

# **The Catalyzing Role of FinTechs for Innovation Sourcing in Financial Services**

*Completed Research Paper*

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## **Abstract**

*In recent years a lively scene of startup companies developed focusing specifically on the financial services sector. These so-called FinTechs are characterized by highly innovative capacities, rapid development methods and a short time to market for their services and technical solutions. This external source of innovation can pose a competitive threat to traditional financial service companies or, on the contrary, may add value by serving as an additional resource for new ideas and technical solutions.*

*Using a multiple case study approach, 18 interviews were conducted with representatives of FinTechs, financial services corporations, and specialized consulting firms. We study how large corporations and FinTechs interact with each other, what organizational setups were chosen and how knowledge transfer is organized for successful collaboration.*

*Our results indicate that the organizational setup, split into three dimensions, has a strong impact on the integration of external knowledge which, in turn, affects the success of innovation sourcing.*

**Keywords:** FinTech, financial services, innovation sourcing, knowledge integration

## **Introduction**

Financial services firms face continuous pressure through tough competition, increasing regulation and eroding interest rates. Additionally, new competitors like Google, Tesco, Apple, Samsung and literally all car manufacturers (so-called ‘non-banks’) expand into the financial services sector on the basis of progressive technology and direct customer access (Gerstner 2016; Worthington and Welch 2011). The market pressure is augmented by innovative startups which penetrate the sector with new business models and solutions aimed to attack traditional business models and change the market (Kauffman and Ma 2015; Lin et al. 2015). These entities are referred to as *FinTechs* (Financial Technology Startups) and can be defined as start-ups making use of advanced technology to offer financial service solutions in multiple areas (Dohms 2016; Kashyap et al. 2016). FinTechs are characterized by great innovative capacity, rapid development methods and short time-to-market for their services and technical solutions. Innovation is at the core of all FinTech companies. Innovation refers to either “organizing the solution

of *new problems*” or finding “a more efficient [...] way of organizing a solution for the *same type of problem*” (Gadrey et al. 1995, p.6). IT plays the role of a catalyst. Recent FinTech innovations concern solutions in the areas of cards and payment services, new products involving mobile phones and location-based services, and blockchain technology (Kauffman and Ma 2015). The majority of FinTechs offer niche products, enabling them to provide apposite services in areas where established banks still have bottlenecks. A particularly weak spot is the time major banks need to implement new technologies and bring them to the market (Skan et al. 2015). In a matter of self-reflection, banks increasingly perceive collaboration with FinTechs as a chance to increase their own innovative capabilities (Canright 2016; Economist 2016).

Complementing a firm’s innovative capabilities through tapping into external knowledge is known as *innovation sourcing* which is a topic of increasing strategic relevance for competitive organizations (Linder et al. 2003). Innovation sourcing is closely related to both the concept of *outsourcing* as outside resources are used to deliver internal processes (Dibbern et al. 2004) and *open innovation* as external knowledge sources are used as part of the company’s internal innovation process (Chesbrough 2003). Lately, FinTechs emerged as a popular innovation sourcing vehicle through various ways of engagement between entrenched corporations and emerging startups (Weiblen and Chesbrough 2015).

The goal of innovation sourcing is to improve the organization’s *innovation capabilities* (Collinson and Narula 2014), i.e. its *innovativeness* (Ibrahim et al. 2009), which describes the organization’s “ability to continuously transform knowledge and ideas into new products, processes and systems” (Lawson and Samson 2001, p.348). In this context, especially agility, “the continual readiness of an Information Systems Development method to rapidly or inherently create change, proactively or reactively embrace change, and learn from change while contributing to perceived customer value” (Conboy 2009, p.340), appears to be a remarkable object of improvement due to the close connection between innovation capabilities and agility regarding adaptability and change. Furthermore, agility closely relates to the delivery of IT projects and digital initiatives which are in the focus of financial service firms’ digitization efforts (Melville 2015).

Research on innovation regularly argues that technological novelty and innovation result from the *recombination* of existing knowledge assets especially in the context of service innovation (Amara et al. 2009; Anand et al. 2007; Fleming 2001). As a consequence, the “process of transferring, translating and/or transforming knowledge to be of use to [the organization]” (Adenfelt and Maaninen-Olsson 2007, p.4) extends the organization’s knowledge repository which, in turn, fosters its innovative capabilities (Fleming 2001; Hislop 2003; König et al. 2011). Accordingly, knowledge integration is the outcome of this process, consisting of both the shared knowledge of individuals and the combined knowledge that emerges from their interactions” and refers to the actual level of the organization’s knowledge repository which is readily at hand for use (Okhuysen and Eisenhardt 2002, p.371). This definition is also consistent with the term’s use by Tiwana and Mclean (2005, p. 17) who measure knowledge integration as an outcome and conceptualize their concept of expertise integration at project level, which is based on knowledge integration, by “the coordinated application of individually held specialist expertise in the accomplishment of tasks”.

Antecedents of knowledge integration have been explored by extant research. For example, Tiwana and Mclean (2005) found absorptive capacity and relational capital as important antecedents of knowledge integration. Further antecedents investigated are sharing of domain knowledge (Kearns and Sabherwal 2006), practices of cross-functional teams to transform and integrate knowledge in novel situations (Majchrzak et al. 2012), social capital (Robert Jr. et al. 2008), and alliance tie portfolio configuration (Tiwana 2008). Research particularly perceives the intra-organizational setup to be critical for knowledge integration. Grant (1996, p. 377) discusses the “view of the firm as an institution for knowledge integration” but also acknowledges that the definition of a firm’s boundary is not precise and may also include firm-like organizations, or multiple-firm networks. In any case, the firm’s structure, e.g. regarding communication and authority, influences knowledge integration. Organizations as a whole, as well as specific units and teams can be structured, coordinated and directed in different ways, leading to differing forms of social collaboration, decision making and knowledge flows (Alavi and Tiwana 2002; Mintzberg 1992; Mintzberg et al. 1996; Mintzberg and Van der Heyden 1999; Robert Jr. et al. 2008; Weigelt and Miller 2013).

In sum, research on knowledge integration investigate various antecedents and acknowledge the importance of organizational setup but is relatively silent when it comes to conceptualize and empirically validate organizational setup as an antecedent of knowledge integration. Furthermore, although several effects of knowledge integration have been explored, there are only a few studies that consider effects on innovation sourcing (Kita and Ohtsuka 2011; Slowinski et al. 2009; Tsai et al. 2015; Yakhlef 2009). Both areas are equally important when assessing the incorporation of FinTechs innovative capacity into traditional financial services firms. However, the relation between intra-organizational setup, knowledge integration, and external knowledge sources to eventually produce innovation is largely unexplored. This leads to the research question: *What is the role of knowledge integration and intra-organizational setup for innovation sourcing success?*

We examine this research question in the context of a variety of organizational setups between financial services firms (namely banks) and FinTechs. This environment provides a rich base for research due to multiple different innovation sourcing arrangements in the context of numerous cooperation issues which are typical for arrangements with start-up (Buchhorn and Müller 2016).

Based on the literature on knowledge recombination, integration, and organizational design, a research model is derived relating organizational setup elements and knowledge integration to innovation sourcing success. The model is tested using a qualitative research approach based on multiple interviews with decision makers of banks, FinTechs, and specialized consultancy firms. The findings show that two of the three dimensions of organizational setup influence knowledge integration. Especially selective decentralization and structural embeddedness were found to positively influence knowledge integration. However, no support was found for a positive influence of output standardization on knowledge integration. Furthermore, we show that knowledge integration influences innovation sourcing success where the latter must be differentiated into success referring to new product offerings and success referring to increased agility.

## **Literature Review**

In the following, the literature on knowledge recombination, integration, and organizational design, as well as research on innovation sourcing is reviewed and important insights for the study are explicated.

### ***Knowledge Recombination and Integration***

Literature states that innovation is based on exchange and combination of knowledge. This perception entails two important implications: (1) Existing assets must be recombined in order to create innovation, and (2) human beings are the agents of this recombination. Consequently, innovation can be regarded as a result of knowledge recombination (Amara et al. 2009; Anand et al. 2007; Collinson and Narula 2014; Fleming 2001). The notion of recombination implies that the “number of innovations is proportional to [the] knowledge stock of the firm (König et al. 2011, p. 146) and that new knowledge assets provide the basis of further innovations (Fleming 2001).

Knowledge can be generated internally or acquired from external sources (Howells et al. 2003; Ransbotham and Mitra 2010). Organizational knowledge assets are not consistent but occur in different shapes (van den Berg 2013). Nonaka (1991) provides a model of organizational learning which indicates two main knowledge resources which stand in reciprocal exchange: *tacit* and *explicit* knowledge. Tacit knowledge is personal, uncodified, and embodied in the personal actions of human beings. It can be described as “know-how, skills, and practical knowledge” stored in human minds (Grant 1996, p. 377). Explicit knowledge, on the contrary, is formal, codified and expressible through a system of symbols (Nonaka 1991; van den Berg 2013). Choo (2000) separates explicit knowledge into two types: rule-based and object-based knowledge. While rule-based knowledge refers to codified rules, routines, or operating procedures, object-based knowledge comprises products, patents, software code, computer databases, etc. According to this point of view, specific information systems like the ones provided by FinTechs represent a certain type of object-based explicit knowledge. Our research makes use of both knowledge manifestations and follows the argumentation of Patnayakuni et al. (2006) and (Nahapiet and Ghoshal 1998, p. 248) in “embracing both the explicit knowledge and the tacit knowing of a collective and its members”.

## **Organizational Setup**

In order to integrate external knowledge assets, the organizational setup or organizational design comes into focus. It describes “the process by which managers select and manage aspects of structure and culture so that an organization can control activities necessary to achieve its goals” (Jones 2013, p. 12). Mintzberg (1992) presents three basic dimensions of organizational setup: (1) linkages between departments, (2) coordination mechanisms, and (3) types of decentralization.

The first dimension (linkages between departments) are the overarching key parts of an organization. In that regard, structural embeddedness is perceived as critical with regards to knowledge integration and the internal relations within an organization. *Structural embeddedness* “describes the impersonal configuration of linkages between people or units” and refers “to the overall pattern of connections between actors” (Nahapiet and Ghoshal 1998p.244). Hence, this dimension represents a social network factor focusing on the structural connection between actors (Scott 1991).

The second dimension of organizational setup is the coordination mechanism. One important coordination mechanism is *output standardization* referring to the level that work results are defined in advance (Mintzberg 1992). While the outcome of the work is formalized, several degrees of freedom are granted to achieve it. In the context of arrangements with external parties, the output represents the defined wants and needs of the organization, i.e. specific tacit or explicit knowledge assets (Moreno-Luzón and Lloria 2008).

For the third dimension, Mintzberg distinguishes three types of decentralization: vertical (power distribution between principals and subordinates), horizontal (power distribution among staff) and selective (power distribution across different organizational units). Especially the dyadic relationship between headquarters and specific organizational units (selective decentralization) is important because it reflects the classical top-down vs. bottom-up conflict organizations have to face (Banks et al. 2016). Selective decentralization also refers to the introduced decision speed issue which, e.g., banks as organizations have with their particular innovation and digitization units which deal with FinTech arrangements (Skan et al. 2015). Accordingly, selective decentralization can be defined as “the degree to which the right to make decisions and evaluate activities” is decentralized (Fredrickson 1986, p. 282).

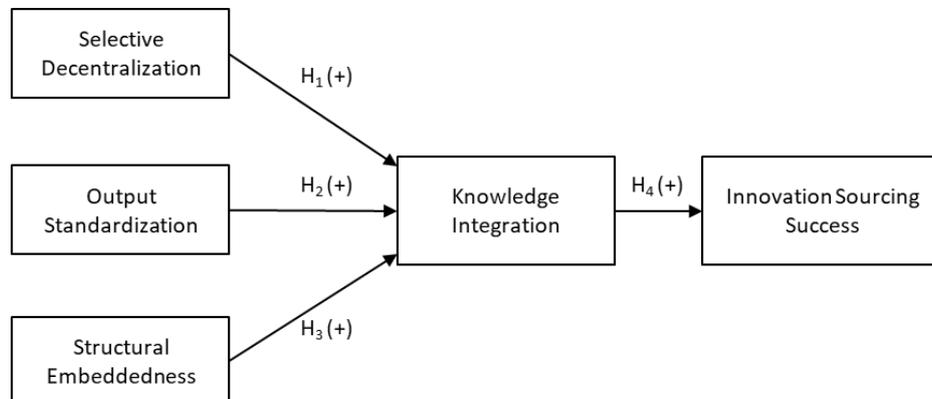
These three structural variables –selective decentralization, output standardization, and structural embeddedness– form a triad of factors. They are perceived as relevant for intra-organizational relationships as they potentially affect knowledge flows and integration in external sourcing arrangements. Regarding the general consequences of the intra-organizational setup, Weigelt and Miller (2013, p. 1411) point out that “organizational structure influences knowledge flows and costs of knowledge creation and exchange”. Consequently, the organizational setup is perceived to affect the diffusion of innovations within and across organizational borders (Sáenz-Royo et al. 2015). In the inter-organizational context, it is assumed that organizations adapt their setup through developing new management measures such as “rules, routines and procedures” (Yakhlef 2009, p. 37) or structural adjustments which affect these mechanisms (Kita and Ohtsuka 2011) to enable frictionless integration of external knowledge. Anand et al. (2007) stress the organizational setup as crucial for the recombinant and integration process. Also, Slowinski et al. (2009) point out that the integration of external innovation sources requires organizational process adjustments.

## **Innovation Sourcing**

Outsourcing research describes several different modes of outsourcing ranging from total to selective outsourcing (Dibbern et al. 2004) and when traditional banks engage with FinTechs, they make use of the full set of options to source innovation (van de Vrande 2013). Each of these sourcing modes inherits distinct characteristics including specific advantages, disadvantages, and effects regarding innovation and knowledge transfer (Kang and Kang 2014; Mahon et al. 2011). However, only measures of selective outsourcing are reported in collaboration between banks and FinTechs. By nature, FinTechs focus on a specific part of the banking value chain and as such can and will only offer selective knowledge to the bank. Also, we found no documented case where banks fully outsourced the product and/or technology development functions.

## Research Model

To answer the research question, the research model depicted in Figure 1 was developed, based on the findings from the literature. In particular, the three antecedents of knowledge integration are drawn from (Mintzberg 1992) and his model of organizational setup as discussed in the previous section. The model will be explained and the hypotheses explicated in the following.



**Figure 1 – Research Model**

**Selective decentralization** is defined as “the degree to which the right to make decisions and evaluate activities [is decentralized]” (Fredrickson 1986, p. 282). Literature indicates a direct impact of selective decentralization on knowledge integration as it implicates autonomy of work, hence, a more decentralized power distribution (Jian-an and Bei 2007). This argument is driven by the rationale that more dynamic and agile organizational decision structures enable speed, recombination, and adaptability (Ciborra 1996). This implies a positive impact of selective decentralization on knowledge integration.

**H<sub>1</sub>:** Selective decentralization positively influences knowledge integration.

Moreno-Luzón and Lloria (2008) point out that **output standardization**, which refers to the level that work results are defined in advance, enables intra-organizational knowledge creation through establishing shared goals as an enabler. In a similar vein, output standardization can help in inter-organizational as a facilitating integration mechanism (Barki and Pinsonneault 2005). Hence, we assume a positive impact of output standardization on knowledge integration.

**H<sub>2</sub>:** Output standardization positively influences knowledge integration.

**Structural embeddedness** refers to the pattern of linkages between actors such as individuals and units (Nahapiet and Ghoshal 1998). As discussed above, different organizational structures bring along different forms of communication linkages and knowledge flows within the organization (Gnyawali and Madhavan 2001; Mintzberg and Van der Heyden 1999) which influences the efficiency of the knowledge integration process (Kita and Ohtsuka 2011) and eventually its outcome. Especially the establishment of cross-functional project teams includes a high degree of structural embeddedness due to the concomitant network ties between the actors (Huang and Newell 2003). The literature argues that a close network of sourcing units goes along with structural embeddedness and provides access to resources such as knowledge assets (Nahapiet and Ghoshal 1998). Furthermore, the social context within these networks influences knowledge integration (Lang 2004). This notion is related to the perspective of social knowledge sharing and learning as provided by Nonaka (1991) which also accounts for organizational units which are able to learn better if they are connected to other organizational parts (Tsai 2001). Therefore, we assume that structural embeddedness is positively related to knowledge integration (Robert Jr. et al. 2008).

**H<sub>3</sub>:** Structural embeddedness positively influences knowledge integration.

In the context of this research, **innovation sourcing success** is defined as an increase in a firm's innovation capability (Collinson and Narula 2014). The literature emphasizes the importance of the company's knowledge repository for its innovative capacity (Fleming 2001; König et al. 2011).

Successful integration of external knowledge assets is crucial for the innovative performance of a firm (Rosenkopf and Almeida 2003) because it may lead to new combinations of knowledge elements. Grant (1996) stresses the integration of knowledge as the basis for organizational capabilities. Research finds that knowledge integration facilitates the successful conduction of IT projects (Mitchell 2006), as well as system development performance (Patnayakuni et al. 2006). Furthermore, integration of knowledge fosters new product development as well as product concept effectiveness (Jayaram and Pathak 2013). Hence, there is the assumption that knowledge integration is positively related to innovation sourcing success:

**H<sub>4</sub>:** Knowledge integration positively influences innovation sourcing success

## **Data and Methodology**

### ***Research Method***

This work utilizes a qualitative research approach which is useful to understand management systems as a whole (Gummesson 2006). Among qualitative research approaches, case studies are predestined to form new knowledge, especially if they are carried out with practitioners within a close management context (Amabile et al. 2001). We choose a multiple case study approach which deems appropriate due to the exploratory nature of this research and the involvement of multiple companies in the analysis (Kaarbo and Beasley 1999; Yin 2009). This is in line with prior research related to knowledge integration or organizational innovation through external sources that make use of multiple case studies such as Anand et al. (2007).

The paper follows a replication logic to enable theory building and hypothesis testing (Eisenhardt 1989). The case selection provides both literal and theoretical replication (Yin 2009). To sustain general research standards and academic rigor regarding design, data collection and data analysis, the structure of this study orients on the remarks of Dubé and Paré (2003) for conducting positivist case research. Furthermore, the paper provides detailed information about the general research method and data collection process aiming to secure reliability (Beverland and Lindgreen 2010; Yin 2009).

### ***Case Environment***

The financial services sector was fairly slow in adopting ground-breaking technological changes for a long time (Dietz et al. 2015). In recent years, young and innovative startup companies identified this technology deployment gap and pushed into the market, offering innovative banking. These FinTechs are located “at the intersection of the financial services and technology sectors” thus developing not only new technologies but also new services for the end customer. Several technological developments contributed to the rise of FinTechs: The ongoing diffusion of mobile devices continues to change the way customers deal with banking products and boosted people's self-initiative providing space for new products and services in the market. Also, the rise of cloud computing and open source software make it easier for start-ups to access to develop products and bring them to the market (Kashyap et al. 2016; Skan et al. 2014). Concurrently with those developments, the main driver for competitive advantage in banking switched from customer loyalty towards technology (Skan et al. 2014). Simultaneously, a decrease in consumer towards established banks as a result of the financial crisis make alternative suppliers of banking products more attractive (Worthington and Welch 2011). The disruptive changes associated with the emergence of FinTechs are frequently labeled as a *revolution* or the *new big thing* (Kauffman and Ma 2015). This is expected to continue for the foreseeable future (Schneider et al. 2016) which raises attention among the big financial institutions with regard to their innovation and digitization strategy (Webster and Pizzala 2015).

### ***Data Collection***

Primary data was collected through a series of interviews (Yin 2009). To achieve independent responses with minimized bias all interviews were conducted on an anonymous basis which was communicated clearly to the respondents. The design and conduction of the interviews followed the recommendations of Rowley (2012) and Qu and Dumay (2011).

Overall, 18 interviews were conducted. Nine interviews with entrenched banks where the informants are in management positions responsible for the innovation or digitization department of the bank itself, or of subsidiaries which are specialized in cooperation with FinTechs. Participating banks were selected according to their activities with FinTech ventures. It needs to be noted that several banks were not available for interviews with a non-commercial background (i.e. outside imaging). To provide further expert perspectives, four interviews with top-level managers from specializes consulting and market research firms a focus on FinTechs were conducted. Furthermore, five interviews with founders and/or CEOs from FinTechs which are in cooperation with banks were performed. Table 2 provides the informants' demographics.

**Table 1 – Demographic Data of Interviewees**

Code	Business Model	# empl.	Title/	Code	Business Model	# empl.	Title
Bank 1	Major Bank	>50k	Senior Manager	Consultancy 1	Strategy Consulting	>3k	Partner
Bank 2	Major Bank	>50k	Division Manager	Consultancy 2	Strategy Consulting	>4k	Partner
Bank 3	Retail Bank	>14k	Head of Digital Experience	Consultancy 3	Management Consulting	>200k	Partner
Bank 4	Major Bank	>50k	Innovation Strategist	Consultancy 4	Market Research	<100	1. Senior Analyst 2. Senior Analyst
Bank 5	Direct Bank	>3k	Head of Digital Strategy	FinTech 1	B2C Mobile Banking	<10	Founder & CEO
Bank 6	Investment Bank	>2k	Subsidiary CEO	FinTech 2	B2B Infrastructure Service	<50	CEO
Bank 7	Cooperative Bank	>4k	Senior Manager	FinTech 3	B2B Blockchain Service	<10	Founder & CEO
Bank 8	Investment Service	>50k	Vice President	FinTech 4	B2C Mobile Insurance	<100	COO
Bank 9	Major Bank	>50k	Chief Digital Officer	FinTech 5	B2C Robo Investment	<30	Founder & CEO

### **Data Analysis Procedure**

Interviews took place from May until August 2016 by phone, Skype, or in person. All talks were audio-recorded when allowed to do so. The interviews took between 30-65 minutes and were transcribed subsequently. One interview relied on written notes due to the request of the respondent not to be recorded. The transcriptions were coded using Nvivo 10, considering the remarks of Siccama and Penna (2008). Coding was done by two researchers independently and disputes were discussed (including expert opinions) until jointly agreed.

### **Test of the Research Model**

Regarding hypothesis 1 the findings indicate that a high degree of selective decentralization which empowers the sourcing team/project managers is associated with positive effects regarding knowledge integration. In all cases where interviewees reported about the deployment of agile system development approaches such as Scrum, they also reported faster decisions and better alignment between functional and technical team members. The key towards successful knowledge integration is the frictionless transition of FinTechs' knowledge assets into the knowledge repository of the banks. Decentralized decision making and speed are essential.

*We have very short decision ways within the organization. This is a big advantage. [...] We work according to Scrum and adapted it to the needs of a bigger organization. [...] We are able to decide quickly and to integrate the excellent 3rd party services, as offered e.g. by FinTechs, in our portfolio. [...] The first time, we needed months till we agreed on a contract [with a FinTech]. Now we are able to make that much better. (Bank 5)*

In turn, interviewees stated that centralized approaches hinder knowledge integration. Complex and long decision ways, which are associated with centralization, obstruct efficient knowledge integration in IT projects, especially in the sensitive starting phase of collaborations with FinTechs.

*Unfortunately, there is a governing body responsible for selecting ideas. I say unfortunately because obviously if it is your idea you want them to adopt it and work on it immediately. But it doesn't quite work that way. So what typically happens is you have an idea, you explore it initially, you then build a business case for it and it gets presented. If the business case looks interesting, exciting and worthwhile we will then start work on it as a small proof of concept. If the proof-of-concept is successful we will then look to expand on that by putting more resources into the project. (Bank 8)*

*When I joined the bank's innovation management two years ago, we often failed at the bank's structures. You had to generate ideas, prepare business cases, pitch against classical projects [and so on], so that it was hard to bring ideas quickly on the road. That is why we are now outside of the actual structure, to be quicker, to tackle budget discussions and similar things in a different way. (Bank 2)*

The remarks of FinTechs and consultancies provide further validity, especially regarding the problems of centralized decision power, as well as the fundamentally different working habits of banks and FinTechs.

*The primary issue is the speed of decisions. If you talk to start-ups, everyone has stories about long decision ways at banks. There is a lot of room for improvement on the bank side. (Consultancy 4)*

*The problem, [when we talked with major banks], is the banks' structures which captures them. At first, we didn't talk to the people responsible. When we had the first meetings, we had it with a lot of different people from different units. However, they had no decision power which made it a slow process. [...] We made much more positive experiences with a model when there was a dedicated project manager who asserted the project. (FinTech 1)*

In conclusion, we find indications that selective decentralization is positively associated with knowledge integration, supporting our Hypothesis 1.

Hypothesis 2 assesses the relation between output standardization and knowledge integration. A general observation was that banks have different expectations towards the output depending on the type of sourcing mode they chose. For those institutions that perform selective outsourcing, a high degree of output standardization was observed. Especially if the bank was looking for new software products the expectation was comparatively clear cut and straight forward.

*Primarily, it is the product which we want to offer our customers. [...] We want to offer the best product, which is either from us [...] or from a third-party supplier like a FinTech. (Bank 4)*

*Our role and responsibility is to find something that is available on the market and bring it into either the internal organization where we can make better use of it or make sure our clients are aware of it so that they can make use of it. (Bank 8)*

These quotes show that the possible output is pre-determined by certain search goal which here is the possible product that the bank wants to offer. Solutions for this image of a possible product are searched for, brought into the organization to make use of it. So basically, the output can be regarded as standardized as there is a rather clear picture of a product that should be developed. Subsequently, knowledge integration activities take place.

However, we also saw other constellations. The choice of software development method seems to play an important role for output standardization and knowledge integration. The adoption of agile development approaches decreases the level of output standardization decreases in comparison to classic development approaches.

*Of course, there is a budget decision in which basic areas we want to invest. However, evaluation and decision concerning which features have to be implemented and conducted lay at the teams. [...] We developed a new app in an agile matter, whereas the new app does not have the functionalities of the old app yet since those functions are not required by 98% of the customers. If you set the outcome in advance, you would build the app for one year in order to recognize afterward that the app is not*

*accepted by the customer which requires reengineering. [...] You should not use the measures of the past [...] I think, in the end, the focus is on activity and input, much less on the final output. [...] If you look at the ratio between announced cooperations and final go-lives, I think that we can claim one of the very best ratios between "announced" and "delivered". (Bank 9)*

Here, we see that the output is relatively unstandardized and depends on what is found during the development. The goal here is not to develop a predefined product but to set a frame for the development where the concrete functionalities develop during the development. So basically, the output cannot be regarded as standardized. However, knowledge integration activities take place.

Overall, the data indicate mixed results regarding the influence of output standardization on knowledge integration. We find quotes indicating a positive relation between both variables but also quotes indicating the opposite. We can speculate that the selected sourcing mode and/or the chosen IS development method moderate this relationship. In sum, we cannot report on clear evidence for the hypothesis that output standardization positively influences knowledge integration and thus we need to reject hypotheses 2.

Regarding hypothesis 3, relating structural embeddedness and knowledge integration, we found indications supporting this hypothesis. The interviewees state that linkages with other organizational units and functions foster knowledge exchange. This is perceived to integrate tacit knowledge into the organization's knowledge repository.

*We work in a close relationship with the parent company. [...] We foster a close exchange and try to bring in innovative topics. [...] The parent company is a great proxy: Which problems are out there, where can we become more innovative? We take these points to reflect the FinTechs we see in the market. (Bank 1)*

*We identify strategic fields and work on them cross-divisional, in teams composed from different organizational divisions with the aim to identify needs for change. (Bank 3)*

*We have a very close exchange and regular round tables on the international level. Furthermore, there are informal internal round tables. Mostly it is about to go the direct way which works very well. [...] [In the case of the video identification], the internet marketing department initiated the project and involved directly our service center. They knew that you cannot implement such a solution on your own. [...] We took up the topic and worked on it cross-functionally. This happened in close exchange and very fast [...] In the end, we have been the first bigger bank in Germany who offered such a service. (Bank 5)*

Our respondents point out the existence of close linkages across organizational unit borders, indicating structural embeddedness, and at the same time they report on the exchange of knowledge, e.g., regarding challenges and innovative solution, that is used to come up with new perspectives. That is, these statements point to structural embeddedness and to the integration of knowledge to come up with new solutions and perspectives.

Overall, we have indications for a positive influence of structural embeddedness on knowledge integration, and thus find support for Hypothesis 3.

Hypothesis 4 assumes a positive association of knowledge integration and innovation sourcing success. All banks working closely with FinTechs reported benefiting from the associated knowledge integration with a perceived increase of their innovative capabilities. The reported success in innovation sourcing included different aspects as reported in the following. One group of respondents reported an increased ability to offer an extended range of innovative products.

*The incubator helps in certain areas to provide added value, to provide a solution which brings convenience to the customer. [...] For one of our FinTechs we serve as an additional sales channel [...]. We connect [FinTech] systems over API interfaces to the bank and get a solution for small-sized companies which you otherwise could not have made cost-covering. [...] For us, it is important that we have an innovative product which helps the customer. That is something which makes you more innovative than other companies because you can access customers in another way. It is about providing a range of solutions. (Bank 2)*

*The range of our services massively increased through cooperation and collaboration. You get faster to the market if you do not make everything on your own. (Bank 3)*

These quotes relate innovation sourcing success to new product offerings and identify collaborative activities with FinTechs to integrate knowledge from FinTechs with own knowledge stock. Another group reported better agility and speed in IS projects as innovation sourcing success. In these interviews, the spillover effects from the FinTech's to the bank's employees were often mentioned.

*We learn a lot about how to speed up processes, our legal staff learns how to interact with FinTechs, and so on. We became much more agile through this cooperation. (Bank 4)*

*I strongly observe that banks, which collaborate with us for a longer time, look exactly how we work and how they can adapt this in their home institutions. [...] I observed this, especially at our partner bank. Initially, they shook their heads and said "We have never worked like this before" when we made new proposals. Today they are much more open for new topics [...] and even overtook us in some cases. (FinTech 5)*

While the learning effect mentioned above can predominantly be observed in IS development projects, it was also mentioned that informal socialization-based knowledge exchange had an impact on agility. In this case, the integrated knowledge is of pure tacit nature.

*We learn from what we do and we learn from other FinTechs. We have a living exchange with them. [...] We learn from them by making informal exchanges. The one part is learning, the other part is applying what you learned by putting it into practice. (Bank 6)*

Overall, the information indicates support for hypothesis 4 regarding the positive impact of knowledge integration on innovation sourcing success.

## **Contribution, Limitations and Further Research**

### ***Theoretical Contribution***

The theoretical contribution of our research is twofold. First, this is one of the first studies conceptually explaining and empirically testing how organizational setup influences knowledge integration. In addition, we split up organizational setup into three dimensions as suggested by Mintzberg (1992) to get a more detailed view and thus were able to investigate each dimension separately. Organizational setup strongly influences knowledge integration. Especially selective decentralization (see also Muthusamy et al. (2005) as well as Baum and Wally (2003)) and structural embeddedness (see also Kita and Ohtsuka (2011) as well as Nahapiet and Ghoshal (1998)) were found to positively influence knowledge integration. However, no support was found for a positive influence of output standardization on knowledge integration. A possible reason can be that the sourcing mode selected moderates this relationship. More research is needed to shed light on this issue.

Secondly, we extend prior research by investigating a rarely addressed dependent variable and provide deeper insights into the positive impact of knowledge integration on innovation sourcing success (Fleming 2001; Grant 1996; König et al. 2011). The association of innovation sourcing success with a larger product range on the one hand and an increase in development agility, on the other hand, provides interesting insights. Although the bank's acute innovation need is often directly focused on explicit knowledge assets such as customer facing software products the positive spillover effect from working with the more agile and innovative FinTech leads to improvement of banks' agility in future IS development. This can be related to Nonaka (1991) and his perspective that tacit and explicit knowledge are related in a mutual transformation process which enables organizational learning as well as to his perspective of socialization.

### ***Practical Implications***

The theoretical contributions also provide important implications for practitioners, especially with regard to IS projects with FinTech participation. Due to the positive impact of selective decentralization on decision speed, banks need to consider how to enable empowered teams while simultaneously paying

attention to operational, regulatory and strategic requirements. Especially when FinTechs as potential cooperation partners are already included in the process, long decision ways and a lack of empowerment negatively affect knowledge integration. Regarding the positive influence of structural embeddedness on knowledge integration, practitioners should consider creating structural linkages between the highly innovative teams and other parts of the organization. These structural linkages should focus on knowledge exchange in order to enable organizational learning.

Regarding the impact of FinTech arrangements on IS development agility, banks should consider FinTechs not only as a provider of technological solutions but also as a strategic vehicle to foster internal speed and encourages cultural change by exposing the bank to an outside culture of agility and innovation.

### ***Limitations and Further Research***

This research is of exploratory nature in the young area of research which deals with the impact of FinTechs on the financial services sector. The findings are based on a qualitative research method which naturally cannot claim statistical generalizability but, however, provides insights that are logically generalizable. Additionally, our informants discuss implications from the German perspective of banking only. Furthermore, the case selection focused on large banks ("big player") which provide a different context compared to smaller, more locally active banks. However, we assume that incentives and behavior with innovation sourcing success are dependent on institutional size (Bhattacharyya and Nanda 2000) which was also emphasized in the interviews, especially regarding the speed of decisions.

Future research could deeper explore moderating factors on the relationship between organizational setup and knowledge integration. Namely, the relationship between output standardization as one dimension of organizational setup and knowledge integration needs more investigation as we found contradictory results. Furthermore, future work should focus on deeper explore the contribution of autonomous teams towards innovation sourcing success as well as the role of individuals championing the innovation process.

### **Conclusion**

Literature underlines the importance of external sourcing knowledge in order to increase organizational innovation capabilities. This external knowledge has to be successfully integrated in order to achieve the associated benefits. Organizational setup factors especially selective decentralization and structural embeddedness were shown to positively affect knowledge integration and eventually innovation sourcing success.

Our study shows that the cooperation of entrenched banks and FinTechs offers fertile grounds for successful innovation sourcing. However, both sides still have a long way to go to achieve their joint goals. Where banks need to become more agile and customer-centric, FinTechs need to understand the specific situation of large-scale financial services firms who are holistically regulated. Where FinTechs are innovative startup companies who embrace mistakes and allow for a culture of learning-from-errors, banks are in essence companies which need to run without errors. In this respect, both parties need to grow closer together by developing a joint understanding in order to successfully innovate.

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