digital mobile cards In App-payments Value capture: Lead generation Value Network: Platform set-up by new-entrants
 https://www.onelinq.com/	Onelinq Launch Date: 2015 Type: FX payment and collection and cash management. Description: Onelinq supports global payments, collection and cash management through its platform hub for businesses and professionals.	Value Proposition: Business intelligence analytics Cross-border settlements FX transfer platform aggregator Electronic Billing (authorization) service Multibank administration interface Subscription processing Real time data Value Network: Platform set-up by new-entrants
 https://onlinebetaalplatform.nl/nl/public	Onlinebetaalplatform Launch Date: 2015 Type: PSP and software provider Description: Onlinebetaalplatform outsources payment services for the platforms of other financial institutions.	Value Proposition: Omnichannel payment solution Subscription processing Business intelligence analytics Multidirectional settlements processing Mobile app interfaces for businesses Value Network: Outsources the payment services
 https://myordergo.com/en/	On the go! Launch Date: 2008 Type: Mobility payment provider	Value Proposition: In App-payments Late Payments Spread Payments

	Description: On the go! through its digital wallet app, provides seamless payment services for parking and fuelling mobility.	Value Network: Platform set-up by new-entrants
 http://p2pcash.com/	P2P Cash Launch Date: 2012 Type: FX transfer and payment provider Description: P2P cash provides P2P FX transfers and remittances (through blockchains) to developing countries	Value Proposition: Cross-border settlements
 https://parkmobile.nl/	Park mobile Launch Date: 2000 Type: Exchange Provider Description: Park mobile, provides an application for seamless mobility payment services for parking	Value Proposition: In App-payments Mobile payment administration app TELE-Communication channel payments
 https://www.payconiq.com/en/	Payconiq Launch Date: 2014 Type: App2App payment method Description: Payconiq provides a mobile payment App which make App2App retail payments and value transfers between users' bank accounts by using QR technologies.	Value Proposition: In App-payments Mobile payment administration app QR code payments Digital Loyalty rewards Electronic Billing (authorization) service:
 https://www.payfastforward.nl/	Pay fast forward Type: PSP Description: Pay fast forward enables online and mobile payments through iDeal.	Value Proposition: Digital payment solution Value Network: Outsources the payment process.
 https://www.payiban.com/nl/	Paylban Launch Date: 2010 Type: PSP Description: Paylban provides digital payment authorisation, collection and administration services for businesses and their customers.	Value Proposition: Business intelligence analytics Electronic Billing (authorization) service TELE-Communication channel payments
 https://www.pay.nl/	Pay.nl Launch Date: 2000 Type: PSP Description: PSP that offers payment solutions for online retailers and professionals.	Value Proposition: Omnichannel payment solution Payment processing Sales analytics Business intelligence analytics Transactions Performance analytics TELE-Communication channel payments Mobile app interfaces for businesses Disclosure services Subscription processing
 http://payplaza.com/	Payplaza Launch Date: 2010 Type: PSP Description: PSP that offers payment solutions for online retailers and professionals worldwide.	Value Proposition: Omnichannel payment solution Payment processing POS software POS terminal Sales analytics Disclosure services: Customization services for businesses. Mobile phone proximity payments FX trading services Value Network: Platform set-up by new-entrants



 https://paypro.nl/	<p>PayPro</p> <p>Launch Date: 2006 Type: PSP</p> <p>Description: PSP that offers payment solutions for online retailers and professionals.</p>	<p>Value Proposition: Omnichannel payment solution Payment processing Subscription processing Billing (authorization) service Debt management Disclosure services</p> <p>Value Network: Platform set-up by new-entrants</p>
 https://corporate.payu.com/	<p>PayU</p> <p>Launch Date: 2002 Type: PSP for growing economies</p> <p>Description: PayU provides local payment processing and local credit access to retailers that operate in high growth countries.</p>	<p>Value Proposition: Omnichannel payment solution Payment processing Local market processing.</p>
 https://www.payvision.com/	<p>Payvision</p> <p>Launch Date: 2002 Type: PSP global acquirer</p> <p>Description: Provides global payment acquiring services for other PSP and their merchants.</p>	<p>Value Proposition: Omnichannel payment solution Payment processing Consultancy services and knowledge Sharing FX trading services Digital security services</p> <p>Value Network: Payment services outsourcing</p>
 https://www.payxpert.com/?cn-re-loaded=1	<p>Payxpert</p> <p>Launch Date: 2008 Type: PSP</p> <p>Description: PSP that offers payment and business intelligence and management solutions for online retailers and professionals.</p>	<p>Value Proposition: Omnichannel payment solution Payment processing POS software POS terminal Sales analytics Business intelligence analytics: Transactions Performance analytics Customer Data mining Local market processing IVR solution Multilanguage Mobile phone proximity payments QR code payments Sign2pay Disclosure services Billing (authorization) service TELE-Communication channel payments Customization services for businesses. Merchants</p> <p>Value Network: Payment services outsourcing</p>
 https://www.pintip.nl/	<p>Pintip</p> <p>Type: POS terminal provider</p> <p>Description: Pintip sells, leases and rents POS terminals for cashless instore payments</p>	<p>Value Proposition: POS terminal</p> <p>Value capture: POS Terminal leasing/renting</p>
 https://pocopy.com/en/	<p>Pocopy</p> <p>Type: Digital wallet Provider</p> <p>Description: Provides customizable digital wallet accounts and management tools connected with credit/debit cards for in store payments.</p>	<p>Value Proposition: Digital mobile wallets Global card issuing Mobile payment administration app Customization and Personalization services Virtual account management TTELE-Communication channel payments Split payment Child account QR code payments</p> <p>Value Network: Platform set-up by new-entrants</p>
	<p>Pom</p>	<p>Value Proposition: Debt management</p>

<p>https://www.pom.be/</p>	<p>Launch Date: 2014 Type: payment software provider</p> <p>Description: Pom ,through its mobile App, provides e-invoicing and payment solutions for companies and their customers</p>	<p>QR code payments TELE-Communication channel payments Sign2pay Transfer slip scan or photo Mobile payment administration app In App payments Value Network: Platform set-up by new-entrants</p>
 <p>http://www.saffe.co/</p>	<p>Saffe</p> <p>Launch Date: 2015 Type: mobile payment Provider</p> <p>Description: Saffe through its mobile facial recognition app enables payments via selfies.</p>	<p>Value Proposition: In App Payments Selfie payment</p>
 <p>https://sdk.finance/</p>	<p>SDK.finance</p> <p>Launch Date: 2013 Type: PSP software provider</p> <p>Description: SDK.finance through its platform provides payment software solutions for other PSP fintech firms and bank institutions.</p>	<p>Value Proposition: Digital mobile wallets Giftcard/voucher Global card issuing Digital Loyalty reawards Wearables payments Value Network: Payment services outsourcing Value capture: Commercial software/application development</p>
 <p>https://www.seqr.com/nl/</p> <p>SEQR Mobile application Scan the QR code at the checkout, or use NFC technology (Near Field Communication)</p>	<p>SEQR</p> <p>Type: Mobile application developer</p> <p>Description: Seqr provides a mobile app that enables QR and NFC payments for its users.</p>	<p>Value Proposition: Mobile payment administration app Mobile phone proximity payments QR code payments</p>
 <p>https://sharepayment.com/</p>	<p>Sharepay</p> <p>Launch Date: 2015 Type: PSP software provider</p> <p>Description: Sharepay platform enables shared online product, service or subscription purchases among friends and relatives.</p>	<p>Value Proposition: Split payments</p>
 <p>https://www.simplifiedcard.com/</p>	<p>Simplifiedcard</p> <p>Launch Date: 2013 Type: PSP for companies</p> <p>Description: Simplified card provides global card payment solutions for corporate uses. Firms can issue these cards to their employees to make transparent and easier global corporate purchases.</p>	<p>Value Proposition: Global card issuing Mobile app interfaces for businesses Disclosure services</p>
 <p>https://www.sisow.nl/</p>	<p>Sisow</p> <p>Launch Date: 2011 Type: PSP from credit management</p> <p>Description: PSP that offers payment and credit management solutions for online retailers.</p>	<p>Value Proposition: Omnichannel payment solution Payment processing Billing (authorization) service Debt management Disclosure services Value Network: Platform set-up by new-entrants</p>
 <p>https://www.slimpay.com/</p>	<p>Slimpay</p> <p>Launch Date: 2010 Type: collection PSP</p>	<p>Value Proposition: Business intelligence analytics Transactions Performance analytics Disclosure services Subscription processing</p>

	Description: Slimpay simplifies the management of recurring payments	Debt management
 <small>The smart way to pay on the web</small> https://smart2pay.com/index.php/en/	<p>Smart2Pay</p> <p>Launch Date: 2002 Type: PSP</p> <p>Description: PSP that offers cross-border payment solutions for online retailers.</p>	<p>Value Proposition:</p> <ul style="list-style-type: none"> Omnichannel payment solution Payment processing Transactions Performance analytics Multidirectional settlements processing Mobile app interfaces for businesses Subscription processing Customization services for businesses
 https://www.spryngpayments.com/	<p>Spryng</p> <p>Launch Date: 2006 Type: PSP (operating in telecommunications)</p> <p>Description: PSP that offers cross-border payment solutions and analytics for online retailers.</p>	<p>Value Proposition:</p> <ul style="list-style-type: none"> Omnichannel payment solution Payment processing Business intelligence analytics Transactions Performance analytics Real time data <p>Value network:</p> <p>Segment Platforms</p>
 https://www.stampwallet.io/	<p>Stampwallet</p> <p>Launch Date: 2014 Type: Exchange Provider</p> <p>Description: Stampwallet provides a digital app (gateway) for merchants to promote their products, loyalties and rewards while collecting customer data and analytics.</p>	<p>Value Proposition:</p> <ul style="list-style-type: none"> Mobile payment administration app Mobile app interfaces for businesses Digital mobile cards Digital Loyalty rewards Customization services for businesses Customer Data mining Business intelligence analytics QR codes payments <p>Value Network:</p> <ul style="list-style-type: none"> Platform set-up by new-entrants <p>Value capture:</p> <ul style="list-style-type: none"> Lead generation
 https://tapp.cafe/en/	<p>Tapp</p> <p>Launch Date: 2015 Type: Mobile app software provider for hospitality</p> <p>Description: Tapp is a mobile app/platform for hospitality industry, bars and restaurants. The app provides seamless, easier and split payments for customers, and data analytics and management services for professionals.</p>	<p>Value Proposition:</p> <ul style="list-style-type: none"> Sales analytics Customer Data mining Billing (authorization) service Mobile payment administration app Disclosure services Real time data In app payments
 http://www.targetmedia.eu/en	<p>Target Media</p> <p>Launch Date: 1995 Type: PSP for mobile telecommunication and digital Music services</p> <p>Description: Target Media operates as PSP for Tele-communication enterprises and digital music platforms.</p>	<p>Value Proposition:</p> <ul style="list-style-type: none"> Omnichannel payment solution Payments processing Business intelligence analytics Billing (authorization) service TELE-Communication channel payments Digital mobile wallets Disclosure services <p>Value network:</p> <p>Segment Platforms</p> <p>Value capture:</p> <ul style="list-style-type: none"> Commercial software/application development
	TransferUP	
	No access to data	
 https://tranwall.com/	<p>Tranwall</p> <p>Launch Date: 2011 Type: card software provider</p> <p>Description: Tranwall provides mobile software interfaces that enable card holders (customers), of card issuing fi-</p>	<p>Value Proposition:</p> <ul style="list-style-type: none"> Transactions Performance analytics Mobile payment administration app Virtual account management for users Real time data Digital payment security services <p>Value Network:</p> <ul style="list-style-type: none"> Payment services outsourcing <p>Value capture:</p>

	<p>financial institutions, to have real time access and control in their payments reducing fraud and increasing transfer conversions. Their services increase trust and security of card payments.</p>	<p>Commercial software/application development</p>
 https://twikey.nl/	<p>Twickey</p> <p>Launch Date: 2013 Type: PSP for subscriptions and reoccurring payments</p> <p>Description: Twickey provides end2end subscription and recurrent payment services for professionals (in relevant fields like utilities, tele-communications, sport clubs, leasing companies, educational institutions, NGOs and subscriptions, by collaborating with the major bank institutions of Netherlands for payment collections</p>	<p>Value Proposition: Billing (authorization) service Subscription processing Customization services for businesses Digital payment security services</p> <p>Value Network: Procured platform spinoffs</p>
 https://www.wirecard.com/	<p>Wirecard</p> <p>Launch Date: 1999 Type: PSP</p> <p>Description: PSP that offers payment, business intelligence, fraud detection and payment optimization solutions for online retailers and professionals.</p>	<p>Value Proposition: Omnichannel payment solution Payment processing Global card issuing POS software POS terminal Transactions Performance analytics In App-payments Mobile payment administration app Mobile phone proximity payments Digital Loyalty rewards Real time data Consultancy services and knowledge Sharing Digital payment security services</p> <p>Value network: Platform set-up by financial services incumbents</p>
 https://www.worapay.com/	<p>Worapay</p> <p>Launch Date: 2012 Type: Mobile app software provider</p> <p>Description: Worapays provides through its Wlopay a digital wallet interface for In-app payments</p>	<p>Value Proposition: Business intelligence analytics In App-payments Digital mobile wallets Transfer slip scan or photo payments Digital Loyalty rewards</p> <p>Value Network: Platform set-up by new-entrants</p>
<p>WORLDFIRST</p> https://www.worldfirst.com/en-nl/business/?locale=en_NL&	<p>Worldfirst</p> <p>Launch Date: 2004 Type: FX transfers provider</p> <p>Description: Worldfirst provides solutions for FX transfers, payrolls or supplier payments for businesses and individuals</p>	<p>Value Proposition: Cross-border settlements: FX transfer platform aggregator Real time data</p>
 https://worldline.com/	<p>Worldline</p> <p>Launch Date: 1970 Type: PSP</p> <p>Description: Worldline is an incumbent PSP firm that covers the whole payment value chain. Worldline provides payment and business intelligence solutions to merchants, professionals in the fields of mobility and</p>	<p>Value Proposition: Omnichannel payment solution Payment processing Sales analytics Business intelligence analytics Transactions Performance analytics Digital Interactive in-store experience POS software POS terminal Mobile proximity payments Digital Interactive in-store experience In App-payments</p>


	telecommunication and other PSP and financial institutions.	Mobile app interfaces for businesses QR code payments Customization services for businesses. Real time data Digital payment security services Digital Loyalty rewards Value network: Platform set-up by financial services incumbents
 https://www.worldpay.com/	Worldpay Launch Date: 1993 Type: PSP Description: PSP that offers payment, business intelligence, fraud detection and payment optimization solutions for online retailers and professionals	Value Proposition: Omnichannel payment solution Payment processing Sales analytics Business intelligence analytics Transactions Performance analytics POS software POS terminal Billing (authorization) service Cross-border settlements FX trading services TELE-Communication channel payments Mobile app interfaces for businesses Proximity mobile payments Consultancy services and knowledge Sharing Value network: Platform set-up by financial services incumbents
 https://www.xximo.nl/	XXIMO Launch Date: 2011 Type: Mobility card and app provider Description: XXIMO provides mobility as a service for businesses and individuals. Through Its mobile app and issued cards. Users can make seamless payments, discover cheap mobility solutions program their schedules in response to map locations, tracking and cost indication.	Value Proposition: Global card issuing In App-payments: Mobile payment administration app Mobile app interfaces for businesses Disclosure services Virtual account management
 http://getyestap.com/	Yestap Launch Date: 2014 Type: Mobile app software provider Description: Yestap provides a digital wallet interface for In-app payments in hospitality	Value Proposition: Digital Interactive in-store experience In App-payments Mobile payment administration interfaces/software for users Digital Loyalty rewards

Blockchain		
 https://bitpay.com/	Bitpay Launch Date: 2011 Type Wallet and Payment Provider Description: Bitpay provides bitcoin payment processing services for businesses and individuals, cryptocurrency wallet application (since 2015) and visa connected with bitcoin wallet (since 2016).	Value proposition: Cryptocurrency Wallets Linked Debit Card Administration interface Cryptocurrency payment processing Cryptocurrency value transfer rails Value capture: Exchange/transaction rate fee
 https://www.bitmymoney.com/	Bitmymoney Launch Date: 2012 Type: Exchange and wallet/account provider	Value proposition: Brokerage Services Cryptocurrency Wallets Tele-communication payments Value network:

	<p>Description: Bitmymoney provides Cryptocurrency accounts for bitcoin buying, selling and storing</p>	<p>Infrastructural consolidation Value capture: Exchange/transaction rate fee</p>
 https://bitonic.nl/merchant	<p>Bitonic</p> <p>Launch Date: 2012 Type Exchange and Knowledge Provider</p> <p>Description: Bitonic enables the buying and selling of bitcoins, provides Platform/marketplace for bitcoin exchange among users (BL3P,2016) and Knowledge sharing services for universities banks and public authorities (Bitonic Academy). Bitonic, also, collaborates with Mollie a PSP for the provision of cryptocurrency payment services for merchants.</p>	<p>Value proposition: Brokerage Services Match and exchange Trading platform Real-time price and trade volume data Consultancy services and knowledge Sharing Cryptocurrency payment processing Value network: Infrastructural consolidation Outsourcing cryptocurrency exchange services: Value capture: Exchange/transaction rate fee Consultation</p>
 https://bit4coin.net/en	<p>Bit4coin</p> <p>Launch Date: 2013 Type: Exchange Provider</p> <p>Description: Selling point for bitcoins. The company sells bitcoins via vouchers and gift cards to individuals and business.</p>	<p>Value proposition: Integrated bank account cryptocurrency transfers Voucher/gift card Value capture: Exchange/transaction rate fee Voucher shipment</p>
 https://btcdirect.eu/en-gb	<p>BTC Direct and BTC.com</p> <p>Launch Dates 2013 and 2015 Type: Exchange and Wallet Provider</p> <p>Description: BTC direct enables the buying and selling of cryptocurrencies and BTC.com provides account wallets (since 2015) for storing cryptocurrencies.</p>	<p>Value proposition: Brokerage Services Real-time price and trade volume data Cryptocurrency Wallets Administration interface Value network; Infrastructural consolidation Value capture: Exchange/transaction rate fee</p>
 https://www.litebit.eu/en	<p>Litebit</p> <p>Launch Date: 2013 Type: Exchange and Wallet Provider</p> <p>Description: Litebit enables the buying and selling of cryptocurrencies and provides account wallets for storing cryptocurrencies.</p>	<p>Value proposition: Brokerage Services Price alerts Cryptocurrency Wallets Real-time price and trade volume data Value network; Infrastructural consolidation Value capture: Exchange/transaction rate fee</p>
 https://quantoz.com/	<p>Quantoz</p> <p>Launch Date: 2013 Type: Wallet, Software and Payment Provider</p> <p>Description Quantoz provides cryptocurrency wallet (Quasar); software for financial institutions and businesses; and merchant services (Nexus). Quantoz, also provides software for an alternative value transfer rail for connected devices micropayments.</p>	<p>Value proposition: Cryptocurrency Wallets Administration interface Cryptocurrency payment processing Integrated bank account cryptocurrency transfers Value Network Start-ups collaborations Value capture: Exchange/transaction rate fee Pay per use for connected devices</p>
 http://tab-trader.com/	<p>TabTrader</p> <p>Launch Date: 2013 Type Exchange Provider</p> <p>Description: Mobile Platform/terminal for trading cryptocurrencies</p>	<p>Value proposition: Match and exchange Trading platform Real-time price and trade volume data Price alerts Administration interface Investment management services Value capture: Exchange/transaction rate fee</p>

 https://anycoindirect.eu/	<p>Anycoin</p> <p>Launch Date: 2014 Type: Exchange Provider</p> <p>Description: Platform/marketplace for cryptocurrency exchanges.</p>	<p>Value proposition: Brokerage Services Credit rewards</p> <p>Value network: Infrastructural consolidation</p> <p>Value capture: Exchange/transaction rate fee</p>
 https://bitex.la/	<p>Bitex</p> <p>Launch Date: 2014 Type: Exchange and Payment Provider</p> <p>Description: Platform that provides processing services for Bitcoins exchanges and payments.</p>	<p>Value proposition Trading platform Match and exchange Cryptocurrency value transfer rails Real-time price and trade volume data Cryptocurrency payment processing Administration interface: Integrated bank account transfers</p> <p>Value network; Infrastructural consolidation</p> <p>Value capture: Exchange/transaction rate fee</p>
 https://www.bitkassa.nl/	<p>BitKassa</p> <p>Launch Date:2014 Type:Exchange, Payment and Knowledge Provider,</p> <p>Description: BitKassa enables the buying and selling of cryptocurrencies, provides cryptocurrency acceptance services for companies and organizes workshops about blockchain for companies and government authorities.</p>	<p>Value proposition: Brokerage Services Cryptocurrency payment processing Consultancy services and knowledge Sharing Integrated bank account transfers</p> <p>Value capture: Exchange/transaction rate fee Consultation</p>
 https://coinify.com/	<p>Coinify</p> <p>Launch Date:2014 Type: Exchange and Payment provider</p> <p>Description: Coinify provides cryptocurrency exchange, payment and processing services for merchants, individuals and established financial institutions and government authorities.</p>	<p>Value proposition: Brokerage Services Cryptocurrency payment processing Outsourcing cryptocurrency exchange services</p> <p>Value Network Exchange, storage and transfer partnerships</p> <p>Value capture: Exchange/transaction rate fee</p>
 https://cointopay.com/	<p>Cointopay International</p> <p>Launch Date: 2014 Type: Exchange, Payment and Wallet Provider</p> <p>Description: Cointopay facilitates cryptocurrency exchanges, cryptocurrency wallets and cryptocurrency acceptance services for merchants.</p>	<p>Value proposition: Brokerage Services Trading platform Match and exchange: Personal Data encryption service Cryptocurrency Wallets Administration interface Cryptocurrency payment processing</p> <p>Value Network Infrastructural consolidation</p> <p>Value capture: Exchange/transaction rate fee</p>
 https://iodigital.io/	<p>iodigital</p> <p>Launch Date: 2014 Type: IT services provider.</p> <p>Description: iodigital utilizes blockchain technologies for data distribution, storage and encryption services;</p>	<p>Value proposition Open source data administration Document digitization services Consultancy services</p> <p>Value capture: Commercial software/application development</p>
 https://legalthings.io/index.html	<p>Legal Things</p> <p>Launch Date: 2014 Type: Blockchain Software Provider</p> <p>Description: Legal Things provides blockchain software that enable the digital automation and transaction of documents and data for businesses.</p>	<p>Value proposition Document Digitization services Open source data administration</p> <p>Value capture: Commercial software/application development</p>

 Marcopolobot https://www.marcopolobot.com/	<p>Marcopolobot</p> <p>Launch Date: 2014 Type: Investment/ Alternative lending</p> <p>Description: Marcopolobot through its API provides an algorithm for automated cryptocurrency lending. Cryptocurrency loans are given to margin traders for speculative activities.</p>	<p>Value proposition: Alternative Lending</p>
<p>SATOS</p> https://www.satos.nl/	<p>Satos</p> <p>Launch Date: 2014 Type: Exchange Provider</p> <p>Description: Satos provides platform for cryptocurrency buying and selling,</p>	<p>Value proposition: Cryptocurrency Brokerage service</p> <p>Value capture: Exchange/transaction rate fee</p>
 https://www.nocks.com/	<p>Nocks</p> <p>Launch Date: 2015 Type: Exchange and Payment Provider</p> <p>Description: Nocks provides a platform for Gulden cryptocurrency trading and cryptocurrency acceptance services for merchants.</p>	<p>Value proposition: Brokerage Services Trading platform Cryptocurrency value transfer rails Cryptocurrency payment processing</p> <p>Value capture: Exchange/transaction rate fee</p>
 BLOQHOUSE https://bloqhouse.com/	<p>Bloqhouse</p> <p>Launch Date: 2016 Type: Software provider.</p> <p>Description: Bloqhouse provides blockchain software for the digitization of physical investment assets (such as real estate, company shares, fractions of art) for liquidity and capital rising.</p>	<p>Value proposition: Trading platforms Asset Digitization services (smart property)</p> <p>Value capture: Exchange/transaction rate fee Commercial software/application development</p>
<p>CryptoTaub</p> https://www.cryptotaub.com/en/home/	<p>CryptoTaub</p> <p>Launch Date: 2016 Type: Knowledge provider</p> <p>Description: CryptoTaub provides training, workshops and presentations in companies and individuals regarding blockchain and cryptocurrencies.</p>	<p>Value proposition: Consultancy services and knowledge Sharing</p> <p>Value capture: Consultation</p>
<p>COIN22</p> https://coin22.com/	<p>Coin 22</p> <p>Launch Date: 2016 Type: Mobile Payment rail provider</p> <p>Description: Coin 22 enables local micro payments and cross-border transactions using mobile value transfer rail and tokenization and blockchain technologies.</p>	<p>Value proposition: Administration interface Asset Digitization services Alternative lending</p>
 coinsnap <small>Bitcoin Merchant Services</small> https://www.coinsnap.eu/en/public/	<p>Coinsnap</p> <p>Launch Date: 2016 Type: Payment Provider</p> <p>Description: Coinsnap provides Bitcoin payment services for merchants.</p>	<p>Value proposition: Cryptocurrency payment processing</p> <p>Value capture: Exchange/transaction rate fee</p>
 https://guts.tickets/	<p>Guts tickets</p> <p>Launch Date: 2016 Type: Blockchain protocol issuer for tickets.</p> <p>Description: Guts tickets utilizes Blockchain technology for creating,</p>	<p>Value proposition: Smart ticketing</p> <p>Value capture: Exchange/transaction rate fee</p>

	validating and monitoring the reselling of smart tickets in the secondary markets..	
 https://bitvavo.com/	<p>Bitvavo</p> <p>Launch Date: 2017 Type: Exchange and Wallet Provider</p> <p>Description: Bitvavo enables the buying and selling of various cryptocurrencies and provides wallet accounts for storing.</p>	<p>Value proposition: Cryptocurrency Brokerage Services Credit rewards Cryptocurrency Wallets</p> <p>Value Network: Infrastructural consolidation</p> <p>Value capture: Exchange/transaction rate fee</p>
 https://www.dcorp.it/	<p>DCORP Ventures</p> <p>Launch Date: 2017 Type: investment/venture capital</p> <p>Description: DCORP explores blockchain potentials in venture capital investments using token and ethereum blockchain technologies.</p>	<p>Value proposition: Smart Investment Smart Governance</p>
 https://www.happycoins.com/en	<p>Happycoins</p> <p>Launch Date: 2017 Type: Exchange Provider</p> <p>Description: Happycoins provides exchange services for people who wish to buy and/or sell bitcoins.</p>	<p>Value proposition: Brokerage Services Credit rewards</p> <p>Value capture: Exchange/transaction rate fee Start-ups merges and acquisitions</p>
 https://internetofcoins.org/	<p>Internet of coins</p> <p>Launch Date;2017 Type: Wallet Provider</p> <p>Description: Provides digital wallet for cryptocurrencies storing.</p>	<p>Value proposition: Cryptocurrency Wallets</p>
<p>NEXT.EXCHANGE</p> https://next.exchange/	<p>Next.Exchange</p> <p>Launch Date: 2017 Type: Exchange Provider</p> <p>Description: Platform for P2P high trading volume cryptocurrency and tokens exchange.</p>	<p>Value proposition: Trading platform Smart investment services</p> <p>Value capture: Exchange/transaction rate fee Promotion fee</p>