Alignment of the firm business model in the digitization process: path dependence and reconfiguration at the case of banking business models

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Abstract

The present paper analyses the impact of digitization on business models in the banking industry. With this analysis the study aims to answer the question: *How are banks digitizing their business models and what are the roles of path dependencies and ambidexterity in the digitization process of business models?* As this study reveals, the banking industry in particular is of relevance to the discussion of digitization since it must reconfigure their business model to changing customer needs in the new digital environment and reinvent their role in the disrupted ecosystem. Banks must drive the digital innovation agenda by linking up with FinTechs and technology providers, as well as cooperate with each other to sustain their competitive position and share costs. Finally, banks have to go beyond traditional innovation strategies by not only restructuring legacy infrastructures from the ground up but by reinventing their organisations with viable organisational structures and core technological capabilities. In order to come to these conclusions, developing a digital business model framework has been one element of the extant research in order to provide a holistic assessment tool on how digitization impacts a company's business model. The literature review of 80 academic and management articles revealed that the BMI and digitization theory is rather fragmented and that further theoretical streams like path dependence and ambidexterity needed to be investigated to answer the research question. Lastly, banking experts where interviewed to test the developed framework and to gather industry data for which limited empirical evidence exists.

Abstract in Portuguese

Esta tese analisa o impacto da digitalização em modelos de negócio na indústria bancaria. Este estudo pretende responder à seguinte pergunta: Como estão os bancos a digitalizar os seus modelos de negócio e quais são os papéis da dependência e da ambidestria no processo de digitalização dos modelos de negócio? A indústria bancaria torna-se relevante de estudo no processo da digitalização pois deve reconfigurar o seu modelo de negócio devido a mudanças nas preferências dos consumidores neste novo ambiente digital e reinventar o seu papel num novo ecossistema. Os bancos devem entrar na era digital através de ligações com empresas tecnológico-financeiras e provedoras de tecnologia, e estabelecer parcerias com cada uma para mantar uma posição competitiva e partilhar custos. Devem ainda não só restruturar infra-estruturas desde baixo até cima mas também aplicar estruturas organizacionais viáveis e capacidades tecnológicas core. Estas conclusões derivam de vasta pesquisa académica em como construir uma estrutura de modelo de negocio e assim poder fornecer uma ferramenta holística que quantifique em quanto a digitalização impacta os componentes do modelo de negocio de cada empresa. A análise de 80 trabalhos académicos e artigos de gestão revelaram que inovação nos modelos de negócio e a teoria da digitalização é bastante fragmentada e que outras teorias como a dependência de caminhos e a ambidestria precisam de ser investigadas para responder à questão de investigação. Por último, foram entrevistados especialistas bancários para testar a estrutura desenvolvida e para colectar dados da indústria para cada evidência empírica existente.

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AuM	assets under management
BM	business model
BMI	business model innovation
CS	Credit Suisse
CVP	customer value proposition
e.g.	for example
et al.	et alii *(and others)*
R&D	research and development

Preface

Digital disruption and the logic behind novel digital business models have always been a topic of great interest to me. The opportunity to follow this interest within my studies was one of the reasons why I chose the Master in Management with Specialization in Strategy and Entrepreneurship at the University Católica-Lisbon SBE. Moreover, to focus my master thesis on this topic was of great importance to me.

I would like to thank Prof. René Bohnsack for this opportunity, the patience and interest in developing a topic with me that so effectively addresses my interests and that is moreover situated in an exciting real-life context. Moreover, his on-going and beneficial support, contributions and fair review throughout the whole writing and revision process, is something for which I am very thankful. I felt honored to work together with an expert in the field of business model innovation like Prof. René Bohnsack.

Furthermore, I want to thank Peter Brugger and Alexander Vencken from the BMI Lab Consultancy of St. Gallen for their advice, their ideas and their support during and especially at the beginning of the research phase and for giving me the opportunity to develop a topic of mutual interest. Their assistance has been of tremendous help for the result of this study and I am very pleased to have received their support.

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1 INTRODUCTION

Digital is one of those terms that mean different things to different people, depending on the point under discussion or which part of the business they work for.[1] When discussing in terms of embracing digital transformation, it appears that there remains a lot of work to be done. When asking organizations how they are adapting to the digital age, only 18% say they understood what this would mean for their organization and less than 30% feel they had the right approach internally to succeed.[2] The notion of Business Model Innovation (BMI) has recently gained significant prominence regarding the conversion of digital technologies into commercial value. This is because companies that want to adapt to new technologies and link ideas to commercial outcomes, need to reinvent or innovate their business model, instead of just relying on the outcomes of product or service innovation. Business Model Reconfiguration, an approach that defines the transition path from a current to a desired business model (De Reuver et al. 2013), plays therefore a significant role for disrupted industries.

The essence of a business model is in defining the manner by which an enterprise delivers value to customers (Teece 2010), entices customers to pay for value by converting those payments to profit, and by which an enterprise designs transaction content, structure, and governance so as to create value through the exploitation of business opportunities (Amit & Zott 2001). A firm's business model is therefore an important pillar of innovation and a crucial source of value creation for the firm and its network of suppliers, partners, and customers (Amit & Zott 2001). What is still unclear in regard of BMI is the importance of understanding organizational path dependencies while assessing the difficulties incumbent organizations are facing in adapting their business model to the new digital ecosystems. In addition, applying an organizational ambidexterity perspective to the business model context has emerged as a new research paradigm in organization theory (Raisch et al. 2009) and seems to play a role in assessing dynamic management capabilities required to respond to this technology shifts.

An industry which has been given special attention in this regards is the banking ecosystem which is undergoing a significant digital change and which current business models (BMs) are under scrutiny. Among several universal trends affecting banks and their customers, "digitization" is the most significant.[3] Moreover, banks are forced to deal with new competitors,

[1] Source: Computer Weekly; 2/2/2016, p18

[2] Source: http://www.paconsulting.com/blog/destinationdigitalblog/the-latest-battle-between-the-digital-slayer-and-the-old-guard/, retrieved 04.08.2016

[3] Source: http://www2.deloitte.com/ch/en/pages/financial-services/articles/swiss-banking-business-models-of-the-future.html, retrieved 10.06.2016

which are not only FinTech startups but also non-banks and technology giants. The digital native's wealth is expected to grow significantly in the next few years and millennials are therefore high-potential customers, but have still unknown needs and expectations.[4] Banks must therefore find adequate ways to respond to the new opportunities to create and capture value from digitization.

The present thesis, following a comprehensive review on BMI and digital transformation, studies the impact of digital change on incumbent BMs and aims at providing an enhanced business model framework that allows assessing both drivers of digital transformation and challenges of organizational matters in this regard. While the theory of 'business model reconfiguration' and 'value creation through digitization' needs to be acknowledged as the underlying basis for describing the situation of the banking industry, the second focus for the present research is of organizational nature. Theoretically concerned with organizational matters of today's firms that are facing technological changes is the literature about organizational path dependence and organizational ambidexterity. The theory of path dependencies will contribute in understanding why incumbent organizations face difficulties in adapting their business model to new digital ecosystems. Organizational ambidexterity instead will highlight the required ability to be efficient in its management of today's business and also adaptable for coping with tomorrow's changing demand (Duncan 1976).

The usefulness and applicability of the provided framework of BMI parameters are tested by assessing the evolution of BMs of banks and by studying how these banks responded to the disruptive digital threat of FinTech companies. The present thesis will therefore examine the way in which digital value is created by FinTechs and enlighten the impact they have in shaping the banking industry. Hence, the guiding research question can be stated as: how are firms in the banking sector digitizing their BMs and what are the roles of path dependencies and ambidexterity in the digitization process of BMs? To fully grasp the ongoing development, three sub-research questions are posed. Firstly, the sources of digital value creation of FinTech and traditional banking BMs are analyzed, secondly the response or not-response of traditional banking organizations will be studied and lastly, the adaption of the incumbent BMs will be evaluated from a strategic as well as organizational perspective. The exploration of these four questions will reveal insights important for both the theory of BMs and the banking industry.

[4] Source: http://www2.deloitte.com/ch/en/pages/financial-services/articles/swiss-banking-business-models-of-the-future.html, retrieved 10.06.2016

2 THEORY

The banking industry is expected to change radically over the coming decades. Such a radical change is always connected to a development of new technology (Tushman et al. 1997) as can be observed for example in new digital enabled offerings such as Robo-advice, blockchain technology or peer-to-peer lending, all with the goal of providing financial services with increased access, efficiency and convenience. Thus, BMI is a major aspect in terms of understanding the developments within the banking industry and therefore the first theoretical stream under examination.

Since the concept of BMs is relatively new in academia and not extensively developed (Teece 2010), exploring the evolution of BMs in the banking industry, which is subject to digital change and is currently in the process of changing today's BMs, might hold interesting insights to develop the theory further. However, to examine the impact of digitization on BMs, the theory of digital transformation needs to be acknowledged secondly, since it will enable an assessment of the relation and combination of these two theoretical contexts. Moreover, organizational change aspects like path dependencies and ambidexterity need to be considered to understand how past decisions and dynamic capabilities of an organization affect future organizational developments.

2.1 Business Model Theory

Business Model Theory is the underlying theoretical stream of this thesis, thus it is elaborated in the first place. This section is divided in (1) Business Model Innovation and (2) Business Model Reconfiguration. The Appendix section contains in A1 the chapter about Customer Value Proposition.

2.1.1 Business Model Innovation

BMI has emerged as an "important mean to commercialise and capture the value of innovations" (Chesbrough & Rosenbloom 2002). In response to environmental dynamics, even "well-established and currently successful BMs cannot be understood as a permanent given" (Schneider & Spieth 2013; Chesbrough 2007). Changing ecosystems are bringing dominant companies under "margin and competitive pressures" and it has therefore become an important management issue for entire industries and companies in all sectors, that are "actively

developing new BMs for building up sustainable competitive advantages" (Gassmann et al. 2016). Changing consumer preferences are forcing leading players to "identify new ways to deliver value to their customers and to obtain and sustain a competitive advantage" (Pateli & Giaglis 2005). Managers that understand the opportunities BMI can deliver in fast changing environments can also assure a sustainable competitive position for their firms.

Existing business model research is still heterogeneous (Gassmann et al. 2016) and there are fragmented methodological approaches on how to conduct a BMI (Pateli & Giaglis 2005). Despite various theoretical concepts and perspectives it is common "among most attempts not to limit its scope on firm internal elements nor external factors, but rather provide a holistic perspective that allows managers to take an integrated view on the firm's activities" (Schneider & Spieth 2013), by integrating all of the firm's business model elements, it's external environment, and its interfaces with customers and partners (Zott & Amit 2010; Schneider & Spieth 2013). However, BMI cannot easily be generalized because its applicability depends on certain business and environmental conditions; BMI is typically dependent on the dimensions or codifications used for business model components (Pateli & Giaglis 2005) but nevertheless, "BMs themselves have emerged as a promising unit of analysis and starting point for innovation strategies" (Schneider & Spieth 2013).

Both practitioners and academics find significant interest in the potential of BMI, for existing corporations that need to convert latent technology into a profitable business as well as for start-ups that need to "discover and exploit new models and engage in significant experimentation and learning"(McGrath 2010). This thesis is assessing the impact of digitization on existing BMs, thus the focus will stay on changes in BMs of focal corporations. Nevertheless, both types of corporations need to define "the manner by which the enterprise delivers value to customers, entices customers to pay for value, and converts those payments to profit" (Teece 2010). Since especially disruptive start-ups in the financial service industry were able to provide such significant customer value and revolutionize their industries by overcoming the dominant industry logic, their BMs and especially value propositions need to be considered for the analysis.

In order to understand the "patterns, causal and logical relationships, as well as processes of BMs" (Gassmann et al. 2016) that can be assessed in different business conditions, a quick overview of the seven dominant schools of thought on BMs will be useful, introduced in the newly published book *Exploring the Field of Business Model Innovation: New Theoretical Perspectives* (Gassmann et al. 2016).

The authors Zott & Amit from the IESE Business School and Wharton School of the University of Pennsylvania, set their focus within BMI on the selection and configuration of activities, on their structure and the required capabilities and processes that need to deliver and distribute the identified value proposition. Their activity system perspective is defined as a "set of interdependent organizational activities centered on a focal firm, including those conducted by the focal firm, its partners, vendors or customers, etc." (Zott & Amit 2010). Demil and Lecocq (2010) from IAE Business School have a more process oriented approach and define a business model as a "dynamic process of balancing revenue, costs, organization, and value". They highlight three core components of a business model: resources and competencies, organizational structure, and value proposition delivery (RCOV framewok). Furthermore, they differentiate within BMI the static view that "allows building typologies and studying the relationship between a given BM … and that gives a consistent picture of the different BM components and how they are arranged" (Demil & Lecocq 2010), from the transformational view (chapter 2.1.2), that focuses on the process of BM evolution and "deals with this major managerial question on how they can change their BMs".

The cognitive school around the authors C. Baden-Fuller and M. S. Morgan, from Cass Buisness School, follow a model-based view on BMs and identify in their research paper *Business models as models* different roles of models: "to provide means to describe and classify businesses; to operate as sites for scientific investigation; and to act as recipes for creative managers" (Baden-Fuller & Morgan 2010).

More relevant for this thesis is the 4th approach, coming from the technology-driven school University of California, Berkeley, in specific from the research group around Henry Chesbrough and David J. Teece. They define a business model as a way to commercialise a novel technology. The authors want to build the bridge from BMs to technology management: "Chesbrough focuses on the aspects of spin-off strategies and open BMs, and thus explores organizational matters; Teece instead is interested in exploring the role of dynamic capabilities for BMI" (Gassmann et al. 2016). Members of another research group dedicated to the technology topic of BMs, with focus on the role of BMs in creating and appropriating value, are S. Tongur and M. Engwall (2014) who try to assess why mature companies are failing to manage technology shifts. They suggest the importance of the S*ervitization* S*trategy* that "emphasises innovation in the value proposition offered to the customer", instead of relying simply on technological R&D, and they stress the "need to understand the dynamics of technological shifts from a business model perspective".

Casadesus-Masanell and Ricart (2010), Harvard Business School, research on how business model and strategy are interlinked and try to clarify the differentiation as well as the gap between the three concepts of strategy, business model, and tactics. J. Magretta (2002) explains that difference quite clearly: "BMs describe, as a system, how the pieces of a business fit together. But they don't factor in one critical dimension of performance: competition. That's the job of strategy" (Magretta 2002). Lastly, the "Recombination School" (Gassmann et al. 2016), from the University of St. Gallen, defines a business model as a recombination of patterns for answering the who–what–how–why questions of a business. They developed a practical framework of the following four dimensions (Gassmann et al. 2016):

1. Who? Every business model serves a certain customer group (Hamel, 2000). Thus, it should answer the question 'Who is the customer?' (Magretta, 2002).
2. What? The second dimension describes what is offered to the customer, or put differently, what the customer values. This notion is commonly referred to as the value proposition (Teece, 2010).
3. How? To build and distribute the value proposition, a firm has to master several processes and activities. These processes and activities go along with the involved resources (Hedman & Kalling, 2003) and capabilities (Morris et al., 2005).
4. Why? Why does the business model generate profit or, more generally, value? This dimension explains why the business model is financially viable, and therefore relates to the revenue model. In essence, it unifies aspects, such as cost structure and revenue mechanisms.

Now that it is clear how BMI can be understood and what BM components can mean from different perspectives, the next chapter will set its focus specifically on business model reconfiguration. As Chesbrough stated in his paper: "to innovate the company business model, executives must first understand what it is, and then examine what paths exist for them to improve on it" (Chesbrough 2007).

2.1.2 Business Model Reconfiguration

Incumbent companies facing technological discontinuities often focus mainly on technological innovation by waiting patiently for novel products to emerge from their internal research laboratories (Chesbrough 2007), and run soon out of business because they do not "adapt their

BMs to the emerging competitive landscape" (Tongur & Engwall 2014). Many recent surveys highlight that more than 50% of executives believe that BMI will become more important than service or product innovation even though success stories like the iTunes-store, that revolutionised portable entertainment, are really rare (Johnson et al. 2008). But why are environmental and technological shifts so difficult to manage? Why are senior managers finding it so difficult to "pull off the new growth that BMI can bring" (Johnson et al. 2008)?

Chesbrough (2007) and Amit & Zott (2010), as well as previous academic research, have helped identify that businesses face significant barriers to business model experimentation. Firstly, most of the companies have "extensive investments and processes for exploring new ideas and technologies, but they often have little if any ability to innovate the BMs through which these inputs will pass" (Chesbrough 2010). The main reason behind that is that gross margins for the emerging models are initially far below those of the established technology that will be disproportionately favoured (Chesbrough 2010). Secondly, Amit & Zott highlight the conflict between key aspects of BMI and the more traditional configurations of firm assets, whose managers create resistance to BM experimentation that might threaten their value-creation role in the company (Amit & Zott 2001). Also Clayton Christensen (1997) and M. Raynor (2003) highlighted that the "root of tension is the conflict between the business model established for the existing technology and that required to exploit the emerging, disruptive technology". Apart from many other organisational capabilities needed to "accelerate the renewal and transformation of BMs", like strategic sensitivity, leadership unity and resource fluidity (Doz & Kosonen 2010), managers don't understand their current business model well enough to know if it "would suit a new opportunity or hinder it, and they don't know how to build a new model when they need it" (Johnson et al. 2008). So how do you reinvent your business model and what method do executives need to follow?

Existing research work on defining structured methodological approaches for business model change is rather fragmented. Most methods are applicable only under certain business conditions and most BMI articles provide basic definitions and differentiations from existing BMI concepts or categorising frameworks, rather than a "stepwise methodology that can guide a business model evolution process" (Pateli & Giaglis 2005). Table 1 highlights the main areas of research in the field of BMI, identified by Wirtz et al. (2016). By means of the conducted analysis of the research field, they identified six substantial research focus areas, of which the first three BMI research fields Definition & Types (15.4%), Design & Process (24.8%), Drivers & Barriers (13.4%) rather cover theoretical and conceptual issues, while the following three

deal with implementing and running BMI Frameworks (20.1%), Implementation & Operation (16.8%), and Performance & Controlling (9.4%).

Allocation of published articles for the BMI State of Research					
	Key Content	Conceptual	Empirical (Qualitative)	Empirical (Quantitative)	Total
Definition and types	• Basic definition of BMI concept and differentiation from existing concepts • Differentiation of certain BMI types	10 (43.5%)	10 (43.5%)	3 (13.0%)	**23 (15.4%)**
Design and Process	• Ex-ante BMI development • Steps and phases of BMI	12 (32.4%)	19 (51.4%)	6 (16.2%)	**37 (24.8%)**
Drivers and Barriers	• Drivers of BMI • Barriers of BMI	7 (35.0%)	13 (65.0%)	0 (0.0%)	**20 (13.4%)**
Frameworks	• Unbundling of BMI concept • Categorization of concrete parameters	12 (40.0%)	13 (43.3%)	5 (16.7%)	**30 (20.1%)**
Implementation and Operation	• Arrangements for BMI implementation • Running BMI business operations	3 (12.0%)	16 (64.0%	6 (24.0%)	**25 (16.8%)**
Performance and Controlling	• Ex-post measurement of BMI feasibility, profitability, and sustainability	1 (7.1%)	3 (21.4%)	10 (71.4%)	**14 (9.4%)**

Table 1: Quantitative analysis of BMI articles (from Wirtz et al. 2016)

The second stream of research relates BMI to organizational change processes and emphasizes the "capabilities, leadership, and learning mechanisms that are needed for successful BMI" (Foss & Saebi 2016). More and more research has been done lately to provide the management with an appropriate design and process to overcome difficulties in the transition from the old to a new business model. Researchers dedicate the largest amount of articles to this research area (24.8%) because having a "stepwise illustration of the course of action may helpfully serve as instructions or at least guidelines for practitioners" (Wirtz et al. 2016). Furthermore, the studies of the BMI research in this context see BMI as an additional method for innovation, next to product, service, and process innovation.

The following methodology tries to investigate more deeply the process of BMI and combines multiple approaches within this field of business model reconfiguration to set out a holistic overview. This methodical foundation, inspired by M. Johnsons et. al HBR article *Reinventing your business model* (2008), by Doz & Kosonen *Leadership Agenda for Accelerating Business Model Renewal* (2010), by Zott & Amit *Activity System Perspective* (2010), Pateli & Giaglis *Technology innovation - induced business model change: a contingency approach* (2005) and other researcher within the field of change management, gives a good overview of the business model reconfiguration process and might be useful for the assessment of digital change, when and where it makes sense for an organisation and whether value can be created and captured.

The beginning of business model reconfiguration starts with understanding the status quo of existing BM by documenting the current business model components. The outcome is a "business model map (for example, Gordijn et al., 2001; Osterwalder and Pigneur, 2002; Pateli and Giaglis, 2003; Morris et. al., 2005; Gassman et al., 2016) that can be used for understanding the key elements of a specific business model (e.g. value proposition, customer engagement, costs and earnings, resources, processes) and their relationships" (Pateli & Giaglis 2005). "By systematically identifying all of its constituent parts, executives can understand how the model fulfills a potent value proposition in a profitable way using certain key resources and key processes" (Johnson et al. 2008). Once the current BM is understood, it's potential of reconfiguration needs to be assessed by defining requirements for technology innovation and by identifying how the current business model could be changed or extended (Pateli & Giaglis 2005). Chesbrough's (2010) seven stages of business model advancement can be useful to assess "where the current business model stands in relation to its potential".

The second step is about identifying influences and technological trends, in this case from digital innovations, on the current model. The assessment of the influence of digital innovations and changing customer needs is all about studying potential benefits and the impact for different dimensions of the business model (Pateli & Giaglis 2005). The innovator should ask himself: What is the customer need? How can we fulfill that need with profit (Johnson et al. 2008)? While comparing the new model with the existing model the fields of the business model that are affected need to be identified. In addition, the missing roles with their activities and functions need to be detected (Pateli & Giaglis 2005). For example, Bancolombia adopted activities designed to offer microcredit, in addition to the typical activities of a retail bank. To conclude the second step, the potential of a networked business model needs to be evaluated (Palo & Tähtinen 2013). A network business model "reflects a situation when it is impossible for a single company to govern all the relevant resources and activities needed in developing, producing, and marketing technology-based services".

The third step is about the conceptualization and design of the future business model and ends at "visualizing the new business model through the design of the transformed value network" (Pateli & Giaglis 2005). In this context, the BMI design provides a simplified representation of a firm's business logic that shows how it makes money on an abstract level (Mezger 2014; Buur et al. 2013) and helps to innovate a company's activities (Wirtz et al. 2016). The design of a activity system (Zott & Amit 2010) can be of advantage in this stage. This concept refers to the activity system content, which describes new assignments that need to be performed, to the activity system structure, which describes how these activities are interlinked, and to the activity

system governance, which refers to the distribution of responsibilities (e.g. franchising) and the required profound organization and governance competencies (Carayannis et al. 2014). Zott & Amit (2010) furthermore identify novelty (capturing latent consumer needs), lock-in (e.g. loyalty programs), complementarities (e.g. after sales service) and efficiency (e.g. decrease transaction costs) as new configurations of firm activities within an e-business model innovation (Chesbrough 2010). Complementarities for example can be "bundling activities within a system that provide more value than running activities separately (Zott & Amit 2010)". Think about a commercial banking's deposit activity that is an important source of funding and that complements the banks' lending activity.

If the industry where a company operates is characterized by a certain and predictable environment, different scenarios for BMs should be defined (Pateli & Giaglis 2005). It includes "defining a set of scenarios, each of which proposes a different cooperation scheme and way of distributing responsibilities between new and existing players". Ideal for uncertain, fast-moving and unpredictable ecosystems is the application of the discovery-driven approach (McGrath 2010) of anticipating and exploring future usage concepts, which "emphasizes a discovery process of trial and error" (McGrath 2010), instead of over-relying on traditional foresight tools (Doz & Kosonen 2010). The last part of the third step of business model reconfiguration is BM roadmapping. By choosing between different alternative BMs, "business model roadmapping may help to define the transition path from the old to the desired BM and helps identify overlapping paths, path dependencies and points of no return" (De Reuver et al. 2013).

At the forth step, managers need to describe the new business model, which "aims at describing one or more BMs by indicating the value provided by each player in the future model, as well as defining financial and communication flows among players" (Pateli & Giaglis 2005). It is important not to forget to describe how the model interacts with models of other players in the industry (Casadesus-Masanell & Ricart 2011), because a business model may "create less value than the others when interactions are considered".

The last step of the BM reconfiguration is about deciding whether all, some or none of the BM components need to be changed. M. Johnson et. al. (2008) says that there is the need to change the BM when significant changes are required in most elements or dimensions. As an example, Johnson et. al. (2008) describes five circumstances than can require a changing BM: the democratization of products in emerging markets (e.g. Tata's nano car); the capitalization on a brand-new technology (e.g. Apple and mp3-player); the refinement of existing products or services (like the reliability of FedEx); if a company can fend-off low end disrupters (e.g. Nano-

car in India) or when a company needs to respond to shifts in competition (lower manufacturing costs).

What needs to be taken into account before signing off a BM renewal are the historic path dependencies of the company. Established firms are cognitively constrained by their existing BM and have a tendency to stay closer to status quo (Bohnsack et al. 2014), which can have an significant impact on the incumbent firms' BMI and evolution. When deciding on whether to change the business model or not, incumbent firms need to understand the distinctive impact of path dependencies on their business model evolution and consider the interplay of several factors: the constraints of a dominant business logic, the role of complementary assets and contingent events (Bohnsack et al. 2014). More information regarding path dependencies are provided in chapter 2.3.1. Lastly, incumbent firms need to assess whether they have organizational capabilities and financial resources for pursuing and addressing organizational incompatible goals equally well (Gregory 2016). This question is closely related to the theory of organizational ambidexterity, which will be more deeply exanimated in chapter 2.3.2.

To conclude, it needs to be acknowledged that there is no generally defined BMI process. Table 1 gives therefore an overview of research fields of several authors, which have been chosen for their focus on BMI process and their importance in this field.

Understanding current BM	Identification of influences and trends	Conceptualization and design	Description of new model	Decide on changing
Document current BM: • Gassman et al. 2016 • Gordijn et al. 2001 • Morris et al. 2005 • Osterwalder et al. 2002 • Pateli & Giaglis 2005 • Frankenberger et al. 2013	**Assess the influence:** • Pateli & Giaglis 2005 • Johnson et al. 2008	**Activities & capabilities:** • Achtenhagen 2013 • Zott & Amit 2010 • Chesbrough 2010 • Mezger 2014	**Documentation:** • Gassman et al. 2016 • Gordijn et al. 2001 • Morris et. al 2005 • Osterwalder et al. 2002 • Pateli & Giaglis 2005	**Circumstances:** • Johnson et al. 2008
Prerequisites for BMI • Schneider & Spieth 2013	**Idea generation:** • Eppler 2012	**Define scenarios, explore and apply roadmaps** • Pateli & Giaglis 2005 • McGrath 2010 • Doz & Kosonen 2010 • De Reuver at al. 2013	**Company or industry related:** • Vast amount of articles	**Path dependencies** • Bohnsack et al. 2014 • Garud et al. 2010 • Sydow et al. 2009 • Schreyögg & Sydow 2009
Identify potential BMs: • Pateli & Giaglis 2005 • Chesbrough 2010 • Wirtz et al. 2016	**Identify missing roles:** • Pateli & Giaglis 2005 • Chesbrough 2010	**Business Modelling** • Buur et al. 2013 • Wirtz et al. 2016	**Describe network interaction** • Casadesus-Masanelli & Ricart 2011	**Ambidexterity** • Tongur et al. 2014 • Gassmann et al. 2016 • Piccinini et al. 2015
	Evaluate networked BM: • Palo & Tähtinen 2013			**Effects on performance:** • Huang 2012

Table 2: BMI design and process by research area (own representation)

To conclude, the highest difficulty for incumbent firms lies in redefining a profitable and sustainable value proposition that justifies the allocation of resources and time. Even though a new technology might hold the opportunity to create value, without a viable business model, this value remains dormant (Chesbrough, 2009). A business model can consist of different interlocking elements that create and deliver value; still most researchers agree that the most important to get right is the customer value proposition (Johnson et al. 2008). The Appendix

chapter A1 will assess to what extend the changes in customer's expectations and a firms value proposition are considered by existing literature on business model reconfiguration.

2.2 Theory of Digitization

A digital business strategy can be achieved by leveraging digital resources to create differential value (Bharadwaj, Sawy, et al. 2013). However, many managers ask consultancies to tell them what digitization would mean for their organisation, since the evolution of digital opportunities requires a new set of managerial tools and thinking – and BMI can play a crucial part in this. How digitization is enabled has been mainly discussed in applied managerial literature and only in the context of the classical digital transformation approach, like in the MIT Sloan Management Review, where industry experts define digital transformation as "the use of new digital technologies, like social media, mobile, analytics or embedded devices, to enable major business improvements, such as enhancing customer experience and streamlining operations" (Fitzgerald et al. 2013).

The reason why C-level managers have increased their interest on digital transformation can be understood by looking at the three strongest managerial challenges associated with the impact of digital transformation[5] (Piccinini, Robert W. Gregory, et al. 2015): First, create "valuable new digital products and services that customers are willing to pay for, despite ongoing profitability of old model". Second, compete with an "expanding range of new rivals and strong non-industry entrants (e.g., Google, Apple)". Lastly, design "new BMs with valuable propositions through digital innovation (content and service related)". Since this paper is setting its focus on this last challenge and tries to leverage the BMI methodology for the digitization process, this chapter will introduce in 2.2.1 the topic of digital transformation. In the Appendix chapter A1 it will be assessed how value can be created through digitization and lastly in A2 how digitization changed the producer-consumer relationship. The findings will be embedded in the digital business model framework in chapter 2.4.

[5] In this paper, which was conducted with an exploratory Delphi study in collaboration with 19 industry experts, the authors aim to shed light on the specific managerial challenges associated with the impact of digital transformation in the automotive industry.

2.2.1 Digital Transformation

Digital technologies are increasingly shifting to the "personalized individual needs of consumers to connect the physical with the digital world" (Henfridsson et al. 2014). Respectively, "businesses across industries are experiencing a differentiation of quickly changing demands" (Priem et al. 2013). So on one side, individuals are embracing the digital revolution, where digital devices are being used to engage in public, business and private, by using mobile and interactive tools "to determine whom to trust, where to go and what to buy" (Berman 2012). Meanwhile, organizations are "undertaking their own digital transformations, rethinking what customers value most and creating operating models that take advantage of what's newly possible for competitive differentiation" (IBM Institute for Business Value 2011). Nevertheless, most executives don't adequately prepare their organizations for disruptions emerging from digital trends even though anticipating that their industries will be disrupted by digital trends to a great or moderate extent (Kane et al. 2016). Berman (2012) states the underlying problem to this topic quite clearly: "The challenge for business is how fast and how far to go on the path to digital transformation". But what exactly means digital transformation?

Since digital firms like Amazon, Netflix, Spotify and now Uber popped up and disrupted major industries, researchers on digital innovation have started to throw light on "how the use of emergent digital technologies enables organizations to create new BMs" (Fichman, R. G., Dos Santos, B. L., & Zheng 2014; Hanelt et al. 2015; Piccinini, Robert W Gregory, et al. 2015; Westerman et al. 2014). What is new for the management that is facing a digital industry transition is the business network redesign, or in other words, that "digital technologies provide open and flexible environments that allow organizations to break some of the traditional operational constrains, combining previously separated networks and fostering innovation to create new customer experiences, relationships, and organizational forms (Lucas et al. 2013; Yoo et al. 2012; Piccinini, Robert W. Gregory, et al. 2015). Furthermore, in digital ecosystems that are made up of different rules and characterized by co-opetition (Selander et al. 2010) the success of innovations of a firm is dependent on the success of complementary innovations from other firms and therefore demands a "different approach to problem solving that goes beyond the scope of the focal firm" (Adner & Kapoor 2010). Other researchers, like Berman (2012), have analysed companies aiming at integrating digital and physical components of operations and have identified that their traditional BMs can be transformed by focusing on two complementary activities: "reshaping customer value propositions and transforming the

operations using digital technologies for greater customer interaction and collaboration" (Berman 2012).

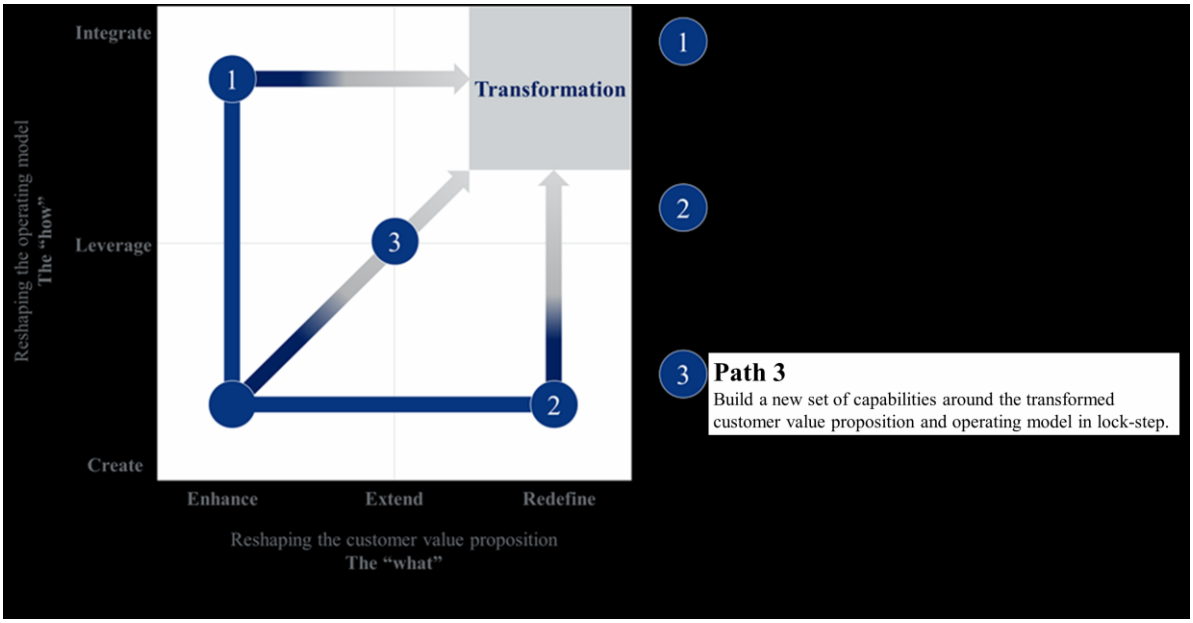

Figure 6: Elements and Paths to Digital Transformation (from IBM Institute of Business Value)

Figure 1 shows that most companies focus on either creating digital value propositions or operating models. To do so, companies must design and deliver new BMs by "constantly exploring the best new ways to capture revenue, structure enterprise activities and stake a position in new or existing industries" (IBM Institute for Business Value 2011). Therefore he stresses the need to apply a disciplined approach that reassembles all the elements of business frequently, even continuously, with the goal to enable the company to keep up with customers (see figure 2 for detailed approach regarding CVP). With which path to start depends on the strategic objectives, industry context, competitive pressures and customer expectations of the industry. In the financial services industry, where technologically innovative new entrants gain market share, where "new revenue-based services can be offered online and through mobile devices, an initial focus on the customer value proposition will provide immediate benefits (Path 2)" (Berman 2012). After this, the digital operations should be aligned to achieve the full transformation.

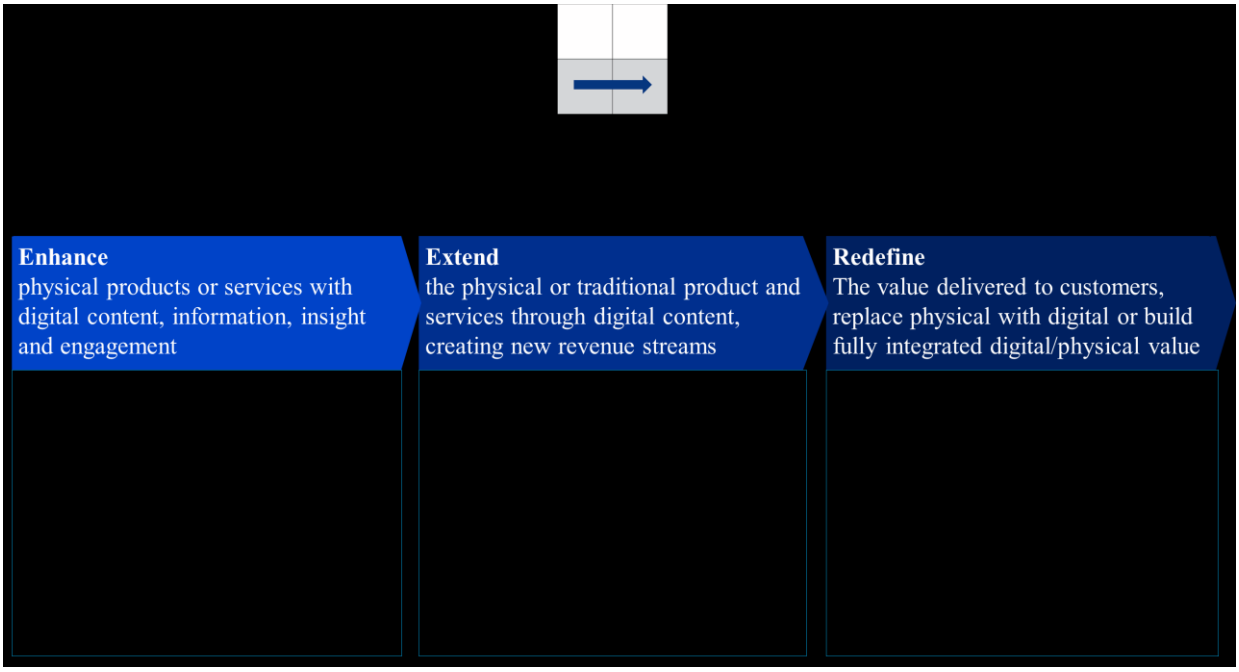

Figure 2: Three stages in reshaping the customer value proposition (from IBM Institute for Business Value)

Barman's model helps managers to balance the scope of the digital transformation – it gives an answer to the question "What" should be reconfigured. Capgemini's Digital Transformation Institute Model (see Figure 3) brings the analysis a step further by addressing three areas: "The Why", "The What" and "The How".

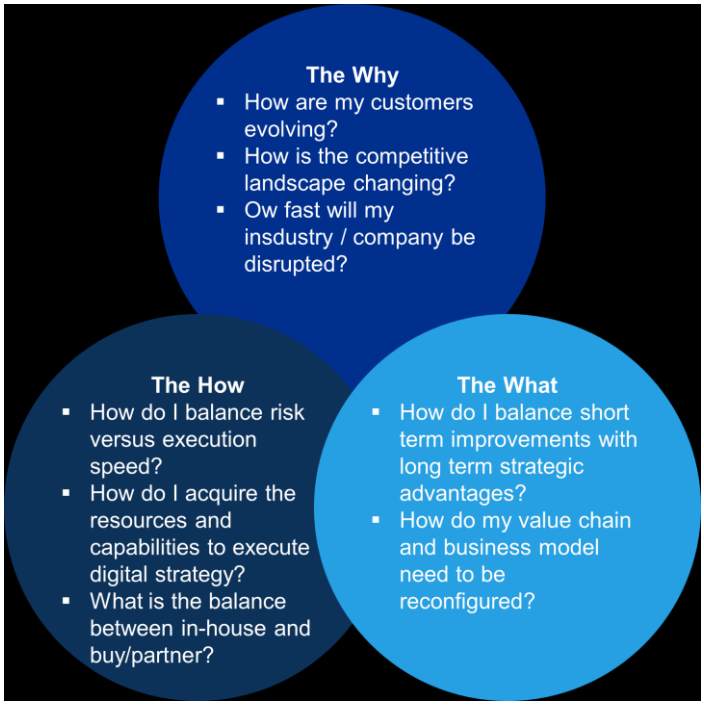

Figure 3: Formulation and execution of the Digital Transformation (from Capgemini Digital Transformation Review, 2016)

The “Why” is about how the “competitive digital landscape is affecting the industry and business” and they suggest that the management should “shape the digital transformation program around three types of scenarios” (Digital Transformation Institute 2016). First on digital trends with high certainty, for instance in retail banking, it can be safely assumed that millennials will demand a seamless, intuitive and connected way of using their bank’s services in digital ways. Second, trends with a strong likelihood, like the reduction in the retail banks’ branch network because of different needs of the digital generation. And lastly, trends with high uncertainty, like the impact of the crypto-currency on the banking world, which can be positive or negative (Digital Transformation Institute 2016). The “How” is about the ability to execute on your strategy at the right tempo, balancing speed, risk, competence building, financial capacity, and making the right trade-offs between in-house and external capabilities (see figure 4).

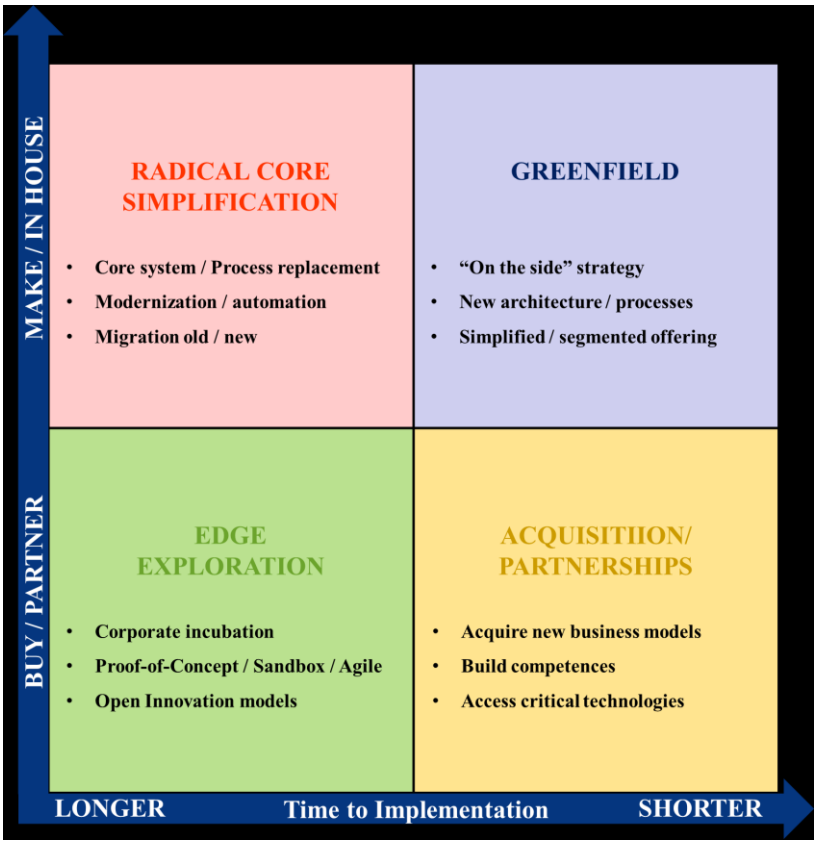

Figure 4: Mapp of execution route - The "How" of the Digital Transformation (Capgemini Digital Transformation Review, 2016)

But reshaping the customer value proposition in the digital area doesn’t only mean enhancing digital content or providing intuitive user experience. In the Appendix section it will be introduced what value creation through digitization means in literature.

2.3 Organizational change

Changing a business model requires a complex set of activities that many companies fail to fulfil. The literature on organizational innovation and change gives us some insight about what difficulties companies are facing in the transition path. This chapter explains the concepts of path dependencies in 2.3.1 and organizational ambidexterity in 2.3.2.

2.3.1 Organizational Path Dependencies

The demand for more flexible or even fluid "new" organizational forms is increasing but there seems to be a higher need to first understand better how organizations can lose their flexibility and become inert or even locked in (Schreyögg & Sydow 2009). One of the most referred concepts that has recently gained significant prominence even in the field of BMI is the theory around organizational path dependence. Broadly speaking, "path dependence is about increasingly constrained processes that cannot easily be escaped" (Vergne & Durand 2010) and "explains that the historical track of an institution has inevitable consequences for current and future decisions and occurrences" (Gassmann et al. 2016).

Incumbent and entrepreneurial firms don't have the same ability to tap into different sources of value creation (Bohnsack et al. 2014; Chesbrough 2010), because past events guide future actions, which implies a persistence in decision-making patterns over time (Schreyögg & Sydow 2009), and therefore firms are cognitively constrained by path-dependent behaviour (Bohnsack et al. 2014). This is more the case for incumbent organizations which tend to get stuck in a specific path, due to a "combination of historical background and resource endowment, contingent events and self-reinforcing mechanisms" (Bohnsack et al. 2014; Garud et al. 2010; Sydow et al. 2009; Vergne & Durand 2010). Bohnsack et al. (2014) expect that in the process of business model evolution, path dependency has a considerable impact, but plays out differently in case of incumbent and entrepreneurial firms. In a longitudinal study, Bohnsack, Pinkse, and Kolk (2014) investigate how path dependencies affect the BMs of electric vehicle manufacturers and show how incumbents and entrepreneurial new market enters approach BMI in distinctive ways. This study is important for us to understand how value creation in BMI can evolve differently.

Bohnsack et al. (2014) explains incumbent's path dependencies in the way that they mainly focus on "efficiency as main source of value creation and that they evolve their business model

to optimize cost efficiencies through economies of scale and scope". Reason for that, as explained by Bohnsack et al., are that they prefer to stay closer to the status quo (Chesbrough & Rosenbloom 2002) because first, they tend to fit new technologies into their existing business model by bundling them with exiting products and services. Second, they prefer to leverage existing internal complementarities and lastly, incumbents have the interest to meet the expectations of existing customers with the support of known partners (Amit & Zott 2001). A combination of this self-reinforcing approaches will therefore drive incumbent organizations to "not diverge too much from existing BMs" (Bohnsack et al. 2014; Chesbrough & Rosenbloom 2002). Even though large firms might have enough resources to enable an evolution of alternative BMs simultaneously (Doz & Kosonen 2010; Helfat & Lieberman 2002; Sosna et al. 2010), Bohnsack et al. expects incumbents to be "relatively unaffected by contingent events because the dominant logic resists adaption to the business model" and "cross-subsidization will also create a financial buffer against disruptive events".

Entrepreneurial firms instead are more flexible in pursuing radical and completely new BMs (Sosna et al. 2010) and are less constrained in the evaluation of ways how to fit new technologies into existing BMs (Chesbrough & Rosenbloom 2002). Amit and Zott (2001) expect these firms to emphasize novelty as main source of value creation and Bohnsack et al. (2014) defines as their main objective of BMI to tap into complementary assets of new partners to create a unique value proposition and to stick to a novelty-based business model to stand out from incumbents (Sydow et al. 2009). Table 3 summarizes Bohnsack et al. (2014) expected impact of path dependencies which will be considered when analysing business model evolution of financial institutions.

Path Dependencies	Possible impact on incumbent firms' business model innovation & evolution	Possible impact on entrepreneurial firms' business model innovation & evolution
Dominant business logic	• Incumbent firms are cognitively constrained by the existing business model and will make new technologies fit into existing business models • Incumbent firms will focus on efficiency as main source of value creation of the business model	• Entrepreneurial firms are not cognitively constrained by the existing business model and will design novel business models for new technologies • Entrepreneurial firms will focus on novelty as main source of value creation of the business model
Complementary assets	• Incumbent firms will create complementarities by bundling old and new products and services and use the business model to serve existing customers • Incumbent firms will experiment with different business models simultaneously and cross-subsidize with revenues from existing business models	• Entrepreneurial firms will create complementarities by bundling new products and services in unique ways and use the business model to attract new customers • Entrepreneurial firms will focus on a single business model at one point in time and leverage pre-entry knowledge from adjacent industries
Contingent events	• Incumbent firms will not be susceptible to contingent events and tend to stick to a business model once it is in place • Incumbent firms will not be vulnerable to disruptive contingent events as they have a financial buffer from existing business activities	• Entrepreneurial firms will be susceptible to contingent events and make continuous changes to their business model • Entrepreneurial firms will be vulnerable to disruptive contingent events as they lack a financial buffer to cope with the disruption

Table 3: Expected impact of path dependencies on business model evolution (from Bohnsack et al. 2014)

2.3.2 Organizational Ambidexterity

Ambidexterity is the organizational capability of pursuing and addressing organizational incompatible goals equally well (Gibson & Birkinshaw 2004) or of simultaneously exploiting existing competencies and exploring new opportunities (Raisch et al. 2009). These organizational capabilities are rooted in theories of organizational adaption (e.g., March, 1991; Levinthal & Marino, 2015) and are relevant for this thesis since studies about BMI and even digital transformation indicate that firms respond to changes in their environment with different sets of capabilities, like 'ambidexterity' or 'agility' (Gregory 2016). Furthermore, large-scale empirical studies (Gibson & Birkinshaw 2004; Lubatkin 2006) provide evidence of organizational ambidexterity's generally positive association with firm performance (Raisch et al. 2009).

Organizational ambidexterity is better defined in academia as a firm's capability than a theory itself and has been studied in numerous forms, such as centralization versus decentralization (Gassmann et al. 2016), individual versus organizational phenomena or internal versus external perspective (Raisch et al. 2009). However, Gassmann et al. (2016) sees as the most "common notion among scholars the management of the tension between exploration and exploitation".

Exploitative initiatives are the ones that refine existing capabilities (e.g. improving their efficiency) and exploratory initiatives instead discover new capabilities (pursuing renewal and innovation-centred activities) (Gassmann et al. 2016). Organizations that engage in both initiates behave ambidextrously.

A related theory to this concept is Weber's (1992) multi-armed bandit problem that introduces the question of how single resources should be allocated among alternative projects, by making the example of a gambler at a row of slot machines that has to decide which machines to play, how many times to play each machine and in which order to play them, to maximize his reward.

Tongur (2014) goes a step further and mentions that "to survive during technology shifts, firms need to master the complexity of 'double ambidexterity', i.e., not just the ambidexterity to simultaneously foster incremental and radical innovation (Gibson and Birkinshaw, 2004; Tushman and O'Reilly, 1996), but also the ambidexterity to simultaneously advance both technological and business model innovation".

Nevertheless, both Tongur (2014) and Gassmann (2016) conclude that it is an unsolved issue how to effectively nurture this integration of exploration and exploitation with technological R&D and BMI and if and how it is feasible to pursue both directions. What is clear is that the ambidexterity issue "perfectly describes the case of BMI, in which managers must decide between exploiting the firm's current market with its current business model and exploring new potential and possibilities through BMI" (Gassmann et al. 2016).

In order to survive and thrive in the digital transformation, Piccinini, Robert W. Gregory, et al. (2015) indicate as one of their findings in their study that "incumbent companies must develop ambidexterity capabilities to be able to resolve emerging physical–digital paradoxes and realize the vast potentials of digital innovation." They introduce the term of 'digital ambidexterity (DAM)', which consists of challenges their panellists perceived concerning the "simultaneous handling of established business activities and rapidly immersing into new value creation activities informed and enabled by digital transformation". Their results reveal both technological and organizational challenges. For instance in the technological dimension, managers mentioned difficulties in balancing customized digital services by leveraging customers' personal data with issues related to data security and privacy. In the organizational dimension, the panellists described the "difficulties to adapt, e.g., financial management systems to fit both paradigms (i.e., aligning new, significant short-term digital technology investments with long-term strategic business planning and digital capability development in times of high uncertainty)" (Piccinini, Robert W. Gregory, et al. 2015).

2.4. Theoretical Framework

In conclusion to the theoretical part a theoretical framework can be depicted. Using the methodological foundation of business model reconfiguration as underlying environment in which an incumbent organization is currently embedded, the digital business model framework leads to a descriptive framework (see figure 5) that identifies the key drivers for digital transformation. The framework is structured by distinguishing between four main components – i.e. value proposition, value creation, value architecture and revenue/cost model, derived from existing frameworks. These components where chosen to maintain a certain simplicity, needed to trace the changes in each component and the interaction between them over time (Demil & Lecocq 2010). The key drivers for a digital transformation and necessary fields of analysis are a holistic combination of theoretical findings introduced in the literature review of chapter 2 and the Appendix section A1-A3, which includes reviews of 80 academic and managerial papers from 2001 to 2016.

Value Proposition	Value Creation
• Target Customer Segment (Osterwalder & Pigneur 2002; Gassmann et al. 2016) • Product / Service Content (Bohnsack et al. 2014) • Value as Experience (El Sawy & Pereira 2013) • Digital Values (Piccinini et al. 2015; Anaman et al. 2008) ▪ Digital Density ▪ Digital Interconnectedness ▪ Consumer centricity	• Automation of processes and product use (Piccinini et al. 2015) • Complementarities (Zott & Amit 2010) • Lock-In (Zott & Amit 2010) • Efficiency (Zott & Amit 2010) • Novelty (Zott & Amit 2010)
Value Architecture	**Revenue and Cost Model**
• Openness of BM (Kortmann & Piller 2016; Keen & Williams 2013) ▪ Closed ▪ Alliances ▪ Platforms • Integration in Product Live-Cycle (Kortmann & Piller 2016)	• New sources of revenue (Osterwalder & Pigneur 2002) • New ways of cost reduction (Osterwalder & Pigneur 2002)

Figure 5: Digital Business Model framework

Furthermore, the two aligned theoretical streams about organizational change, path dependencies and ambidexterity, are important to be taken into account to answer the research questions and capture the business model evolution of the incumbent firm. Therefore figure 6 summarizes the main theoretical building blocks and their linkages.

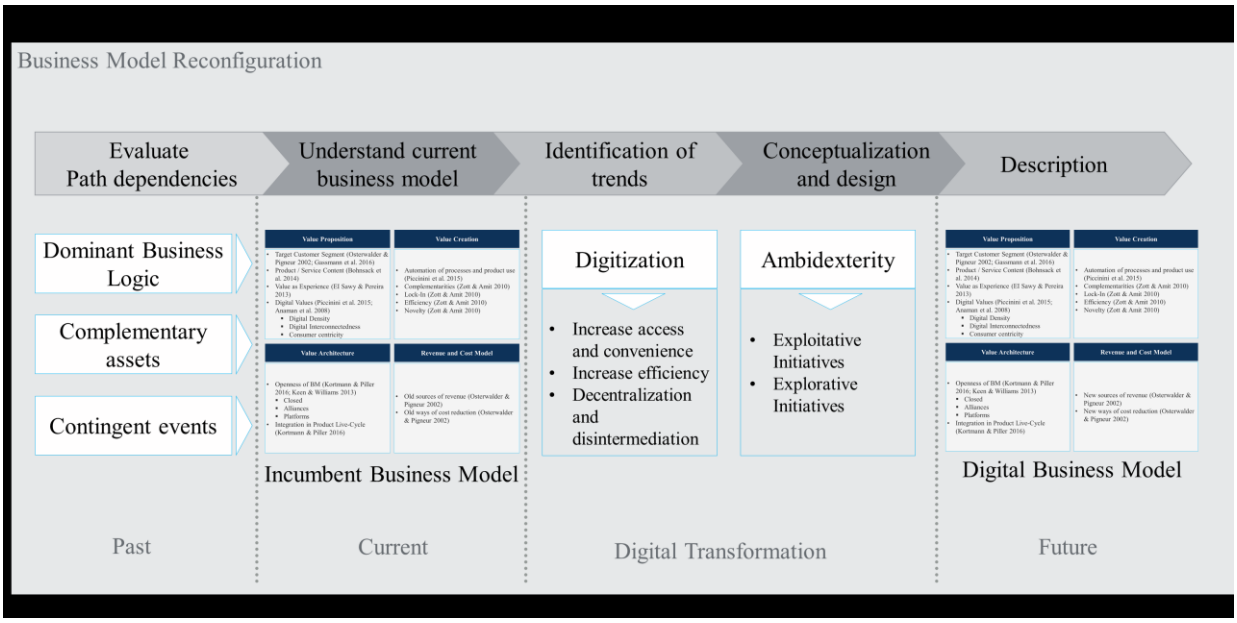

Figure 6: Theoretical framework

Using the building blocks derived from the theories analysed leads to an enlarged business model evaluation framework (figure 7). The thirteen aspects pointed out in the digital business model framework (figure 5) are enhanced by the theory-specific aspects derived from path dependencies and ambidexterity. This is necessary to capture the organizational aspects which play a significant role when an incumbent firm is phasing a digital revolution. Hence, figure 7 visualizes the 17 aspects necessary to consider, for being able to evaluate the BMs in questions. Theses 17 aspects serve as a pre-structured case in the subsequent empirical part of this study.

Theoretical building blocks	Business Model Aspects	Source
Digital Business Model Aspects:	1. Target Customer Segment 2. Product / Service content 3. Value as Experience 4. Digital Values 5. Automation of Processes & Product Use 6. Complementarities 7. Lock-in 8. Efficiency 9. Novelty 10. Openness of BM 11. Integration of Product Live-Cycle 12. Revenues / Costs	1. Osterwalder & Pigneur 2002; Gassmann et al. 2016 2. Bohnsack et al. 2014 3. El Sawy & Pereira 2013 4.-5. Piccinini et al. 2015; Anaman et al. 2008 6.-9. Zott & Amit 2010 10.-11. Kortmann & Piller 2016; Keen & Williams 2013 12. N/A
Path dependencies:	13. Dominant Business Logic 14. Complementary Assets 15. Contingent Events	13.-15. Bohnsack et al. 2014; Garud 2010; Vergne 2010
Ambidexterity:	16. Exploitative Initiatives 17. Explorative Initiatives	16.-17. Tongur 2014; Gassmann et al. 2016

Figure 7: Enhanced Business Model framework

3 BANKING CASE STUDY

The purpose of this chapter is to outline the digital development of the banking industry and set a basis for further implications in the remainder of this study. In chapter 3.1 an overview is given of the banking industry in its current competitive state and role in the digital ecosystem. The Appendix 4 outlines to what extend the banking industry is disrupted and Appendix 5 takes a closer look into the intersection of financial services and the technology sector.

3.1 A New Digital Ecosystem

The financial crisis in 2008 and 2009 and the subsequent reaction by the banks caused a significant loss of trust in the financial institutions. Even though there are few loan-loss provisions left to release, margins are in steady decline across the globe, as interest rates remain low and competition intensifies (Dietz 2015). Yet, after all that negative circumstances, global banking's ROE has changed only slightly, from 8.6 percent in 1994 to 9.5 percent in 2014 (Dietz 2015). So actually one might conclude that nothing has changed, but beneath the surface, financial technology firms, called FinTechs, start acting as an alternative for banks with a more agile and limited yet sophisticated product portfolio and as digitization accelerates, banks will be in a battle for the customer.

More than $25bn have been invested into FinTech between 2010 and 2015, making it the number-one target for venture funding. Moreover, an estimated 4,000 firms are challenging banks in every product line in their portfolios – from payments to lending to foreign exchange (Economist 2015). Furthermore, the "ubiquity of mobile devices has begun to undercut the advantages of physical distribution that banks previously enjoyed" (Miklos et al. 2015) and it is estimated that over the next decade the number of branches of financial institutions, including the staff employed, will drop by as much as 50 per cent. Five major retail banking businesses (consumer finance, mortgages, SME lending, retail payments and wealth management) are the most vulnerable ones and FinTechs will most likely capture only a small portion of these businesses (Dietz 2015). A major concern of banks is therefore not only the loss of market share, but the decrease in profitability coming from margin compression, as FinTechs force prices to lower.

But under attack are not only employees of physical retail branches, market shares and profit margins of financial institutions - digital developments such as robotics process automation (RPA) and artificial intelligence will drive automation through banks operating model and reduce the number of employees needed drastically.

As Monitor Deloitte (2016) mentioned, it is now time for banks to industrialize their business to eliminate redundancies, re-engineer the value chain, automate and standardise processes wherever possible, while providing transparency about the profit of activities (Monitor Deloitte & University Lucern 2016). From a more strategic perspective, McKinsey (2015) recommends that banks need from one hand "capitalize fully on their biggest advantages", which are data and access to the customer. On the other hand, banks can find success by embracing the digital revolution, "holding off attackers with one hand and less nimble incumbents with the other" (Dietz 2015).

4 RESEARCH DESIGN

The following chapter outlines the research design applied in this study and is subdivided into four parts that describe the criteria of the research design. The first part reviews the purpose of the study, including the research questions, and is followed by the general description of the research strategy in 4.2. The third part depicts the sample and data collection of the study and the fourth section comprises the data analysis processes respectively.

4.1 Research Purpose and Question

The purpose of this research is to investigate the banking industry, which is arguably undergoing a significant transition towards digitization with regards to new BMs used to reshape the customer value propositions, and transform the operations for greater customer interaction and collaboration. Furthermore, the FinTech industry is more and more forcing traditional banks to rethink their core BMs and embrace digital innovations, because FinTech companies do not focus anymore only on frontline activities but have a broad digital engagement through the entire value chain with offerings across all financial services.[6] By investigating how banks reshaped their BMs in the last decade, this thesis aims at enhancing the literature about digital BMI and to what extent path dependencies and ambidextrous capabilities play a role in the reconfiguration process. From an industry perspective, the objective is to draw implications for industry participants by evaluating and comparing business model changes.

From this it follows that the main research question of this study is:

- How are traditional banks digitizing their business models and what are the roles of path dependencies and ambidexterity in the digitization process of business models?

To fully grasp the aims discussed above, three sub-research questions are posed:

- What are the sources of digital value creation of FinTech and traditional banking business models?
- How did traditional banks respond or not-respond to the digital threat of FinTech companies?
- How did traditional banks adapt their business models from an organizational perspective?

[6] Source: http://www.mckinsey.com/industries/financial-services/our-insights/bracing-for-seven-critical-changes-as-FinTech-matures?cid=other-eml-alt-mip-mck-oth-1611, retrieved 02.11.2016

4.2 Research Strategy

The literature review revealed that the business model theory is not collectively exhaustive and suggests that further theoretical streams need to be investigated to answer the research question. Accordingly, it can be stated that a coherent theoretical approach has not yet been developed. The choice of literature was based on the 80 most recent and most cited articles in each field. However, additional management articles were incorporated into the study as the theoretical literature revealed to be not complete to answer the research question. As outlined in the research question, the main purpose is to gather insights about the "how" of the reconfiguration of BMs of incumbent banks. Such questions are most coherently answered by using a qualitative, exploratory approach (Eisenhardt, 1989; Yin, 2003), as the empirical methodology of case studies, which holds the ability to explore contemporary phenomena situated in a real-life context. As identified by Wirtz et al. (2016), the largest data collection category in the BMI topic are case studies, representing 61.5% of the total number of empirical studies identified.

The choice of literature is the foundation for applying the enhanced digital business model framework to case studies, followed by the selection of two global banks. To apply and test the framework to a real-life banking context and to investigate the evolution of the banks business model, two similar global banks were chosen, that both provide retail banking, wealth management, asset management, and investment banking services for private, corporate, and institutional clients worldwide. Both banks, named UBS Group AG and CS Group AG, are headquarter in Switzerland, are moving into emerging markets in search of growth and both have investment bank divisions that were built up over decades through US and UK acquisitions.[7] How core revenues by region and business unit are split up, can be seen on the chart below:

[7] Source: https://www.ft.com/content/86dafffa-6748-11e3-a5f9-00144feabdc0, retrieved 10.12.2016

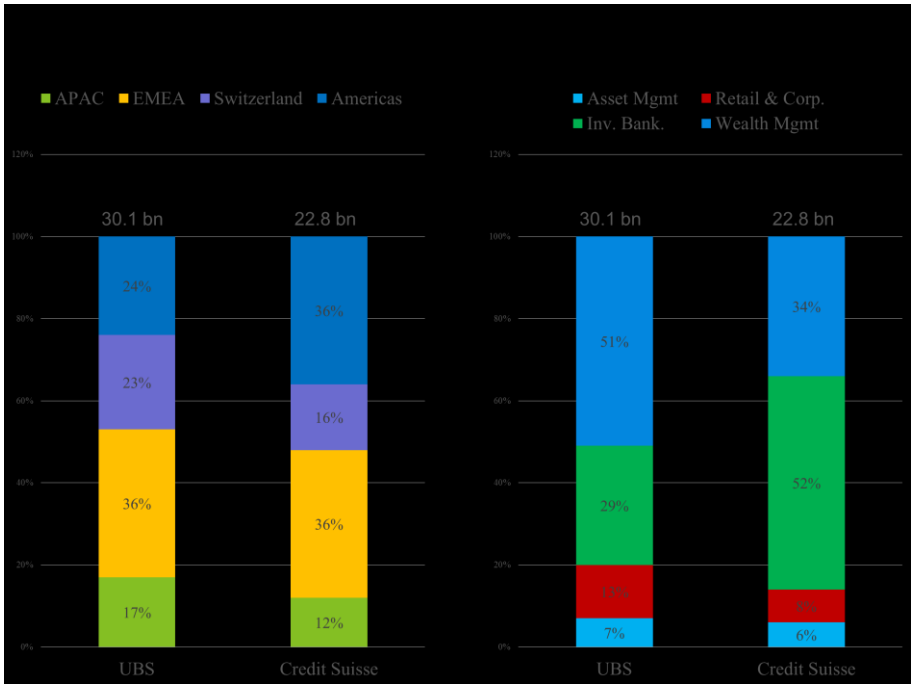

Figure 8: UBS and CS revenues by region and business unit (source: www.finnews.com)

The next step comprised the primary empirical data collection, with structured expert interviews. Conducting an exploratory Delphi study in collaboration with industry experts is a qualitatively valuable research approach to investigate specific managerial challenges associated with the impact of digital transformation on the business model (Keil et al. 2013).

4.3 Data Collection

To assess the banks business model evolution the Delphi method was chosen, since it is based on management expertise and represents an "inductive, data-driven approach that is often used in exploratory studies on specific topics or research questions for which no or limited empirical evidence exists" (Paré et al. 2013; Piccinini, Robert W. Gregory, et al. 2015). Furthermore, the Delphi study does not require a large statistical sample to represent a specific population; instead, qualified experts with deep understandings of the topic of interest are needed (Okoli & Pawlowski 2004). To receive a holistic outside-in view of the reconfiguration path of UBS and Credit Suisse (CS), two consultants from Monitor Deloitte Consulting AG Switzerland where chosen, which have a long-standing experience within both bank's strategic as well as operational development.

The Delphi study was conducted entirely on interviews, which took around 45 minutes each and covered all 17 business model evolution aspects necessary to consider, for being able to evaluate the bank's BMs in questions. To ensure that the panellists understood the different

concept of business model aspect and responded properly to the questions, I first provided them with a short definition of the concept based on the literature in chapter 2 of this study.

4.4 Data Analysis

The first step to analyse the outcome of the two interviews is to summarize the key distinguishing aspects of each bank's business model evolution. The second step is comprised of the analysis of the various aspects included in the two cases. Hence, segmentation according to the 17 business model aspects serves as structural guidance for the results section. The description of each aspect allows for the results to be displayed in the most structured way and for extracting key elements with regards to the seven building blocks of the enhanced digital business model framework (Gropp 2010). To validate the consolidated list of business model changes, the table was send to the panellists to verify whether their answers had been properly grouped and whether their ideas were adequately represented (Paré et al. 2013). From these analytical steps, general trends are derived to answer the research questions in the discussion section. Lastly, implications for theory are developed as well as practical considerations for the banking industry.

5 RESULTS

This section contains the results of the empirical part of the study and the outcomes of the interviews related to the UBS and CS business model evolutions. By analysing the business model's reconfiguration path from the respective bank, research question 1 "*How are traditional banks digitizing their business models and what are the roles of path dependencies and ambidexterity in the digitization process of business models?"* is answered. The remaining discussion section is then used to answer the sub-questions as based on theoretical and empirical insights. This section, however, is purely based on the results gathered through the Delphi interview methodology and sets its focus on the research question 1.

5.1 General data

This section presents the main findings of the analysis of the impact of digitization on the evolution of BMs in the banking industry. Table 4 included below contains the BMI parameters regarding UBS and Table 5 regarding CS. The major findings in regard to each BM component are subsequently used to discuss similarities and differences in the business model evolution between the two universal banks. Which role path dependence and ambidexterity play in the reconfiguration process will be discussed in the subsequent chapters 5.3 and 5.4.

Incumbent Firm	Value Proposition	Value Creation	Value Architecture	Revenue & Cost Model
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]		
	[redacted]	[redacted]		
		[redacted]		

Table 4: UBS Digital Business Model components and reconfiguration

Incumbent Firm	Value Proposition	Value Creation	Value Architecture	Revenue & Cost Model
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]		
	[redacted]	[redacted]		
		[redacted]		

Table 5: CS Digital Business Model components and reconfiguration

5.2 Digital Business Model Aspects

The Digital Business Model aspects comprise twelve aspects and are the core of each case, since it focuses on how the banks digitised their business in the last decade. In the following sections the aspects are analysed and the results are described and lead eventually to overall trends observed in this industry. Lastly, the sources of digital value creation of universal banks as well as how the banks responded to the digital threat of FinTechs can be identified, which will be useful for a more detailed examination in the discussion section of chapter 6.

5.2.1 Value Proposition

The target customer segment of UBS and CS has not been affected by the increase of digitization in the financial services. Nevertheless, since different customer segments aspire digital solutions to a different extent, banks focus on increased clustering of client segments to target each one with the right digital strategy. The impact of digitization can be identified more in the other aspects of the value proposition. First, in the product/service content of UBS, where Robo-advise providers threaten the accurateness and efficiency of human financial advisors, the UBS Advice solution was positioned as a competitive answer by combining automated monitoring and risk assessment with professional advice. Clients can decide to what extent they want to delegate investment decisions to the UBS global expert network or they can take all the decisions by themselves, by using a digital und user friendly e-banking solution. Second, the

value as experience is enacted by banks through digitized branch concepts and user-friendly e-banking solutions. Furthermore, to simplify money transfer between friends and family, UBS developed the Paymit app solution, where clients can send and receive money through their smartphone in the simplest way. Regarding digital interconnectedness, the digital private banking platform from CS needs to be acknowledged: it delivers a collaborative and interactive online solution that is centred around the Relationship Manager's expertise and experience. A reason for a generally lower digital density could be that banks do not want to impose the clients too much information. Consumer centricity instead is a recognised trend that finds its application within both online advisory solutions, where customers are empowered to actively expand their knowledge, to stay informed and to make decisions themselves.

5.2.2 Value Creation

To leverage the value creation opportunities from digitization, UBS and CS try to decrease unnecessary interactions between personell and clients by developing further e-banking and mobile platforms, like online on-boarding systems and Robo-advice solutions, and are thereby driving down costs. Novel digital solutions are enhancing the service portfolio, like the CS self-service private banking platform or the UBS money-transfer solution. From a back-end perspective, banks have been moving slow in improving their efficiency. While the e-banking solution was developed in an early age of digitization, activities in the back-end remained manual. Nowadays banks try to catch-up with back-office efficiency by automating their processes with robotics process automation (RPA) solutions, by moving data storage to a more flexible cloud provider and by trying to outsource non value adding IT activities as much as the sensitive banking business allows. Lastly, promising technological enhancements like Blockchain, which could significantly simplify settlement infrastructures, or Intelligent Automation, Machine Learning and Biometrics, create further opportunities for banks to industrialize their processes and un-lock additional value.

5.2.3 Value Architecture

The banking industry has a relatively closed business model since the business deals with sensitive client data that both UBS and CS try to protect, with for example the newest cyber security and data encryption technologies. Nevertheless, the value and quality of outsourcing partners, especially those of digital solutions, have increased to an extent which makes it impossible for banks not to collaborate with them. That said, the bank's business model is opening itself and managers need to find the right trade-off between data security and open

innovation. In regard to product and service innovation both banks are opening their value architecture by establishing innovation labs, start-up competitions and even alliances with other financial service providers, all with the goal to be at the forefront of technology innovation. R3 for example is a consortium of more than 70 of the world biggest financial institutions in research and development of Blockchain database usage in the financial system, where UBS and CS are both members in. UBS's partnership with SIX and Swisscom for the development of the Paymit app, or CS's partnership with Impact Hub Zürich are two of several initiatives these banks are involved with globally to push on and promote innovation.

5.2.4 Revenue and Cost Model

Digitization is not impacting the banks business model yet to that extent that revenue models have been reinvented. The banks are still making money with their traditional interest spread, fees and investments, and this is not going to be changed (at least soon). From the cost angle perspective, the reduction enabled by robotics process automation or simplified online solutions that require less employees in branches can be mentioned, but since lean processes in banks organisations have been a target already before the potential of digitization emerged, it would not be correct to speak about new cost models in this regard.

5.2.5 Conclusion Digital Business Model Aspects

Conclusively, it can be summarised that mainly two of the four digital business model components are significantly affected by digitization, namely the value proposition and the value architecture. Since the question of how much has to change in the current business model to be classified as BMI has no clear answer (Schneider & Spieth 2014), it is difficult to conclude that both banks are innovating their business model because of digitization. Nevertheless, since both banks are trying to "adopt a novel approach to commercializing their underlying assets" (Gambardella & McGahan 2010), we can conclude that UBS and CS are at least undergoing a business model reconfiguration process. What is clear is that banks are not pursuing innovative BMs such as FinTech companies are doing; instead they focus on digitizing their value offerings with intuitive, user-friendly and customer centred solutions. In other words, the digital innovations lead to incremental innovations in both banks BMs and not to a disruption of the existing ones.

5.3 Path Dependence Aspects

This section presents the main findings of this analysis in regard to path dependencies of UBS and CS, or in other words, the historical track of the institutions that has inevitable consequences for current and future initiatives in trying to adjust their business model progressively or incrementally. Secondly, past and future contingent events which could radically change their BMs are examined. Table 6 included below contains the path dependence parameters regarding UBS and Table 7 regarding CS. The Organisational Ambidexterity components are included as well in these tables and will be assessed in the next chapter 5.4.

Incumbent Firm	Path dependencies	Ambidexterity
[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]
	[redacted]	

Table 6: UBS path dependence and ambidexterity aspects in the reconfiguration process

Incumbent Firm	Path dependencies	Ambidexterity
[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]
	[redacted]	

Table 7: CS path dependence and ambidexterity aspects in the reconfiguration process

The findings in this section not only respond to what role path dependence plays in the BM reconfiguration process, included in research question 1, but explain as well what the sources of digital value creation of FinTech compared to traditional banking BMs are. Research question 2 is therefore answered as well.

UBS's dominant business logic, which contributes to understanding why value creation in BMI evolved differently with novel technology solutions provided by FinTech companies, can be summarised in three findings. First, historically really complex and heterogenic IT infrastructures where established over time. Ultimately, banks are "big" data and technology

companies which have at their center complex data storage landscapes that record who has how much money and the rules governing transaction processing.[8] Changes to this infrastructure are complex and cost intensive and have therefore been rather an obstacle then an enabler of innovation. Secondly, UBS is a well-known and trusted global brand in the segment of High-Net-Worth-Individuals, which invest assets above $1 million, and has interest in continuing meeting the expectations of its existing customers. Digital solutions are therefore not as relevant in most of UBS's business segments as someone might think – with wealth and asset management comprising 80% of the banks business. Lastly, the managers of UBS prefer to leverage existing internal complementarities by trying to fit new technologies in their existing business model instead of designing novel ones. Entrepreneurial FinTech companies are not that cognitively constrained by an existing business model and have therefore novelty as their main source of value creation.

In regard to CS, the interview revealed three major findings which explain the path dependence role in the BM reconfiguration process. First, CS has rigid and hierarchal organizational structures and is dominated by a complex governance and managerial interests, which makes it difficult to implement a novel business strategy as a response to FinTech's threats. Secondly, CS is a well-known brand, has a well-established customer base and proximity, and has the legitimacy of an established, trusted firm; all capabilities they can leverage when fighting for the customer. Lastly, the investment banking and wealth management business of CS is not really under attack of FinTech offerings and in case of further technological developments, CS will continue in focusing its business towards more profitable and not disrupted segments. The only contingent event that could threaten the competitive advantage of both banks is when Blockchain technology gets institutionalized, lowers barriers to entry and questions the intermediary role of a universal bank.

To conclude, it must be appointed that both banks have complementary assets which makes it possible for them to continue playing a major role in the innovation of financial services and in holding on to customer relationships. First, they have big IT as well as innovation departments which makes it possible to revert to internal resources and competencies. Secondly, both banks have a huge capital strength which provides them with significant amounts to invest in innovation and promising start-ups. The combination of this self-reinforcing approaches will drive both incumbent banks to "not diverge too much from their existing BMs" (Bohnsack et al. 2014; Chesbrough & Rosenbloom 2002). Instead, both banks pursue renewal and

[8] source: https://www.ft.com/content/75b2f800-29f8-11e3-9bc6-00144feab7de, retrieved 15.10.2016

innovation-centred activities outside their existing business model, by leveraging ambidextrous capabilities, as explained in the next section.

5.4 Ambidexterity Aspects

Both banks refine their existing capabilities through exploitative initiatives like improving back-office efficiency and try to discover new opportunities with explorative initiatives outside their traditional business architecture, by partnering with technology firms and other financial service provides for research and development activities. Both organisations behave therefore ambidextrous, which could be identified by the outcomes of the interviews. Both banks are actively developing digital solutions by digitising the customer relationship, creating emotional connections and leveraging their data sources to deliver a superior customer experience. They both fight for the digital customer, as identified by McKinsey Global (2015) to be the defining dynamic of the next 10 years. If both banks would not behave ambidextrous, they would step back to the "basic business of financing and providing their balance sheet to others for resale", which would be a more exploitative option, but one that requires substantial simplification, elimination of redundancies and tactical cost reduction measures. Both of this exploitative and explorative initiatives are on UBS's and CS's strategic agenda.

5.5 Conclusion Results

UBS and CS are facing a disruptive threat from digital solutions provided by FinTech companies, but the danger is not a holistic industry disruption like that experienced by travel agencies or Kodak. The danger is that innovative BMs make single parts of banks' product portfolios obsolete and steal customers and drive down fees. The continuous pressure to digitize the business will impact and shape not only the strongly path depended banking business model, but even customer behaviors and the long-term structure of the financial services industry. It can be concluded that if the client preference towards financial services switches from a single-provider towards the acceptance of multiple providers of different niche services from FinTechs, the incumbent banking business model is threatened and gradual and ambidextrous developments alongside the traditional business may play a much more crucial role for banks to survive. Lastly it must be mentioned that this development is positive since it increases competition and drives innovation and value creation for the advantages of end consumers, especially in the "underbanked" third countries like Afrika and China.

6 DISCUSSION

The present section addresses three parts. The first part answers the sub-research questions, the second part discusses the effectiveness of the established digital business model framework as a management tool and the third part conveys the implications for theory and practice as well as future research options evolving from this study. Generally, this chapter utilizes the theoretical foundations laid out in chapter two and the empirical results as outlined in chapter five to answer the research questions and to draw implications.

6.1 Research Questions

The study´s objective is to answer four research questions. The guiding central research question: *How are traditional banks digitizing their business models and what are the roles of path dependencies and ambidexterity in the digitization process of business models?* and three additional sub-research questions:

- *What are the sources of digital value creation of FinTech and traditional banking business models?*
- *How did traditional banks respond or not-respond to the digital threat of FinTech companies?*
- *How did traditional banks adapt their business models from an organizational perspective?*

The guiding research question and research question 2 have been partly answered in the results section, but with additional insights from answering the sub-research questions 2 and 3, the answer will be enhanced. This section addresses sub-research question two (section 6.1.1) and three (section 6.1.2). This separation in answering the research questions is guided by the use of theory, which has not been in the focus of chapter five, but is a central point in this chapter.

6.1.1 How banks responded to the digital threat of FinTech companies

Banks responded to digital disruption in different ways. In the last decade they had a more passive position in the digitization process and tried to learn from digital solutions outside and inside the financial service industry and adapted their offerings relatively. Since 2015 banks are playing a more active role by watching FinTechs more closely and by partnering and even profiting from the latest innovations brought to the market by the large FinTech investments. What emerged from the study is that nowadays big universal banks started investing heavily in

digital banking and pouring money into accelerators and innovation labs - thereby not only riding along as clients embrace new FinTech services, but by driving increased customer acquisition, cross-selling and satisfaction while decreasing branch traffic and related costs. Only IT spending exploded to an extent that banks are increasingly referring themselves to as "IT providers". But these investments are important to further develop digital services, automated investment solutions or machine learning techniques, which can help banks for example to reduce losses from outstanding loans. Many research sources state that there has been an increased customer satisfaction when using mobile banking solutions from big banks.[9] The outlook for big banks remains therefore positive, driven by their complementary assets that provide them with the ability to invest heavily in customer-centric innovations as well as to bring them quickly to market.

6.1.2 How banks adapted their business model from an organisational perspective

Many large banks have opened their value architecture by either having their own start-up programs to incubate and launch FinTech companies or by putting aside venture capital to acquire them. From the research emerges that UBS and CS responded to the digital changes in their environment with these ambidextrous capabilities. The high satisfaction from clients using mobile and platform solutions emerging from this open approach of innovation supports the ambidexterity's generally positive association with firm performance. Nevertheless, the incumbent rigid organisational structure and governance of large banks like UBS and CS do not yet support their managers in exploring new potential and possibilities through BMI. As both Tongur (2014) and Gassmann (2016) concluded, it is still an unsolved issue how to effectively nurture the integration of exploration and exploitation with BMI and if and how vital organisational structures can support to pursue both directions.

6.2 The Digital Business Model Framework

Developing the digital business model framework has been one research element of the extensive research and its motivation source was more organisational learning then innovation research. Since the elaborated enhanced framework helped answering all research questions it can be concluded that it is a helpful tool to visualize how digitization impacts a company's key business components in a simplified manner, and thus provides a holistic picture of how the company creates digital value and delivers it to the customer. Still, it is not clear whether the

[9] http://www.jdpower.com/press-releases/2016-us-retail-banking-satisfaction-study, retrieved 16.12.2016

framework is mutually exclusive and collectively exhaustive and therefore important business model parameters and sub-components have been left out. In management literature BMI frameworks are seen as a structured trial-and-error process that needs to be developed over time to anticipate and react to external and internal changes (Demil & Lecocq 2010; Schneider & Spieth 2013; Wirtz et al. 2016). Therefore, the elaborated framework can be used as a potential source of business opportunities emerging from digitization, which should be further enhanced with new parameters related to digital innovation. Further limitations of the framework are that it does not consider the importance of the customer and shifts of customer preferences, which could not be found in any academic article in the field of BMI (Wirtz et al. 2016). Lastly, the framework has a static approach and only helps as a description and classification of BMI; a more dynamic approach instead would help to address change and transformation.

6.3 Implications

This section uses the answers from the research questions to draw implications for both theory and practice. Section 6.3.1 mainly reviews the analysed theoretical streams outlined in chapter two and concludes from the findings of this study how these influence the theoretical streams. The practical section (6.2.2) looks back on the research questions and uses the answers to depict possible recommendations for banks with regards to the BMI.

6.3.1 Implications for Theory

To the best of my knowledge, this is the first study that applies a BMI framework to assess the impact of digital innovation on universal banking BMs and that assesses what role path dependencies play in the digital transformation process. The results obtained in this study extend to findings mentioned in previous related literature on the influence of path dependencies on business model evolution (e.g. Bohnsack 2014) and on digital enabled business transformation (e.g. Piccinini 2015) and digital innovation (e.g., Yoo et al. 2012), differentiating them to the specific characteristics of digital transformation in the context of the universal banking industry.

At the same time, the findings conclude that the digital business model framework seems to be a valuable tool to assess whether digital technological innovations lead to incremental innovations in BMs of a specific industry or to a disruption of the existing ones. Furthermore, organisational path dependencies related to the integration of digital innovation into the established business model of banks as well as the difficulties to simultaneously exploiting

existing competencies and exploring new opportunities within banking organizations emerged from this study to play an important role in the management of digital transformation.

6.3.2 Implications for the Banking Industry

The aim of this study is not to forecast the evolution or to describe scenarios of the banking industry but it is rather the description of the current impact of digitization and the positioning of suggestions as to where banks might focus their efforts on. Technological breakthroughs or governmental regulations can always drive the ongoing digital development in different and unexpected directions.

As the study highlighted, client preference towards financial services switch from a single-provider towards the acceptance of multiple providers of specific services from FinTechs. If this shift of customer preferences moves on and if banks are not able to drive their digital service offerings in a competitive manner, the incumbent banking business model is threatened. Secondly, the study revealed that already many parts of the financial services value chain have been improved and digitally enhanced by technology giants and FinTechs. The moment someone combines these offerings within a single platform solution and present customers with a holistic proposition, established banks will be in serious trouble. Therefore, banks need to act now and engage actively in Application Programming Interface (API) solutions that can connect new services to their existing core banking platforms and unbundle a range of modern solutions, thereby facilitating considerable innovation. Furthermore, shared database technology like Blockchain can help increase the speed and reduce the cost of activities such as settlement and clearing – but can as well threaten the competitive advantage of established banks and decrease barriers to entry. Finally, for banks to survive this technology shifts in the long run, they not only need to simultaneously foster incremental and radical innovation (Gibson and Birkinshaw, 2004; Tushman and O'Reilly, 1996), but also the “ambidexterity to simultaneously advance both technological and BMI” (Tongur & Engwall 2014).

6.3.3. Limitations of the study

First, the results are based on a limited number of 2 experts. Although the sample size in the Delphi methodology is not required to be statistically representative of the population (Okoli & Pawlowski 2004), results must be taken carefully when generalised. Moreover, the relatively weak level of consensus reached in the outcomes of the interviews might be explained through the diversity of the expert’s experiences concerning BMI and digital transformation. Moreover,

it could be observed that the experts evaluated the impact of digitization differently, probably based on experiences they gained as consultants or banking managers. Secondly, the generalizability of the findings for other industries on a detail level is limited. To conclude, it could be argued that too many different elements (theoretical streams, business model components and parameters, academic and management papers, research questions) are taken into consideration which can occasionally create a tendency for superficial implications. However, it can be stated that this paper revealed inspiring insights in the given topic.

6.3.4 Future Research Options

The limitations of the study offer several future research avenues to explore and show that further empirical research on BMI tools and methods is needed. With regard to future research in the BMI framework area, Frankenberger (2013) and Wirtz (2016) identified a general lack of comprehensive frameworks that support incumbent companies and managers in BMI. Additionally, those that are available, are not capable of taking customer-driven change into account (Pynnönen et al. 2012), as recognised when analysing the results of this study. Furthermore, most of the frameworks are static and descriptive and do not consider a dynamic view that addresses change and transformation, which is important for established companies that want to gradually develop new BMs and mostly fail because of internal organisational concerns. By including in this study path dependence and organisational ambidexterity aspects, we can conclude that the approach had a slightly dynamic perspective. Nevertheless, more theoretical streams in regard to organisational change, transformation, forecasting and maybe scenario planning need to be included. Moreover it needs to be acknowledged that not only BMI but especially digitization and its impact on organisations, customer-driven change and value generation is suffering from an under-theorized approach and from a fragmented theorization, driven mainly by applied management literature. Lastly, future research options could cover the implementation of business model changes, which “demands significant reconfigurations of the value chain, the organizational structure, and the resource base of a firm” (Mezger 2014; Wirtz et al. 2016).

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Appendix

Appendix 1: Customer Value Proposition

You can only reinvent a BM by first identifying a successful customer value proposition, a value proposition that helps the customer to get a specific job done (Johnson et al. 2008) and that reflects the content of the transactions with the customer (Zott & Amit 2010). Johnson (2008) mean by "job" a fundamental problem in a given situation that needs a solution (e.g. Tata car as a saver alternative to family scooters). But industry transitions are making things getting a bit more difficult. "Technology shifts imply that new value attributes will be important for customers in the future, which implies the necessity of new value propositions and new value capture techniques" (Tongur & Engwall 2014). In regard of value proposition Tongur & Engwall (2014) identified two research streams. The first one is about gaining competitive advantage through a stronger technological position by investing in R&D, the so called technological innovation strategy that assumes that the value-creating technology constitutes the firm's core competence (Tongur & Engwall 2014; Prahalad & Hamel 1990). The alternative research field is the servitization literature, which is about transforming the firm's value proposition "by climbing the value chain, embedding the technology in a value proposition of functional sales and product-service systems" (Tongur & Engwall 2014; Baines et al. 2009). The dilemma, introduced by Tongur & Engwall (2008), that both strategies have, are that they suffer from uncertainty: the technological innovation strategy "enhances successful technological change, but risks creating an obsolete value proposition due to new, emerging customer demands; the servitization strategy enhances the company's ability to match the value proposition with customer demands, but creates the risk that the company may lose its technological competitive edge." Nevertheless, many cases for a good value proposition are made in regard of shifting from selling a product to establishing a profitable service operation, like GE selling flight hours instead of jet engines that shifted the risk of downtime from the airline customer to GE (Chesbrough 2007), or like the Swiss manufacturer Hilti that started selling tool use and maintenance to contractors instead of the tools themselves (Johnson et al. 2008). Or in the biotech industry, where start-ups add "services to their portfolio of product development, so that in the long term their revenue sources are their products, but proposing services to their customers allows them to generate short-term cash resources" (Demil & Lecocq 2010; Durand et al. 2008). So on one side, firms face questions about whether to focus on products or services and how to target the desired customer (Bohnsack et al. 2014). Demil

and Lecocq (2010) specify on the other side the subsidiary level, where these value propositions also "encompass whom the offer will be marketed". They state that firms may address value propositions to various kinds of 'customers' - end consumers, suppliers, complementors, competitors or sponsors - particularly in the case of multisided markets (Demil & Lecocq 2010). However, "BMs in the digital space are different from what has been known" in many traditional industries (Hanelt et al. 2015). The reason why new customer value propositions tend to emerge from new entrants in the industries is because they "tend to be dynamic, they rely on ecosystems made up of diverse actors that participate in value creation and capturing, and are more service oriented". Too often managers don't understand and can't adapt to this kind of business, because the diffusion of digital technologies requires new frames of managerial thinking toward BMs (Hanelt et al. 2015; Priem et al. 2013; Zott & Amit 2010). The next chapter sets its focus therefore on digital transformation, value creation through digitization and the changing producer-consumer relationship in the digital space.

To continue with the literature review in chapter 2, please go back to chapter 2.2.

Appendix 2: Value Creation through Digitization

To leverage all opportunities of the digital revolution, some companies transform the entire customer value proposition and operations for delivering the right digital value. At incumbent firms this is often a response to fast moving new entrants that call into question the value proposition of traditional companies (Berman 2012). What is new to most companies regarding value creation in the digital business ecosystems is that "products and services are complex, customized, and made up of modular components provided by networks of firms" (El Sawy & Pereira 2013). As Keen & Williams (2013) sad, "value is not anymore a function of the product or service, is not stable or fixed, and is less and less under the control of providers". El Sawy & Pereira (2013) explain this phenomenon with the case of mobile phones, where customers that use the same hardware will never make the same software choices or use the devices in the same way or context. Moreover they state that it is more useful to see value as an "experience created through use and percieved by each cutomer upon the enactment of a digital service" and they call this perspective as "value-in-use" or "value-as-experience" or "value conversion". Keen and Williams (2013) illustrate that in digital business, value is a function of the choice space rather than the product or service or price and that value is always shifting and a moving target. Thus, the "critical task for effective digital strategy requires building value architectures that accommodate continuing shifts in value, and Keen and Williams provide new frameworks

for understanding how to think that through" (Bharadwaj, El Sawy, et al. 2013; Keen & Williams 2013). What researches have in common is that they agree on the fact that in the digital ecosystems, digital platforms, which are architectures that allow modular substitution of complementary assets (West 2003) and that deliver the digital services, will play a significant role for the ecosystems prosperity. In a platform business, value delivery and value conversion can be shared with the entire ecosystem and can also intrude into other industries and add new dimensions of customer, company, and partner value (EI Sawy & Pereira 2013; Keen & Williams 2013). They state that organizations in keystone positions in the ecosystem will play the major role in establishing digital platforms for the combination of technologies and the delivery of services (Gawer & Cusumano 2008) and may choose to leave many activities of value creation to others in the ecosystem. That said, enterprises moving in business environments with such conditions need to effectively design BMs in order to survive and thrive in the future. Kortmann & Piller (2016) recently introduced their framework of nine business model archetypes that captures this increasing openness of BMs. They conclude that manufacturing firms increasingly adapt their BMs by vertically integrating the entire product life cycle and by re-allocating traditionally separated tasks into new forms of horizontal stakeholder collaborations (Kortmann & Piller 2016). The most extended openness of BMs are the platforms (see figure 9), where firms "establish a two-sided or multi-sided "peer-to-peer" market with customers (and/or suppliers) on the supply side and customers on the demand side". Examples from the banking industry are the lending platforms like Lending Club, where the firms make use of "platforms to capture value from both sides without actively creating it" and where "value-creating activities are allocated instead to consumers (and/or suppliers) that also participate in captured value" (Kortmann & Piller 2016).

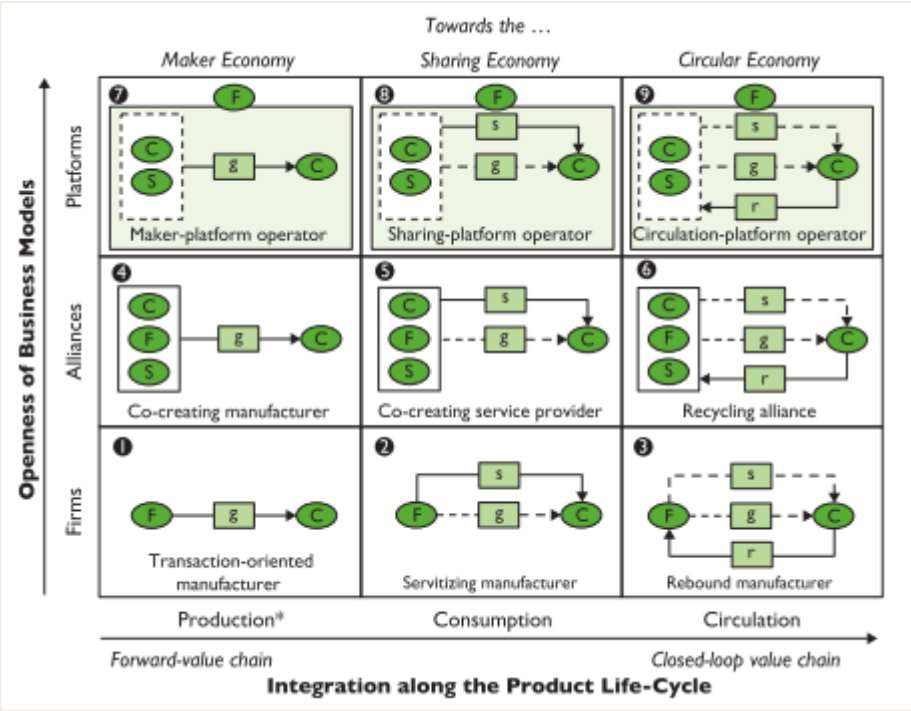

Figure 9: Open Business Models in extended Product Life Cycles (from Kortmann & Piller 2016)

In Figure 9 the "production" covers all activities of a conventional forward value chain, including product/service development, manufacturing, and distribution. The letter "F" means focal firm, the letter "C" consumers and the letter "S" suppliers or contributors. The outputs are defined as "g" like goods, "s" like value-add services and "r" like re-acquired products. The solid lines indicate the core business activity of a business model, dashed lines indicate potential activities of other BMs that can be integrated.

To sum up the differences in value creation in the digital space, managers might remind themselves of the four value realities, identified by Keen & Williams (2013) and illustrated in figure 10 below.

Reality 1: The buyer determines value	Given choices, the buyer, not the seller, determines which dimensions of value matter and how offers compare.
Reality 2: Value is always relative and shifting	Value is always relative and shifting, because it is a function of an expanding choice space, driven by a consistent set of historical forces that disturb the business terrain.
Reality 3: Companies leverage ecocomplexes	Companies increasingly exploit the choice space to leverage adaptive ecocomplexes of relationships rather than go it alone.
Reality 4: Entrepreneurs will offer new dimensions of value	The distinctive characteristic of the entrepreneur is to leverage the forces of disturbance to offer new dimensions of value or find new ways to enhance existing ones.

Figure 10: Value Realities for Digital Business (from Keen & Williams 2013)

In prior decades, alliances and joint ventures where needed to make one firm's technology compatible with another's – todays architectures instead allow us to "ride on rails of application programming interfaces (APIs) and broadband optics" that allow us to combine digital services like Google Maps with all kind of social media newsfeeds or big-data services, in no time and on a shoestring budget (Piccinini, Robert W. Gregory, et al. 2015). In the financial service industry, "APIs are becoming the obvious and practical means to port the most promising innovations of FinTech start-ups over to the front end of both established traditional banks as well as challenger banks" (Curreny Clouds, 2015). Prosper digital ecosystems enable the possibility of combining capabilities across boundaries into innovative new offerings and solutions to create and capture value (Schlagwein et al. 2011).

To conclude, a readiness check from the IBM Institue for Business Value (2013) helps companies reshape their customer value proposition in the digital transformation process, by answering to the following three questions:

1. "How are you engaging with customers to understand their needs and expectations – and how they are changing in the digital environment?"
2. "How do mobile and online technologies change the way you can engage with and create new value for your customers?"
3. "How will you drive the digital agenda in your industry rather than having it imposed on you by competitors?"

Appendix 3: Producer-Consumer relationship

Traditional businesses, such as the banking and the automotive industry, are forced to react to shifts concerning people's interactions with digital products, moving from evaluating performance to researching experience (Anaman et al. 2008), and are focusing on digital initiatives to better respond to this changing consumer needs (Westerman et al. 2012).
Anaman et al. (2008) see this change emerge "partially due to the increased connectivity, mobility, and domestication of digital products and services, which reflects the increasing relevance of digital devices in issues of lifestyle and how people choose to express their identities". Relevant to understand the changes in the producer-consumer relationship in the digital age are the results of Piccinini's at al. (2015) study that indicates that the constructs of digital density, digital interconnectedness, and consumer-centricity are the key drivers of changes. Regarding the increase in digital density, they advocate that the increase of available information through digital channels allows customers to be more informed about different products and services and capable of solving problems with products or services online without the help of intermediaries. Digital interconnectedness is "enabling new means of interactions between consumers and technologies (i.e. way of usage), consumers and consumers (i.e., exchange on information), and consumers and producers (i.e., increasing need to obtain responses about products and services anytime, anywhere and with multiple touch points)" (Piccinini, Robert W Gregory, et al. 2015; Westerman et al. 2014). Westerman et al. (2014) makes the example of a bank that established a Twitter account to answer client complaints quickly, helping customers avoid going physically to a branch, which also enabled crowdsourcing with several employees and other customers. Lastly, offerings are becoming more consumer-centred and even individually customized and hyper-differentiated, too meet the demands of more informed and digitally empowered consumers. Figure 11 sums up the main categories:

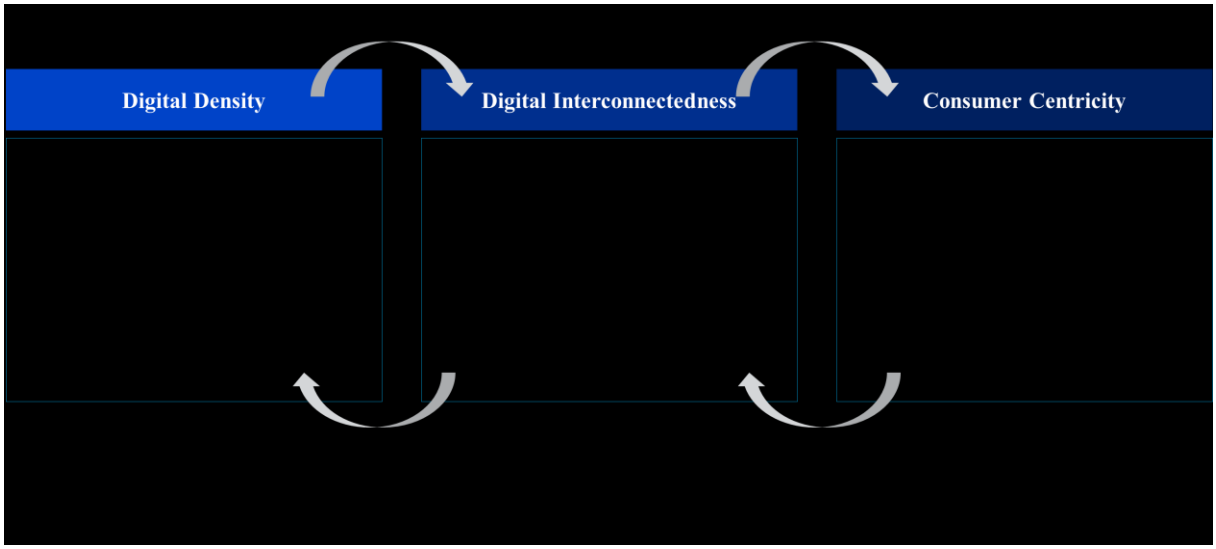

Figure 11: Changes in the producer-consumer relationship (from Piccinini et al. 2015)

In this new producer-consumer relationship, where offerings are becoming more and more consumer-centred, the "customer experience becomes primate as value is primarily created through the process of consumption and the experience which it creates" (EI Sawy & Pereira 2013) and that's why in designing new digital BMs, an effective customer experience will take centre stage. EI & Pereira have identified similar game changing drivers of the digital transformation, like the notion of customization and personalization, the digital rich identity on the internet that captures personal preferences, tastes, interests, etc. and that further enables customization and targeting. Third, they mention services that learn a customer's preferences and discover them and lastly conclude that the "primacy of experience will be further augmented by multiple modes of access and devices with multisensory capabilities". But how should experience be delivered?

EI & Pereira illustrate that in the digital business, the "success of delivery of a product or service is heavily predicated on the user interface experience in terms of ease of use, simplicity, convenience, and positive energy, and should generate an extraordinary or ''wow'' experience (EI Sawy & Pereira 2013)". They describe the interface as the "link between the qualitative and experiential nature of the value proposition and the physical infrastructure that delivers it" and advocate that managers who need to assess how well an interface delivers a digital value need to address the following questions:

1. "Do the affordances of new interfaces enhance our value proposition? (example: social networking helps music customers discover new and better music through their friends; mobility affords social presence by being aware of location and time)"
2. "Do new interfaces help us deliver a more ''precise'' value to customers?"

3. "Do the limitations of new interfaces detract from our value proposition (example: how satisfying is TV on a tiny mobile device?)"
4. "How can we use multiple interfaces in conjunction (example: connecting your video recorder to your mobile and your PC…)"

To continue with the literature review in chapter 2, please go back to chapter 2.3.

Appendix 4: Banking disrupted

The banking business is one of the most rigid of incumbent industries, managing for example in Europe assets that amount to around 300% of Europe's GDP and "comprising six of the top ten companies in the world" (Economist 2015). As the Economist (2015) states further, more than 90% of households in developed economies take advantage of banking services but, most important, an increasing number of government regulations are increasing barriers to enter this market and protecting the banks' positions by restricting new entrant's possibilities. So, what do banks have to worry about?

The disruption of markets like the banking industry will not happen from one year to the other, as we have seen it in the music industry with Apple, YouTube or Spotify, or what digital photography did to Kodak, but rather a "continuous pressure to innovate that will shape customer behaviors, BMs, and the long-term structure of the financial services industry" (World Economic Forum 2015). But what exactly is the threat that FinTech poses to the financial industry?

According to Rachel Botsman, author of "What's Mine Is Yours: Collaborative Consumption Is Changing The Way We Live" (2010), an industry's incumbents face a disruptive threat in case the market fulfills four key criteria: 1. There are fees that can be cut out of the process and people will benefit; 2. It's unnecessarily complex; 3. Trust has broken down; 4. People who have been excluded from the system are getting new access (Botsman & Rogers 2010). Investigating if this is the case for the banking industry might sheer light on how serious disruption is threatening the market.

1. There are fees that can be cut out of the process and people will benefit.

There is an increased number of consumers who proves to be open to FinTech services and few consumers ever return to their banks thereafter.[10] But it is hard to see that FinTech services

[10] S.P. (2015), Why FinTechs won't kill banks, in The Economist

make banks obsolete because for one, most of the FinTech services are dependent on the client's bank accounts and secondly, the FinTech startups are still tiny compared to banks who deal with trillions. But what FinTechs are doing for sure, that's taking under pressure the sector's profitability. McKinsey (2015) estimates that by 2025 there will be a deterioration of 10% to 40% in revenues and 20% to 60% in profits within five major retail banking businesses, namely consumer finance, mortgages, SME lending, retail payments and wealth management. This will not be caused solely by a majority of consumers defecting to FinTech services, but also due to margin compression as the new entrant's force prices lower for equivalent or even better services (Dietz 2015).

2. It's unnecessarily complex.

Research has conveyed that banks five highest sources of complexity for the business are regulation and compliance, channel proliferation, systems fragmentation, product proliferation and geographic expansion.[11] The tighten compliance frameworks and capital adequacy requirements have not only increased the banking industry's complexity, especially regarding cross-border activities, but also increased costs for banks that are now forced to run large compliance departments. Regarding channel and product proliferation, the three client segments millennials, small businesses and the underbanked nations need to be mentioned, which have a high sensitivity to cost, an openness to remote delivery and distribution, and a large size. This offers a major opportunity for FinTech attackers to build and scale sustainable businesses that create value (Dietz 2015).

3. Trust has broken down.

According to studies conducted by the US based communications marketing agency Edelman over 16 years, the financial services sector is the least trusted one. Even though an increase has been noted during the last years, only 54% of respondents to a survey conducted among consumers, stated to trust the industry as a whole (Röder 2016). In the meanwhile, famous technology providers with brand recognition and trust surpassing financial institutions are entering the market, leveraging their extensive data and distribution capability. Finally, alternative lending marketplaces, like Lending Club that uses a peer-to-peer model that allows it to avoid most regulatory burdens (Economist 2015), gain sufficient customer trust and reputation to attract more risk-adverse investors and low-risk borrowers (World Economic Forum 2015). As tech-savvy millennials, who have little loyalty to banks, begin to take larger shares of financial assets, the problem for banks is likely to grow (Economist 2015).

4. People who have been excluded from the system are getting new access.

[11] Emerson, R. et al. (2015), Managing Complexity – The State of the Financial Services Industry 2015, for Oliver Wyman

In developing countries like Africa or China mobile payment solutions have been deployed to extend financial services to the "unbanked" or "underbanked“ (World Economic Forum 2015). The revenues of mainstream financial institutions are stagnating as they concentrate on competing for clients at the top of the pyramid, although only 30% of the world have access to full banking service. The exponential growth of smartphone adoption has therefore created an opportunity for financial technology to offer financial services on this platform to reach the 70% of the pyramid who are underserved by banks and unbanked (EY 2015).

Appendix 5: FinTech Business Models

As the Economist (2015) identified, FinTech firms are a dynamic segment at the intersection of the financial services and technology sectors (PwC 2016) where technology-focused start-ups have created BMs and technology structures tailored to a specific product's market. FinTech BMs will therefore disrupt individual products by products and not the banking business model as a whole, with consumer banking and fund transfer and payments as the sectors most likely to be affected over the next five years (see figure 12 below).

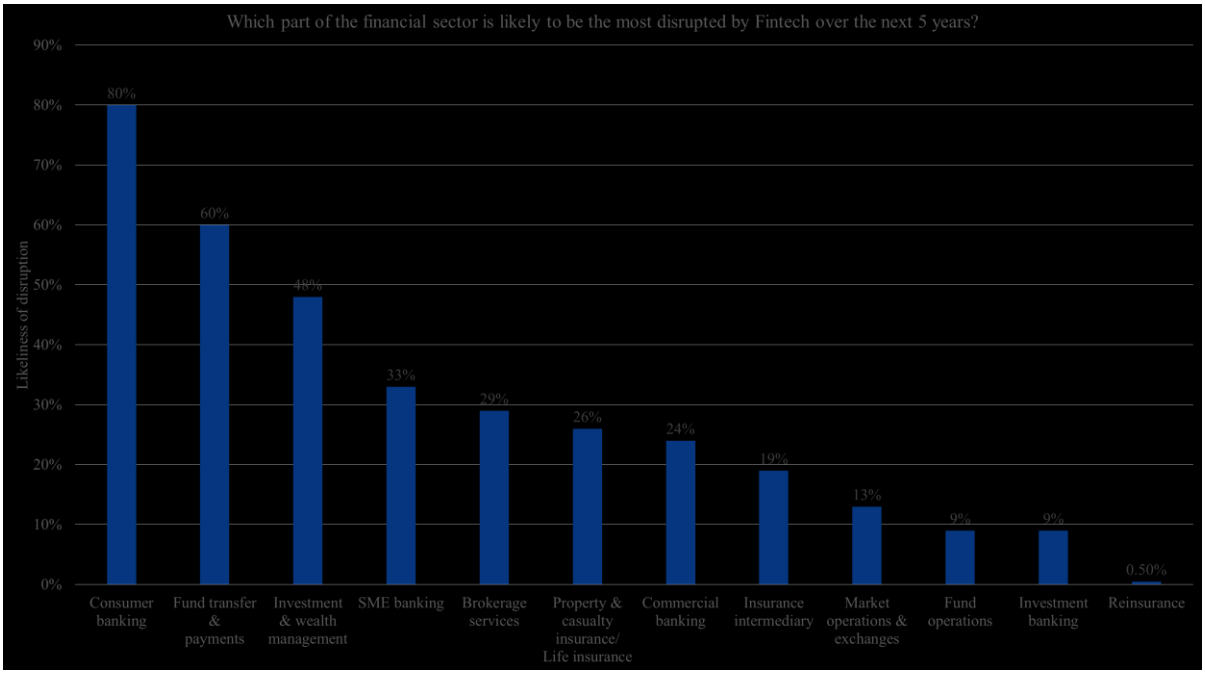

Figure 12: Areas of disruption (from PwC Global FinTech Survey 2016)

In consumer and commercial lending, for example, the emergence of peer-to-peer lending platforms also manifest themselves as alternative credit models (PwC 2016), using non-traditional data sources and powerful data analytics to price risks, accelerate customer centric lending processes, and lower operating costs.

In recent years, the payments industry has also experienced a high level of disruption with the surge of new technology-driven payments processes (PwC 2016), allowing consumers to test FinTech products with simple transactions that doesn't involve much risk or commitment (EY 2015). The real disruption though will emerge from the two new types of money, named centralized virtual currencies, usually for the purpose of transacting in social and gaming economies, and cryptocurrencies, which aim to eliminate the need for financial intermediaries by offering direct peer-to-peer online payments, through the so called Blockchain technology (EY 2015).

Other successful examples of BMs from the FinTech sector are Robo-advice services from start-ups like Future Advisor and Betterment, which are smart automated investing services that optimize investments. Secondly, in the area of equity crowdfunding, Seeders and EquityNet have to be named, where hundreds of millions in business funding have been raised. Prosper and Lending Club are probably the biggest names around peer-to-peer lending, with Lending Club having originated $22.6 billion in loans up to 30. November 2016. FinTechs focusing more on payments and distributed ledger technology[12] are Ripple, Chain and R3, which provide banks around the world with Blockchain technology that allows them to make direct cross-country transactions without the need for a central counterparty or correspondent. Lastly, the machine learning start-up KENSHO combines latest big data and machine-learning techniques to analyze how real-world events affect markets [13] and has therefore gained lots of attention from investment banks, like Goldman Sachs, which provided Series A funding of around $50 million.[14]

To conclude, we can identify three key elements that explain the superiority of FinTech BMs compared to the traditional way of doing business of incumbent organizations: first, FinTechs increase access to and convenience of financial services, through services like mobile banking, E-Money or Robo-advice. Secondly, FinTechs increase the efficiency of financial services, by providing mobile payments, Blockchain technology for settlement or P2P lending and automated underwriting. Lastly, there are trends towards decentralization and disintermediation in the financial service industry, enabled by distributed ledger technology and crowdfunding services for loans and equity.[15]

[12] A distributed ledger (also called shared ledger) is a consensus of replicated, shared, and synchronized digital data geographically spread across multiple sites, countries, or institutions. There is no central administrator or centralised data storage. Blockchain is only one type of data structure considered to be a distributed ledger.

[13] http://www.forbes.com/sites/laurashin/2015/12/09/kensho-the-financial-answer-machine/#f77ab7e19425, retrieved 17.12.2016

[14] https://www.crunchbase.com/organization/kensho#/entity, retrieved 17.12.2016

[15] John Schindler, Board of Governors of the UK Federal Reserve System, at the "Workshop on Digital Banking and FinTech: Challenges and Threats for the Banking System", organized by Banco de Portugal, Sept. 2016