



WORKING PAPER:
DESIGNING CROWDFUNDING SERVICE SYSTEMS – TOWARDS A
NASCENT DESIGN THEORY

Philipp Haas

Institute of Information Management
School of Management, University of St. Gallen
Müller-Friedberg-Strasse 8, 9000 St. Gallen, Switzerland

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Abstract

This paper investigates, how incumbents of traditional industries can mutually design service systems with a partner from the digital world, in order to explore and exploit new business opportunities. As the competitive edge of these digital businesses is based on new competences, considering a decomposition and modularization approach allows the bundling of competences of multiple partners. This is particularly relevant in the financial service industry, where crowdlending as a startup-driven innovation gained large attention over the last few years. Despite the high proximity to traditional banking products, banks are struggling to keep pace and failed to leverage on the mutual strengths, so far. Thus, bundling competences with startups in modular service systems represents a straightforward solution for overcoming these shortcomings. By conducting an Action Design Research project together with a large Swiss bank from 2014 to 2016, we systematically conceptualize the constituting components, exchange relationships, and the design of a crowdlending service system and thereby, contribute to crowdlending research. By formularizing the learnings from the project, we describe actionable design knowledge as a first step for the development of a nascent design theory, which supports incumbents throughout the design of service systems together with a partner from the digital world. Therefore, we provide a valuable contribution to service science.

Keywords: Crowdlending, Crowdfunding, Service Systems, Service Design, Service Engineering, Action Design Research

1. INTRODUCTION

Digital technologies and new business approaches have affected, threatened, and radically changed traditional industries with start-ups introducing innovative solutions, which deeply impacted today's societies and individuals. Incumbents in traditional service industries struggle to keep up with the pace of these start-ups and to adapt to changing customer requirements (Christensen 1997; Christensen and Overdorf 2000). Frequently well-funded by millions of venture capital and equipped with a sense for exploring and exploiting opportunities, this new class of competitors frequently moves faster and more flexible than incumbents. Therefore, they rapidly and inexorably conquer existing and newly developing market segments and offer complementary and substitutional services by relying on their speed, flexibility, and customer centricity.

This is particularly the case in the financial service industry, where a plethora of start-ups sustainably disrupted and reshaped its landscape by building on service systems (e.g., digital online payment or virtual currencies) (Beck 2010; Liebenau et al. 2014). In particular crowdlending as novel concept of lending and investing (e.g., *Lending Club*¹) gained large attention and momentum over the last few years and is an impressive example for this change. Crowdlending can be described as collective funding of loans by an undefined group of capital givers, where capital seekers and the crowd of capital givers are directly interlinked via an crowdlending intermediary by means of an Internet-based open call (Belleflamme et al. 2014). Crowdlending is characterized by a modular structure, comprising several activities and stakeholders within a service system (Haas et al. 2015; Liebenau et al. 2014). Despite the proximity to the traditional financial service industry, the competitive edge of crowdlending is based on components, which have not been considered relevant for the banking industry so far, such as crowd management (Liebenau et al. 2014). Besides, these new competitors are digital and “*analytical [...] from birth*” (Davenport 2014), as their business models and core competencies include advanced data analytics such as analytics-driven risk scoring. By building on grown legacy systems, incumbents such as banks are almost unable to copy these approaches due to issues of speed and flexibility. Nevertheless, banks today already have

¹ www.lendingclub.com

competences which are necessary to offer crowdlending systems, e.g., account management, payment, and ensuring legal requirements. Besides, the banks most pivotal assets and competitive advantage over the crowdlending newcomers are the huge customer bases, which are based on long-standing relationships, trust and reliability. Therefore, bundling competences with startups and other service providers in service systems represents a straightforward solution for overcoming the organizational and operative shortcomings and leverage on mutual strengths.

Service systems can be defined as “*configurations of people, information, organizations, and technologies that operate together for mutual benefit*” (Maglio et al. 2015). This allows the provision of certain services by the incumbents themselves, whereas they may source others from specialized partners within the service system. This enables incumbents to keep up with the pace of start-ups while leveraging their own strengths and enables the startup to benefit from the incumbent’s grown customer base, financial resources and reputation (Christensen and Raynor 2013). However, as service systems comprise complex combinations of multiple services and stakeholders, the design of such service systems represents a tough challenge. Despite the relevance of the service system perspective for the development of crowdlending service systems (CSS), current research has not described and conceptualized the modular structure of crowdlending services and the question of how to systematically design CSSs. Attempts to answer this question on a more holistic level reveals that research has largely neglected the topic of how to systematically design service systems. In order to leverage efficient service development in such interconnected systems, the design of tools and methods for their systematic engineering is substantial (Böhmman et al. 2014c). Although the modular structure in service has been studied for many years and a system’s and platform’s perspective has been considered relevant (Tuunanen and Cassab 2011), the design of modular service systems can be considered highly relevant, but understudied (Yoo et al. 2012). First attempts for the systematic design of service systems exist (Teixeira et al. 2016), and even impacts on such design for the financial sector, have been examined (Ding et al. 2010), but neither does a theory for the design of service systems exist nor does current literature focus on the design of modular service systems as needed for crowdlending and all settings where the experience of incumbents and the innovative and agile character of

startups are key to success and need to be combined. That is why our research question is *“how should the systematic design of service systems look like that enables an incumbent to partner up with digital-savvy partners to provide great value-propositions and user-centered services for their customers”*.

Therefore, this paper follows an action design research approach (ADR), introduced by Sein et al. (2011), within a project with a large Swiss bank in order to systematically develop a CSS and formalize our lessons learned in order to provide insights in the systematic design of service systems. The bank had scouted crowdlending for some times, but struggled to find a profitable and valid way to systematically make this disruptive trend accessible and to design an own crowdlending service offering. By considering a partnering approach together with a start-up, the bank was able to successfully enter the crowdlending market. Our research approach follows the four steps of ADR– 1) Problem Formulation; 2) Building, Intervention, and Evaluation; 3) Reflection and Learning; and 4) Formalizing of Learning.

Within the first step of ADR, we formulize the bank’s problem, identify and analyze the related literature, and represent the real world problem as an instance of a class of problems. Within the second step of ADR, we conduct three design iterations – Initiation, Conceptualization, and Realization – in order to design the banks CSS and shed light on the components and inner workings of the system. Parallel to these steps, we conduct a reflection and learning step, which moves conceptually from building a solution for a particular instance to applying that learning to a broader class of problems. In the fourth step, we formalize these respective learnings. By doing so, we are able to derive an initial draft for an nascent theory of design and action in form of a five step design framework, which supports incumbents in the systematic design of service systems between together with partner from the digital world.

This paper has two major theoretical contributions. First, we extend current research on the functional conceptualization of crowdfunding (Beaulieu et al. 2015; Belleflamme et al. 2014; Tomczak and Brem 2013) by considering crowdlending as a decomposable modular service system. Thus, we describe the crowdlending service system by twelve constituting service modules and its inner workings on a process level. This enables the

exploitation of traditional modularization benefits such as flexibility, reuse, variability, and module-wide innovation (Böhmman et al. 2008) and by that allows the bundling of capabilities of a bank and external partners, as suggested by Christensen and Raynor (2013).

Second, reflecting and formalizing the learnings of the ADR approach enables us, to contribute to service science, which calls for “*research, leading to actionable knowledge for systematically designing, developing, and piloting service systems*”, for a multi-stakeholder system perspective and for the provision of according tools and methods to manage them (Böhmman et al. 2014c). Therefore, we are providing an initial draft for a nascent theory of design and action (Gregor 2006) in form of a multi-step design framework comprising respective design guidelines and a course of action for the systematic design of service systems along the four categories of service systems - people, processes, IT, and organization (Maglio and Spohrer 2008b). This theory empowers incumbents in the systematic design of service systems with partners from the digital world.

For practice, this paper provides guidance for incumbents and digital companies for the systematic design of new service systems and engaging the mutual bundling of competences. This might encourage incumbents and new market entrants to engage new partnerships, develop innovative service systems, and exploit white spots more successfully.

2. THEORETICAL BACKGROUND

Designing Service Systems

Maglio and Spohrer (2008a) define service systems as “*value-co-creation configurations of people, technology, value propositions connecting internal and external service systems, and shared information (e.g., language, laws, measures, and methods)*.” Referring to them as ecosystems, Vargo and Lusch (2011) and Alter (2013) define service systems as “*work systems producing a service*”. Given these various definitions, one can agree on the many-to-many service experiences (Chandler and Lusch 2015) service systems are based on. Given this definition, the current literature can be well-

presented in the following four categories: people, processes, technology and the organization.

Capabilities, interaction, change, and value are fundamental to those service systems and most of current literature on people within service systems concentrate on these topics (Maglio et al. 2015), especially considering service experience between the human entities of service systems. These service experiences are made during the co-creation of services (Vargo and Lusch 2004; Vargo and Lusch 2016; Vargo et al. 2008). The path of co-creation is not simple or uni-faceted, but rather involves a “*complex combination of activities and interactions between lead firms and network actors, characterized by both lead firm and network-based innovation*” (Perks et al. 2012) in which the service provider not only makes value propositions, but “*can engage itself in customers’ value fulfillment as well*” (Grönroos 2008). The traditional role of the service provider transforms to a role of a service aggregator and orchestrator of the service systems, which is “*different than the dyadic buyer and seller standard equilibrium neoclassical economic model*” and needs according value propositions which “*invite, shape, and potentially transform engagement in service*” (Chandler and Lusch 2015).

When considering the magnitude of service system resources, their integration in the value co-creation process is critical. Here, the actors’ resource integration should be “*informed by both the value proposition and the service and social structures (with the dimensions of legitimation, domination, and signification) of the service system*” (Edvardsson et al. 2012).

In regards to technology, the “*innovative assembly of ICT as well as non-ICT resources*” is considered highly relevant (Srivastava and Shainesh 2015) in service systems. As technology is considered a “*game changer*” for services (Ostrom et al. 2015), many contexts that have been studied without an IT perspective might need adjustments for the new digital settings and platform structures. Inter-organizational service delivery systems as well as technology- and ICT-enabled platforms and ecosystems have been studied in several contexts (Barrett et al. 2015), but these digital infrastructures as the basis of successful service systems need further consideration (Henfridsson and Bygstad 2013).

From a process perspective, the current body of literature on service design and service systems engineering provides mainly two categories of multidisciplinary design methods - first, human-centered methods, which focus on the customer's expectations and experiences; second, methods for modelling, prototyping, and enacting, which focus on the design, visualization, and evaluation of activities and interactions of participating stakeholders and resources (Holmlid and Evenson 2008; Morelli 2002; Morelli 2006; Vasantha et al. 2012). The results of designing service systems are artifacts such as prototypes that show a detailed representation of the respective value proposition and value creation (Teixeira et al., 2016).

In terms of organizational aspects, one of the most important aspects is the definition of roles the different actors in a service system take, because that is how their interplay, co-creation is configured so that the service system's overall value propositions and success is determined. In this context, service systems are supposed to adapt to value propositions through the configuration of actors and resources which are determined by the service architecture (Böhmman et al. 2014a). Further, these service architectures also determine system-wide properties of service systems such as speed (Alter 2008). So far, no service system design exists that is capable of handling multiple speeds as being relevant in case incumbents are co-creating value with startups. Accordingly, service systems can be conceptualized as "*complex socio-technical systems that enable value co-creation*" (Böhmman et al. 2014a). As actors are people and those who are involved in the process of interactive value creation with their knowledge and skills (Maglio et al. 2009), this is how the four considered categories of service systems people, processes, IT and organization are connected.

Crowdlending Service Systems

Crowdlending can be described as collective funding of loans by an undefined group of capital givers, where capital seekers and the crowd of capital givers are directly interlinked via a crowdlending intermediary by means of an Internet-based open call (Belleflamme et al. 2014). Following this thought in crowdlending the task of funding is outsourced to the crowd of capital givers (Moritz and Block 2014). Thus, funding activities are no longer restricted to financial institutions such as banks, but opened up to the public, such that anybody can participate according to their individual financial and

mental capabilities. Thus, the roles of customers and suppliers become blurry (Rong and Shi 2014; Williamson and De Meyer 2012), while on the other hand network effects became crucial (Belleflamme et al. 2018). Thus, crowdlending represents an profit-oriented archetype of crowdfunding based on loans for capital seekers and interest as compensation for capital givers (Haas et al. 2014).

Previous research on crowdfunding mostly investigated behavioral decision-making patterns of capital givers and seekers, e.g., herding or signaling effects (Agrawal et al. 2010; Berns et al. 2018; Burtch et al. 2013b; Hornuf and Schwienbacher 2018), their motivation (Gerber et al. 2012), beneficial characteristics (e.g., race) (Lin et al. 2014; Wang and Greiner 2011; Younkin and Kuppaswamy 2017), or their roles and activities within crowdfunding projects (Hui et al. 2013; Ordanini et al. 2011). The second main stream of research focuses on crowdfunding projects, e.g., factors that influence the funding success including social and personal networks (Lin et al. 2013), project presentation (Mittra and Gilbert 2014b), the offered incentives (Hildebrand et al. 2017), or the dynamics of crowdfunding projects (Mollick 2014; Schwienbacher and Larralde 2012). Additionally, certain authors investigated risks associated with crowdfunding (Burtch et al. 2016; Siering et al. 2016) or fraudulent behavior (Cumming et al. 2016; Siering et al. 2016). Further, researchers tried to investigate the benefits of crowdfunding for gaining market insights and engaging the crowd in the product development process (Chemla and Tinn 2018; Viotto da Cruz 2018).

Despite the popularity, the potential, and the rising range of crowdfunding services and applications, research on crowdfunding is still at the beginning. Especially research on the systematic design of crowdfunding has been very limited. Most notably, Wieck et al. (2013) investigate how information systems for crowdfunding services can be developed, piloted, and evaluated. Besides, some authors aimed at systematizing crowdfunding services (Belleflamme et al. 2013; Bradford 2012; Haas et al. 2014; Massolution 2013). By taking a process perspective, Tomczak and Brem (2013) conceptualized an investment model of crowdfunding by using process modeling technique.

In particular crowdlending has enormous disruptive potential due to its proximity to the traditional banking industry. Due to the direct peer-to-peer intermediation of capital

givers and capital seekers crowdlending reflects a disintermediation of the funding process, as no central institution is needed in order to provide the capital. However, due to prevalent transaction costs – e.g., by the collection of multiple micropayments and the micro repayments – and information asymmetries – e.g., due to the occurrence of information hiding, manipulation, and fraudulent behavior information (Ahlers et al. 2015; Burtch et al. 2016; Cumming et al. 2016; Siering et al. 2016) – intermediaries in crowdfunding are still essential (Bakos 1991; Bakos 1998; Cumming and Zhang 2019; Fehrer and Nenonen 2019; Lin 2015; Mahadevan 2000).

Thus, banks today already have competences, which are necessary to engage in crowdlending, e.g., account management and payment provision. In particular, for incumbents of the banking industry crowdlending can be considered an emergent business opportunity for the utilization of niche markets by building on a modular service system structure (Liebenau et al. 2014). Within a service system, incumbents and partners can bundle their competences to a consistent crowdlending service provision (O'Sullivan et al. 2002). Following the argumentation from service science literature, a CSS can be decomposed into its constituting components such as people, organization, processes, and technologies. Knowledge about these components, their exchange relationships, and inner workings is crucial for systematically designing CSSs comprising multiple people and organization (Baida et al. 2004; O'Sullivan et al. 2002).

3. METHODOLOGY

Applying Action Design Research to develop a Theory of Design and Action

A Theory of Design and Action (Design Theory) provides explicit prescriptions in the form of e.g., methods, techniques, or guidelines for the effective and feasible design of artefacts (Gregor 2006; Gregor and Jones 2007; Walls et al. 1992). A theory of design and action allows for the systematic specification of design knowledge (Gregor and Jones 2007). This is especially valuable in the context of our research project of designing a crowdlending system together with a fintech startup as it is based on insights from the field and the related literature regarding crowdlending and service systems. This allows for the abstraction to a broader class of problems – how to design service systems as an incumbent together with a startup. The systematic development of design knowledge in form of a design theory represents a valuable contribution for both academia and practice

(Giessmann and Legner 2016; Gregory and Muntermann 2014). We follow an action design research approach (ADR), introduced by Sein et al. (2011) in order to develop an initial draft for a nascent design theory for crowdfunding service systems. ADR follows the four interrelated phases of (1) Problem Formulation, (2) Building, Intervention, and Evaluation (BIE), (3) Reflection and Learning, and (4) Formalizing of Learning. For the presentation of the formalized design knowledge we follow the recommendations by Gregor & Jones (2007).

ADR has shown to be a valid method for generating prescriptive design knowledge by developing, evaluating, and reflecting ensemble IT artifacts within organizational research contexts (Giessmann and Legner 2016; Sein et al. 2011). In the course of ADR, a practical concern of people in an immediate problematic situation is addressed by designing a problem solution and piloting this solution as a measure of intervention for this problem. ADR aims at both, making theoretical contributions and providing assistance for the in-field problem-solving of practitioners (Benbasat and Zmud 1999; Rosemann and Vessey 2008). ADR supports the creation of prescriptive design knowledge by analyzing the continuing adaptation of the artifact and the practices of its use, but also by the generalization upon the results of these analyses. ADR comprises an inductive reflection process, which can be formalized into a design theory (2013). As ADR addresses the intersection of IT and social environment it is suitable approach for the design of artifacts that constitutes a bundle of IT-based mechanism embedded in a social environment (Sein et al. 2011).

Action Design Research Context

To shed light on the design of CSSs, we started a research project with a large Swiss bank in December 2013. The bank had scouted crowdfunding for some times, but struggled to find a profitable and valid way to systematically make this new way of funding accessible and to design an own crowdlending service offering. Therefore, an interdisciplinary project team was set up consisting of researchers specialized in crowdlending and service engineering and bank executives specialized in innovation management and banking services. By considering a partnering approach together with a startup, the bank was able to successfully enter the crowdlending market in December 2016.

Our research approach follows the four steps of ADR, as indicated in Figure 1. Within the first step of ADR, we formulize the bank's problem, identify and analyze the related literature, and elaborate the class of problems. Within the second step of ADR, we conduct three design iterations – Initiation, Conceptualization, and Realization – in order to design the banks CSS. Parallel to these steps, we conduct a reflection and learning step, which moves conceptually from building a solution for a particular instance to applying the lessons learned to the broader class of problems. In the fourth step, we formalize these respective learnings and describe a theory of design and action in the form of a design framework, which supports incumbents throughout the systematic design of CSSs with a partner from the digital world.

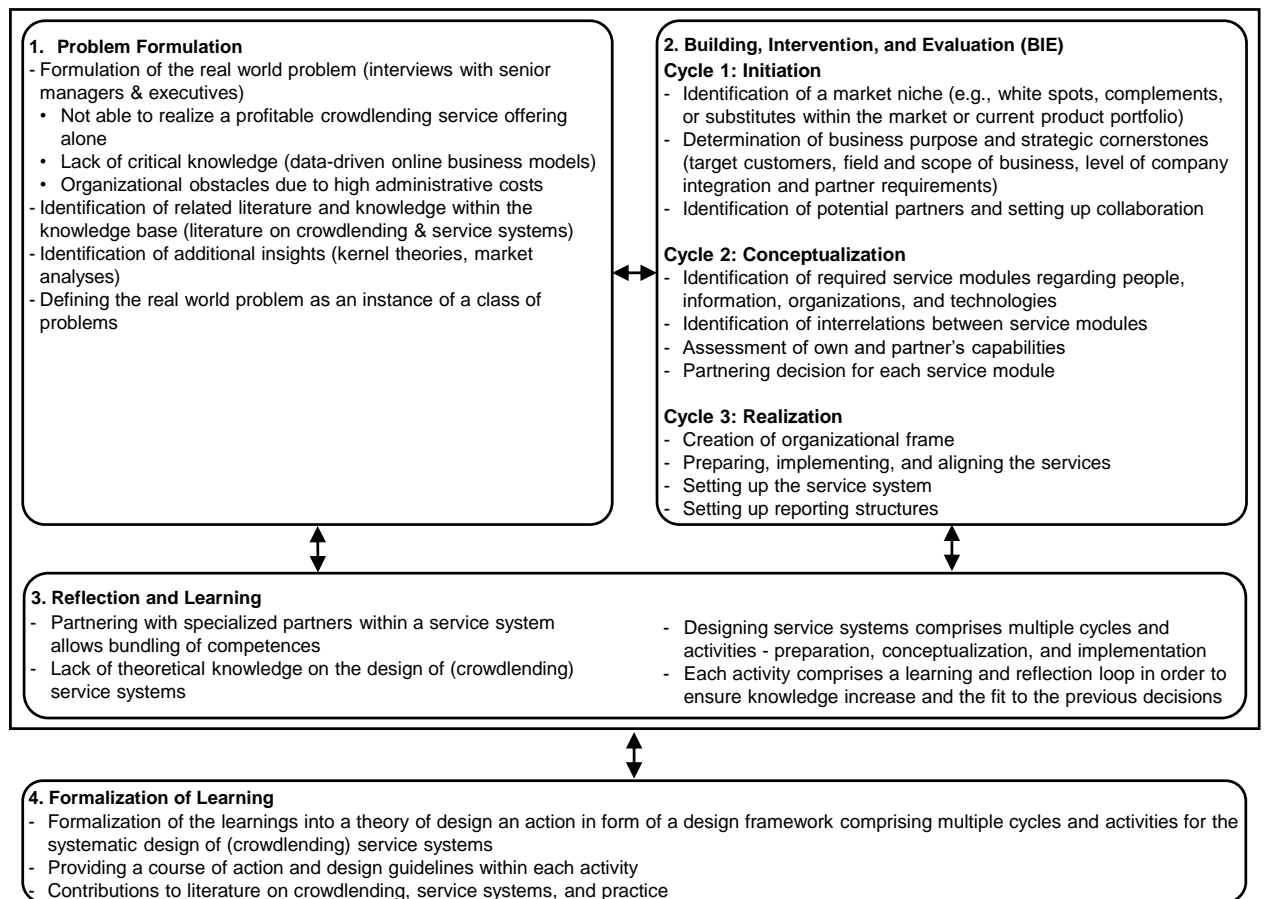


Figure 1: ADR Approach

4. THE COURSE OF THE ADR PROJECT

Problem Formulation

In a first step, we clarified on the bank's challenges with engaging in digital platform business. Therefore, we conducted informal interviews with three senior executives in order to get insights into the bank's previous crowdlending considerations and attempts. The results indicated that the bank previously tried to engage in crowdlending two times. Both attempts followed a do it yourself approach and failed in early conceptualization stages. No profitable business case has been developed due to the lacking critical knowledge regarding online platform business within the bank and due to the high internal administrative and operational costs. Thus, they failed to overlook and cope with the complexity of crowdlending.

Next, we reviewed existing knowledge in order to inform the design of a potential problem solution. Therefore, we reviewed the available crowdlending literature. The review revealed that crowdlending comprises a complex system of interconnected intermediary services, which enable the interaction between capital seekers and capital givers and support successful matchmaking, flow of capital, goods, and information (Belleflamme et al. 2014; Mollick 2014; Wei and Lin ; Zvilichovsky et al. 2013). As banks lack critical competences (Liebenau et al. 2014), collaborating with established crowdlending partners might help to overcome shortcomings regarding crowdlending specific knowledge and expertise. However, as crowdlending is a highly dynamic, differentiated, complex, and context specific phenomenon, existing solutions can't be simply copied, but must be carefully adapted to the specific context. Thus, intense exchange between the incumbent and a partner is needed, in order to design a CSS, which leverages on the expertise of both worlds – traditional & reliable banking and agile, innovative and digital fintech business. As the question of how to enable the mutual design activities between an incumbent and a partner has been largely neglected in the crowdlending literature so far, we extended our scope of literature to the general design of service systems. However, no systematic process for the joint design of service systems has been published so far. Thus, the mutual systematic design of service systems between an incumbent and a startup partner can be defined as a class of problems.

The review of the related literature and the inputs from the bank enabled us to develop a first impression of possible solutions. Therefore, we are aiming to develop an overarching process that captures all activities that are required to design a service system as an incumbent together with a startup. In this vein, we aim at formulating respective learnings and a course of reflection and decision making for each process steps.

Building, Intervention, Evaluation (BIE)

Building on the problem formulation, we develop, pilot and evaluate the CSS together with the bank by running three BIE cycles.

Cycle 1 – Preparation

Building & Intervention

The preparation phase (cycle 1) aims at the identification of a proper market niche (e.g., white spots, complements, or substitutions within the market or current product portfolio). Therefore, we conducted comprehensive market analyses (e.g., PEST, SWOT, and competitor analyses). Additionally, a workshop session with bank representatives from different departments was carried out in December 2013 (N=10), in order to identify market segments that could not be served with the bank's existing service offerings and which might be profitable addressable by means of a crowdfunding service system. Market and literature analyses, workshop results as well as additional six interviews with three senior executives with expert knowledge of banking products, one Swiss self-employment consultancy, as well as representatives of two crowdlending platforms, indicated the same potential market segment – business loans for self-employed and small to medium sized businesses from CHF 10'000 to 150'000. A significant body of research identified liquidity constraints and insufficient access to capital as the most prevailing threat for small and medium-sized businesses (Evans and Jovanovic 1989; Holtz-Eakin et al. 1993; Johansson 2000). Afterwards, a project team was commissioned in order to develop a solution space based on the previous findings (see Table 1). The solution space comprises six specifications of strategic cornerstones.

Table 1: Strategic Cornerstones

| Strategic Cornerstone | Description |
|-------------------------------------|--|
| Business focus | Provision of small business loans |
| Core objectives | Establish a sustainable non-interest-related sources of income, which complements the current product portfolio |
| Desired added value | Positive image effects for the bank regarding the bank's innovativeness and digital leadership |
| Level of organizational integration | Striving for a maximum of organizational independency of the service system from the bank (e.g., rather stand-alone in form of a joint venture; with the opportunity for the bank to up- and down-scale the bank's engagement) |
| Level of operational involvement | No operational integration of bank's business processes (e.g., no consolidated supervision; no service provision by the bank besides standard bank processes; co-branding with bank's logo is allowed) |
| Partner requirements | Successful and established crowdlending business model; German-speaking; experiences with foreign markets; positive image |

In a final step of the preparation phase, a long list of potential partners was screened and reduced to a short list comprising three potential partners. After a first round of noncommittal meetings, the most promising partner was identified and the collaboration for the following development of the CSS was set up. This included legal agreements on the general intention for the collaborative development of the CSS for the provision of small business loans in the Swiss market, mutual exclusivity, and openness regarding business models and operational knowhow, and clauses for the case of a failure of the collaboration.

Evaluation of the Preparation Phase

The evaluation of the preparation phase is threefold - Evaluating the market niche, evaluating the strategic cornerstones, and evaluating the choice of partner. Therefore, a focus group workshop with three senior executives from the bank's product management

with in depth knowledge about the customers, the loan market, and the bank's operational capabilities was conducted in March 2014. The findings regarding the market niche, the solution space, and the choice of partner have been presented to the focus group. The focus group was asked to assess the findings validity, accordance to the bank's strategy and intentions, and feasibility based on resources and capabilities. The focus group confirmed the increasing demand of the capital seekers for alternative forms of funding with independency against banks (e.g., fewer securities necessary, no loss of control), less bureaucracy (faster and more transparent decision-making), higher flexibility (quicker payment dates), and the access to capital for niche markets, which are not served by banks. In this sense, they validated small to medium companies as a suitable target group, as they experience major obstacles, when applying for loans via traditional ways of funding. These are caused due to the high risk, low profitability, and the high administration costs. Anyhow, this target group represents a desirable market niche, due to its economic importance and high potential for up- and cross-selling. Therefore, crowdlending was evaluated a viable approach for complementing the bank's product portfolio. Due to the lack of experience with crowdlending and its impact in the financial service industry with regard to reputation and disruption, the proposed reduced initial operational involvement and the low level of organizational integration was evaluated an ideal approach for managing the reputational risks for the bank. Therefore, the focus group evaluated engaging with an experienced partner a solid approach to achieve the core objective and the added value. Thus, the evaluation of the focus group was rather positive, and therefore, the advancement of the project was decided.

Cycle 2 – Conceptualization

Building & Intervention

The conceptualization phase (cycle 2) aims at designing the CSS by building on and learning from the partner's business model, experiences, and operational knowledge in order to overcome the complexity of the CSS. In order to enable the mutual design of the CSS, the project team was extended by representatives of the startup. Thus, the CEO (as an expert of the business model), the General Counsel (as an expert in legal and regulatory issues), and the Head of Business Development (as an expert of market development and internationalization) joined the project team. In order to overcome the

complexity and successfully adapt the partner's expertise to the specific context, certain methods were applied to the partners existing CSS. In order to analyze the customer's expectations (customer journeys, storytelling), and for identifying the required services regarding people, information, organizations, and technologies as well as the interactions between the services and stakeholders.

As services are a set of processes being part of the interactions between the components of service systems (Chesbrough and Spohrer 2006; Peters et al. 2015b), a process perspective was taken first in order to identify the service modules. We applied "Business Process Model and Notation" (BPMN 2.0) (Dijkman et al. 2008; White 2004) and Service Blueprinting (Fließ and Kleinaltenkamp 2004) in order to model the level of customer involvement. Thereby, we were able to identify the stakeholders, involved in the service provision. Second, we aimed at deriving the respective service modules. Therefore, we grouped all processes according to their respective owner ("who is responsible for the execution?"), their proximity ("how similar are the tasks and objectives of the processes?"), and their level of customer involvement ("how close are capital seekers and capital givers involved in the process?"). The analyses led to the identification of twelve constituting service modules, which form a CSS (see Table 2).

Table 2: Overview of Services

| Service Modules | Description |
|--------------------------|---|
| Matchmaking | An e-market place is operated in order to interconnect capital seekers & givers, create thick markets, to provide information, and to register funding decisions. |
| Contracting & Compliance | After the funding goal is reached, automatized and standardized online contracting is provided in order to ensure legal liability and compliance. Until the full repayment of the capital the compliance to the contract is tracked and assessed. |
| Customer Support | Crowdfunding is a more unbureaucratic way of funding. Therefore, certain activities are performed to enhance the customer relationship in order to overcome initial barriers, to clarify customer issues, and support the customer journey of capital givers and capital seekers. |
| Risk Assessment | Crowdfunding services rate risks related to the capital seeker by tracking credit-, trustworthiness, and project history. Traditional forms of risk scoring are extended by analyzing additional behavioral information (time tracking, project description). |
| Authentication | In order to meet legal regulations (Know Your Customer – KYC), prevent fraud, |

| | |
|---------------------------|--|
| | and reduce risks for capital seekers and givers, crowdfunding services apply comprehensive online identification and authentication processes. |
| Crowd Activation | Crowdfunding services perform the attraction, activation, and balancing of the 'right' crowd in order to ensure funding success, attractive returns and to generate network effects. Therefore, promotional activities (especially via social media) are performed. |
| Investor Relations | Crowdfunding is a more transparent and democratic way of investing. Therefore, certain activities enable instant and constant communication between the capital seekers and capital givers in order to extend the investment engagement of capital givers (e.g., performance and quality tracking of projects or investment portfolios). |
| Payment Processing | To enable a fast, reliable, and efficient flow of money between capital seekers and givers as well as the skimming of the platform fees, automatized (online) payment functionalities are provided. |
| Banking | Banking services for inter alia account management, the credit processing, the collection and provision of the capital (Pooling), and exclusive access to credit information are implemented. |
| Dunning & Debt Collection | In case of debt default effective dunning and debt collection services are needed in order to prevent or minimize the risk of investment losses. |
| IT Operations | The service provision of the CSS is enabled by a high level of interconnectivity and exchange relationships between the service modules. All service modules are characterized by a high level of automation and enabled by sophisticated IT support. |
| Corporate Development | By taking a management perspective, the orchestration between the service modules as well as the creation of an organizational and operational frame for a consistent service provision is crucial for a functioning and success service system. |

Further, the service modules were grouped according to their business function within the value creation of the service system. Therefore, we assessed, whether the service modules support Management, Service (including Sales, Operation, Transaction-related, Cross-Transaction Activities), or Supporting Activities (Alt et al. 2009) (see Table 3).

Table 3: Business Function of Service Modules

| Activities | | Service Modules |
|-----------------------|--------------------------------|---------------------------|
| Management Activities | | Corporate Development |
| Service Activities | Sales Activities | Crowd Activation |
| | | Customer Support |
| | | Investor Relations |
| | Operation Activities | Matchmaking |
| | | Risk Scoring |
| | | Contracting & Compliance |
| | Transaction-related Activities | Payment Processing |
| | | Dunning & Debt Collection |
| | Cross-Transaction Activities | Executing Banking |
| | | Authentication |
| Supporting Activities | | IT Operations |

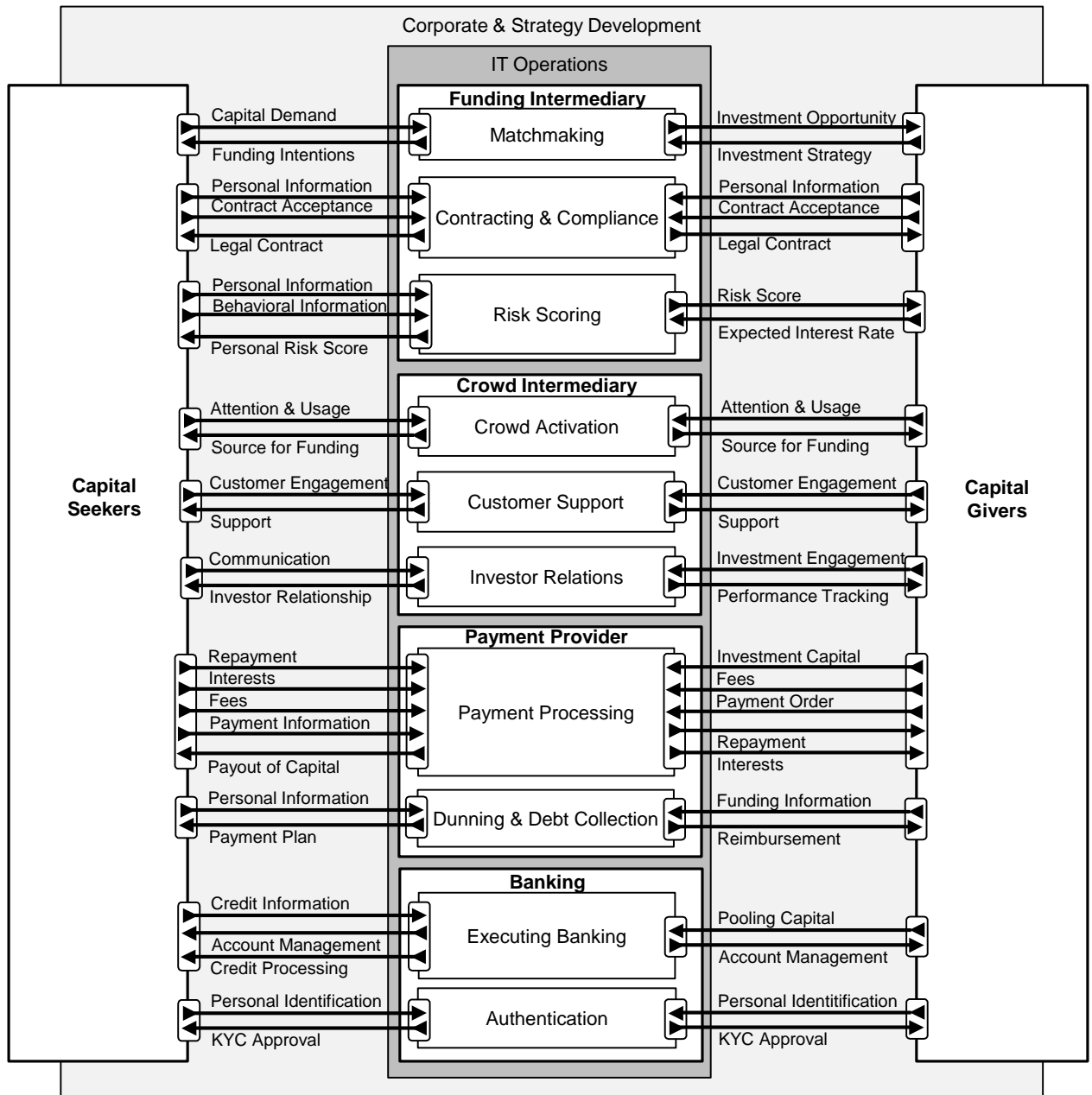
Two service modules – Corporate Development and IT Operations – focus on the surrounding environment, while the others are part of the core value creation. By considering their respective position within the value creation and their responsibilities, we derived four separate roles, which have to be assumed in order to enable the service provision within the CSS (see Table 4). Each role bundles a set of similar service modules, which require similar competences. Therefore, these roles represents a logical structure for determining responsibilities within a service system and making outsourcing decisions.

Table 4: Roles within Crowdlending Service Provision

| Role | Service Module |
|----------------------|---------------------------|
| Crowd Intermediary | Crowd Activation |
| | Customer Support |
| | Investor Relations |
| Funding Intermediary | Matchmaking |
| | Risk Scoring |
| | Contracting & Compliance |
| Payment Provider | Payment Processing |
| | Dunning & Debt Collection |
| Banking | Executing Banking |
| | Authentication |

Following, we modelled the service system, by using e3 Value (Gordijn 2002) modelling technique. Therefore, we modelled the various value exchange relationships between the roles and capital seekers and givers, regarding the respective service modules (see Figure 2).

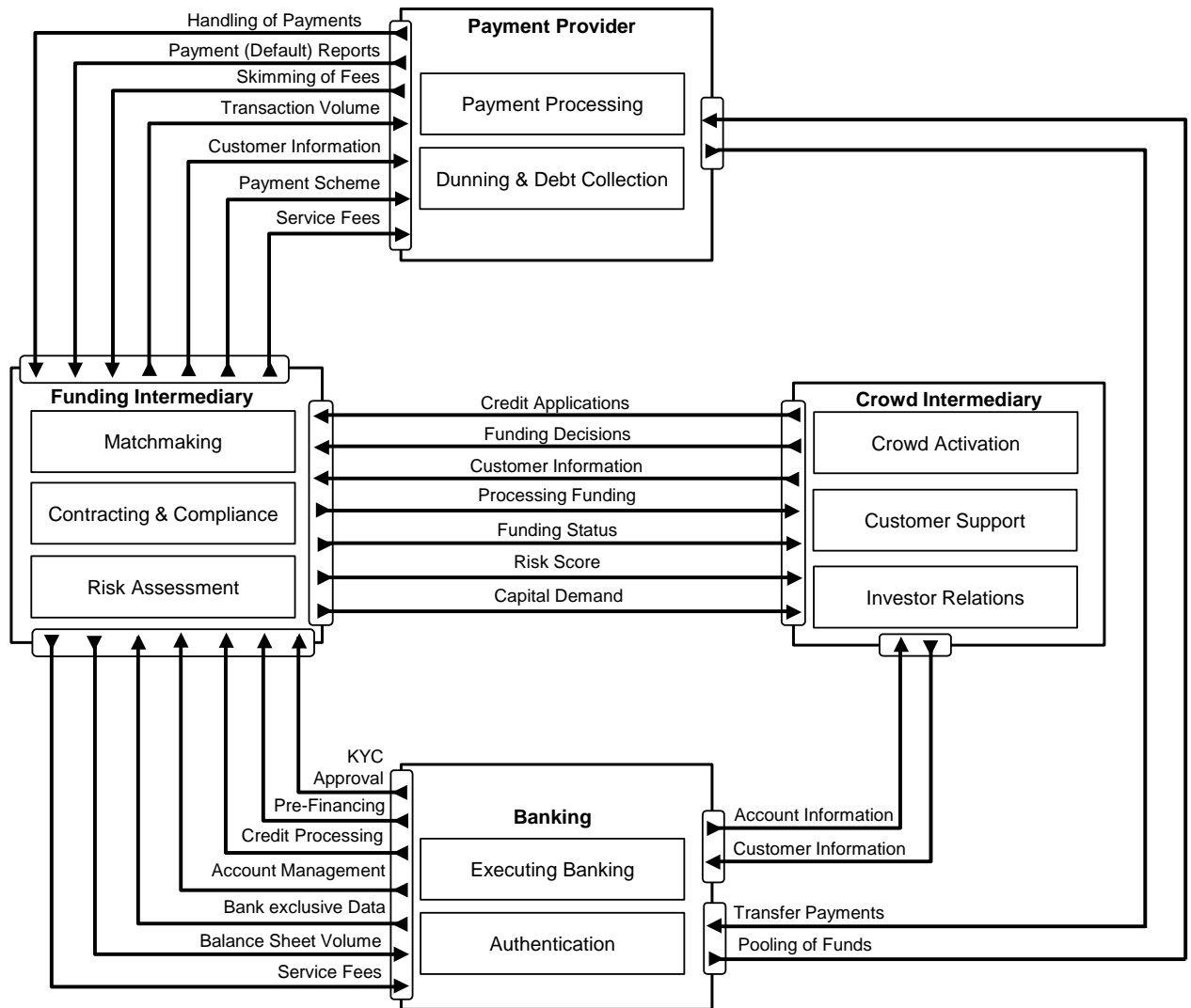
Figure 2: Customer Exchange Relationships



Nevertheless, the interaction between the roles, in order to fulfill the service provision, remains rather a black box. Therefore, we modelled the value exchange relationships between the roles, considering the comprising service modules (see Figure 3). This modelling turns the black box into a white box and reveals the high complexity and

interconnectivity of the service system. It also indicates the required high degree of specialization of the single roles in order to enable the service provision of the respective service modules. Even though, all roles are necessary in order to enable the service provision within the CSS, the role of the Funding Intermediary seems to be the most pivotal role. The Funding Intermediary role orchestrates the overall service provision, while the other roles take over supporting roles.

Figure 3: Value Exchange Relationships between Roles



The derived roles and the respective crowdfunding services are assessed whether they have the potential to be performed by the bank itself based on skills, experiences, legal necessity, power to act, and strategic objectives. Therefore, interviews and workshop

settings with experts from different departments (e.g. risk management, compliance, business development, product management and marketing) are conducted. Services, which are new and beyond the experiences, competences, or strategic objectives of the bank, need to be performed by the partner or a third party. Thus, by conducting detailed negotiations between the bank and the startup, a partnering decision was made for each service module, resulting in the final conceptualization of the CSS. The bank decided only to oblige to the Banking role.

Evaluation of the Conceptualization Phase

The evaluation of the conceptualization phase focusses on completeness and organizational and legal compliance. Therefore, in a first step we evaluated the completeness of the identified service modules comparing the list of the identified service modules with 26 crowdlending platforms, which were identified by an online search. The online search was conducted via Google between March and October 2016. Search criteria included that the CSS: 1) is active; 2) is in German or English language; 3) provides the necessary information on the website; and 4) can be assigned to crowdlending (e.g., by using the terms like “crowdlending”, “Peer-to-Peer-Lending, or “Social-Lending”). By reviewing the provided information regarding the crowdlending processes, we identified a very high homogeneity in the operated service modules and executed roles, which indicates a high level of completeness. However, large variations of the processes and the involved partners exist on a micro level most due to different legal requirements (e.g., personal vs. digital authentication, formal necessity of banks as financial intermediary, or degree of automation and digitization of contracting).

The conceptualization of the crowdlending services system was evaluated formatively by two focus group workshops with senior and top-level executives. Both positively evaluated the organizational compliance of the service system to the bank’s strategy and competences, its expected profitability and positive image effects, as well as its stand-alone capability. Further, Swiss Financial Market Authorities positively assessed the legal accordance of the proposed service system.

Cycle 3 – Implementation

Building & Intervention

After the conceptual approval of the banks and the start up's executive and supervisory boards the implementation phase (cycle 3) started by setting up the organizational frame. Therefore, building on the previous negotiations between the bank and the startup, a joint corporation was founded. As these negotiations were mostly performed by legal advisors, which haven't been involved so far, conflicting views, which have been avoided so far, came up. Thus, formalizing the conceptualization on a contractual level represents a critical point, which can be avoided by creating a sense of togetherness, early involvement of legal experts, addressing critical topics during the conceptualization phase, and provide and comply effective decision-making processes on both sides. Additionally, reporting structures were defined, by identifying the relevant stakeholder's within the bank and their respective strategies and objectives. Afterwards KPIs have been derived and transformed into a balanced scorecard, which was implemented by defining reporting processes and determining the people in charge. The regulatory approval was obtained by the Swiss market authorities. Finally, the organizational framing has been approved by the bank's executive board and supervisory board. Therefore, the final concept and the organizational framing have been presented and discussed in November 2016.

In order to setting up the service system agile methods were applied. Thus, the service modules were implemented and the service system was set up by aligning and interlinking the single services. In this vein, the CSS was transferred from the project phase to normal operation. Thus, the responsibilities were transferred from project team to the operating staff. Besides, marketing activities started in order to attract pilot capital givers and seekers. Afterwards, the CSS became operational and started its open beta-phase with a limited number active capital seekers from January to March 2017.

Evaluation of the Implementation Phase

The evaluation of the Implementation phase focusses on the performance of the CSS and the outcomes of pursuing a partnering approach for the systematic exploitation of digital innovation in general.

Therefore, the results of the open-beta phase have been critically assessed. Due to the ex-ante marketing activities, a total of 80 capital seekers with a demanded capital volume of Mio CHF 3.5 applied on the website for a loan. By applying the risk scoring processes six pilot capital seekers with a total volume of ca. CHF 300'000 have been approved for applying for a loan throughout the open-beta phase. 100 percent have been funded within a 2-3 weeks period only by private capital givers followed by successful contracting and payout. So far, no repayments continue as planned with no debt defaults. The findings of the open-beta phase indicate an excellent performance of the CSS and the constituting service modules. Due to the success of the open-beta phase, the final go-live was approved in June 2017.

Besides, the project sponsor was interviewed with regard to the general satisfaction with the partnering approach and the impact of the project. The interview was conducted in May 2017 by telephone. The expert has been asked questions about the overall satisfaction regarding the project in general, the outcomes, and the partnering approach.

The answers revealed that the project's impact exceed the initial expected scope, as it has built awareness for the need for a cultural change in order to be capable for the new competitive arena of digital business. Therefore, partnering becomes a necessity not only to keep pace with new competitors but also to exploit new markets and opportunities. Therefore, the bank's culture, competences, IT infrastructure, business processes, and resources have started to be reorganized in order to empower the mutual exploration of new topics of interest with external partners. Thus, the project's contribution not only comprises the development of a CSS, but a deep impact in the bank's future strategy.

Reflection & Learning

Parallel to both, the Problem Formulation and the BIE activities, this step moves conceptually from building a solution for a particular instance to applying that learning to a broader class of problems – how to systematically enable the design of service systems between an incumbent with a startup. Thus, the step focuses on reflecting the results of the Problem Formulation and the different BIE cycles. Reflections and learnings regarding the Problem Formulation phase illustrated the necessity to collaborate with a specialized partner within a service system in order to bundle competences and revealed

the lack of theoretical knowledge regarding the systematic design of service systems. Reflections and learnings regarding the BIE phase revealed that designing service systems comprises multiple design cycles and activities. Each activity revealed respective lessons learned, which can be translated into prescriptive design guidelines. Further, each activity comprises learning and reflection loops in order to ensure knowledge increase and the fit to the previous design steps.

Formalization of Learning

In the final step of ADR, the learnings are consolidated in order to provide contributions to the respective class of problems of how to design CSSs. Therefore, we developed an initial draft for a theory of design and action (Gregor 2006; Gregor and Jones 2007) in form of a design framework for the systematic design of CSSs. In order to develop the framework, we started by preparing the initial course of action. Therefore, we reflected the conducted activities within each of the three design phases – Initiation, Conceptualization, and Realization. Three researchers independently grouped them according to the activities' common theme, in order to identify the five design steps. After the consolidation of the design activities into a consistent design process, we conducted expert interviews with four involved senior managers of the bank (Innovation Management, Project Management, General Counsel, and Corporate Venturing) and the Business Development Manager of the startup in order to collect their feedback on the process and their experiences regarding each design step. Their statements identified specific lessons learned regarding each design step as well as the necessity of a reflection loop after each design step, in order to assess the outcomes' fit to the initial requirements, objectives, and potentials.

Evaluation of the Theory of Design and Action

In order to evaluate the proposed design framework as an initial step for a nascent theory of design and action, we conducted five interviews with experts, which already participated in the design of a service systems, where an incumbent collaborated with a partner from the digital world. All experts came from different contexts, which ensures good generalizability of the results (see Table 5). The interviews were held face-to-face, via Skype, and telephone during May 2017.

Table 5: Overview Experts

| Expert | Context of Service System | Incumbent | Partner from the digital world |
|---------------|--|------------------------|---------------------------------------|
| #1 | Crowdlending of SME loans | Bank | Crowdlending platform provider |
| #2 | Business model innovation | Software provider | Ideation platform provider |
| #3 | Crowdfunding for startup incubation | University accelerator | Crowdfunding platform provider |
| #4 | Crowdsourced software testing | Insurance company | Crowdtesting platform provider |
| #5 | Platform-based intermediation of human-centered services | Care service provider | Intermediation platform provider |

First, the experts were asked to report about their design approach, their course of action, and respective lessons learned. Thereby, all experts confirmed the three phases of Initiation, Conceptualization, and Realization. Afterwards, the proposed nascent theory of design and action, respectively the design framework, was presented step by step and the experts were asked to give feedback regarding comprehensiveness, usefulness, and applicability.

The experts evaluated the design framework to provide major support for the systemization of the design approach and valuable insights on the critical obstacles in order to ensure an effective and efficient design. The experts mentioned that the lack of a systematic design approach led to repeated distractions of the design activities, significant delays and a waste of money and resources. The experts rated the design framework to enable a more focused and thoughtful design. Following, a mutual design approach together with a partner from the digital world, was evaluated as the most efficient and effective way for the sustainable exploitation of the opportunities of new service systems. This approach allows leveraging mutual strengths and synergies. Further, the expert gave valuable comments for improving the comprehensiveness, which were carefully integrated in the final version of the design framework.

5. THE CROWDFUNDING DESIGN FRAMEWORK

Overview

Throughout the formalization of the learnings, we consolidated the experiences regarding the design process. In the style of our research approach with the three BIE phases Initiation, Conceptualization, and Realization, we were able to identify a systematic design framework for the design of CSSs. This framework comprises a systematic design process of five interrelated design steps - Preparation, Partnering, Exploration, Design, and Implementation. Additionally, each step comprises a reflection loop, which helps to reconsider the fit to previous requirements, assumptions and objectives. Finally, for each design step respective lessons learned are presented, which represent prescriptive design knowledge and illustrates a course of action for the successful design of CSSs. An overview of the CSS design framework can be seen in Figure 4.

The CSS design framework represents an initial step for the development of a nascent “*Theory of Design and Action*” (Gregor 2006; Gregor and Jones 2007) as it provides explicit design knowledge in the form of a five stage design process, accompanied by a course of action and respective lessons learned for the design of CSSs (Gregor 2006; Gregor and Jones 2007; Walls et al. 1992). It is not the aim of the proposed design framework to provide a comprehensive methodological toolbox for each design step individually, but to present an overarching design process and specific lessons learned for supporting the systematic and effective design of CSSs. Therefore, the proposed design framework propagates the early integration of potential partners (e.g. startups), in order to enable mutual learning and the exploitation of an optimum of synergies.

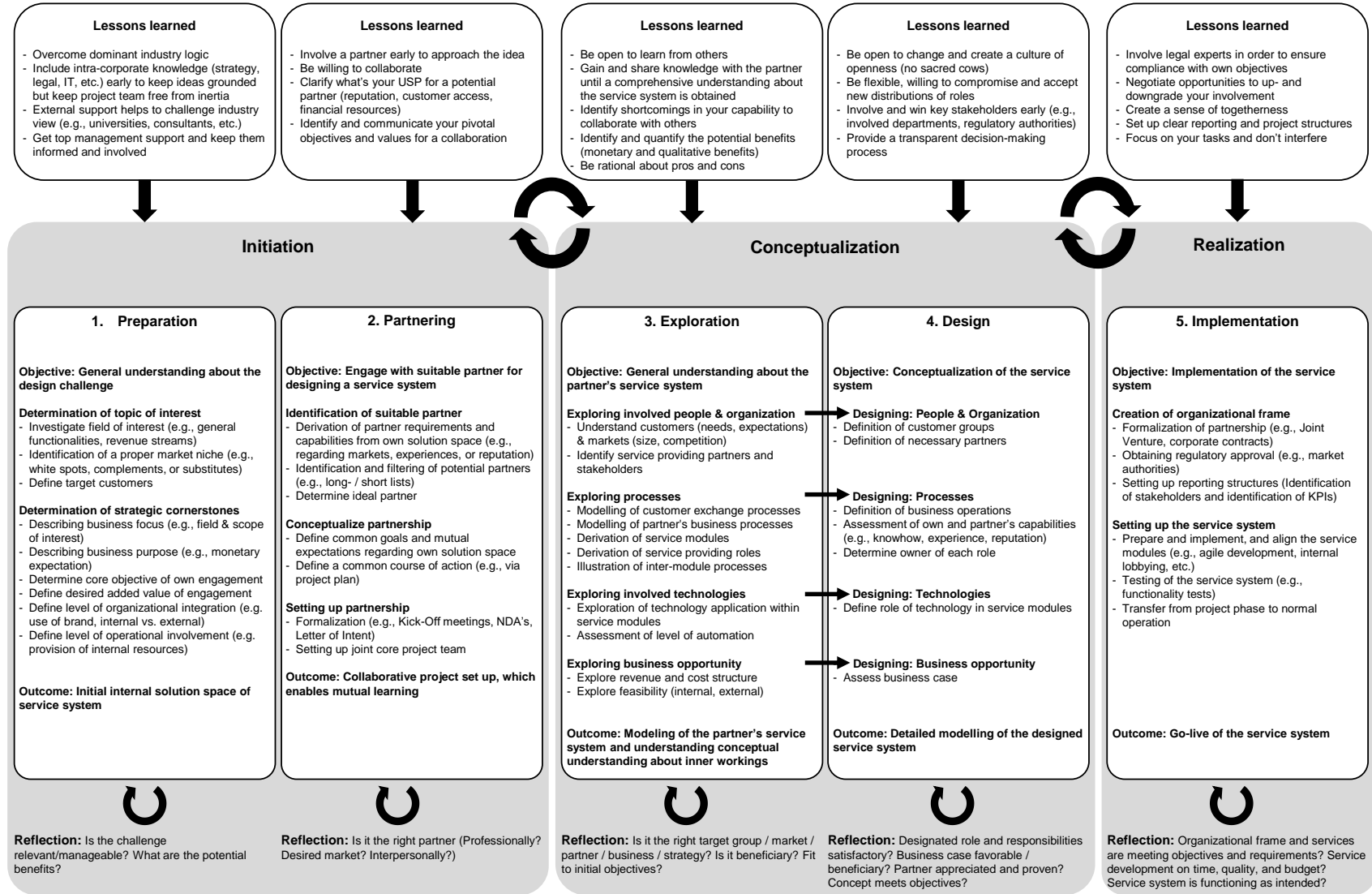


Figure 4: Overview Service System Design Framework

Initiation Phase

The Initiation Phase is the starting point for an incumbent, which plans to systematically design a service system with a partner from the digital world. This phase comprises two design steps – 1. Preparation and 2. Partnering. The objective of the initiation phase are to get a general understanding about the design challenge and the engagement with an appropriate partner for the design of the service system.

1. Preparation

The initial detection of a topic of interest, which should be approached together with a partner from the digital world is the prerequisite of the proposed design process. This general interest in the phenomenon has to be transferred into an actual market definition. This market definition has to identify a proper market niche, e.g., by identifying white spots, complements, or substitutes within the market or the current product portfolio. Thus, specific customer groups have to be identified in order to keep the design focused. Besides, strategic cornerstones have to be defined during this step. Therefore, it is crucial to determine the specific business focus and the business purpose, e.g., whether the service system aims at gathering experiences with digital online-business or whether monetary expectations are pursued. Throughout this clarifications, the core objective as well as the added value of engaging in the service system has to be determined. Further, it is necessary to determine the organizational integration of the service system and the level of the company involvement. Thus, decisions regarding how close the service system should operate next to current products (e.g., M&A, joint ventures, financial participation, or mere cooperation) and how deep the incumbents plans to be involved in the operational service provision (e.g., use of logo, customer data, strategic / operational infrastructure) should be defined.

Preparing the upcoming design steps is a tough challenge, as it requires overcoming the dominant industry logic. The inclusion of external support like e.g., universities, consultants, etc. helps to include external and neutral experts and thus, challenge dominant industry or company views. However, in order to ensure the effectiveness of the design, it is necessary to keep the nascent ideas grounded. Therefore, it is helpful to consult broad intra-corporate knowledge and experts from different departments like e.g., strategy, legal, IT, etc. However, by relying too much on these experts might cause problems to overcome industry logics. Thus, the project team should be kept free from inertia. Therefore, top management support is crucial in order to balance visionary thinking and grounding ideas.

After developing a general understanding about the market and the defined solution space of the pursued service system, the project team should reflect, whether the topic is actual relevant, whether the design challenge is manageable, and whether the potential benefits and opportunities meet the requirements and outweigh the potential threats. This reflection serves as basis for a decision of whether the design should continue to the next step, or whether it should be revised or terminated.

2. Partnering

If the preparation step was performed successfully, the next step focuses on identifying a suitable partner and setting up a collaboration, which enables the mutual design of the service system. Grouping together in such an early stage is useful in order to enable quick knowledge transfer, exploiting mutual synergies, and overcoming industry and company bonds. Therefore, in a first step, partner requirements have to be determined regarding the partner's current markets, business model, reputation, or previous experiences with e.g. internationalization, cooperation, or regulatory issues. Additionally, it is important to identify the own strengths, which potential partner's might desire to gain through a cooperation (e.g., reputation, customer access, customer base, financial resources, etc.), and what the own weaknesses are in order to bridge the gap. To know the own realistic value and to develop a strong value proposition for potential partners is crucial for achieving strong bargaining power. However, for many incumbents it is hard to accept that collaborating with growth companies make them the junior partner in the co-operation, as they barely have operational knowledge and are depending on the partner's knowledge. Based on the requirements potential partners can be identified by screening the market and a long list can be put together. By assessing the potential partners on the long list regarding additional requirements or a more fine grained analyses, a short list of a few suitable partner can be created. The potential partners on the short list should be prioritized and an initial contact established via a non-committal exchange in order to assess the fit to the intended strategy, pivotal objectives, and intentions and to identify the ideal partner.

After determining the ideal partner, the partnership should be conceptualized. Therefore, the incumbent's solution space has to be evaluated with the partner's expectations and revised if necessary. Following, common goals and a common course of action has to be defined. If both parties agree to the common intention, the collaboration should to be formalized. Therefore, a joint project team comprising

know-how on the market, business operations, regulation and compliance issues, and financial planning has to be set up and officially sworn in. In order to show mutual commitment and setting the boundaries of the collaboration Non-Disclosure Agreements (NDA) and a Letter of Intent (LoI) can be signed.

The progress throughout the partnering step should be continuously reflected, in order to assess whether it is really the right partner in terms of requirements, expectations, and shared intentions. Otherwise, a new partner has to be identified or even the own solution space revised. If the partnership has been formularized, the next design step can be approached.

Conceptualization Phase

The Conceptualization Phase builds on the results of the Initiation Phase and aims on actually developing the service system. This phase comprises two closely interrelated steps – 3. Exploration and 4. Design. Both activities follow the four elements of service systems – people, organization, processes, and technology. Thus, the objectives of the conceptualization are achieving a general understanding about operating a service system and its constituting elements, and afterwards, designing the service system.

3. Exploration

After setting up the partnership, the aim is to explore the partner's service system. In order to explore insights regarding people the partner's customers, their needs, expectations and requirements have to be analyzed. Following, this insights have to be transferred and validated at the target market, also considering the actual and potential market size, the competitive situation, and legal and regulatory situation.

In order to explore insights regarding organizations, the involved stakeholders of the partner's service system have to be identified.

In order to gain insights regarding constituting processes and the inner workings of the service system four steps have to be conducted. 1) The partner's business operations have to be explored by modelling all customer exchange and service processes. 2) By grouping the processes based on ownership ("who is responsible for the execution?"), their proximity ("how similar are the tasks and objectives of the processes?"), and their level of customer involvement ("how close are customer groups involved in the process?") a set of service modules can be identified. 3) By grouping the identified

service modules according to their business function within the value creation of the service system - management, service (including sales, operation, transaction-related, cross-transaction activities), or supporting activities – the constituting roles of the service system can be defined. 4) Finally, the inter-role relationships can be modelled in order to gain insights in the inner workings of the service system.

In order to explore the role of technology within the service system, the application of technology in each service module and the level of automation have to be assessed.

In order to ensure the effectivity of the exploration together with the partner, it is necessary to be willing to learn from the partner in order to acquire expert knowledge from the partner. In this vein, own shortcomings in the capability to collaborate with others and running a service system can be identified.

Insights regarding the business opportunity can be explored by analyzing the revenue and cost structure and conducting analyses regarding the internal (e.g., financial capabilities, monetary expectations, and available resources) and external (e.g., legal and regulatory issues) feasibility.

Throughout the reflection of this step, the conducted activities and assumptions so far should re-evaluated. In this vein, one should assess, whether the focus lies on the correct target group and market, and whether the right strategy and business objectives are pursued. Additionally, during achieving a comprehensive understanding about the design challenge and the service system it is necessary to reflect, whether it is still the right partner and whether it is beneficiary to further engage or not.

4. Design

During the final step of the conceptualization phase the actual design decisions of the service system is performed based on the gained knowledge of the exploration phase. Therefore, decisions regarding the explored four elements of service systems have to be made.

With regard to people and organization the precise customer groups and the necessary partner have to be defined. Concerning the processes and inner workings, the explored knowledge has to be transferred to the incumbent's context and solution space. Therefore, the incumbent's and partner's capabilities regarding each service module have to be assessed based on strengths and weaknesses (e.g., knowhow, experience,

and reputation). After assessing the capabilities and the alignment of the capabilities with the prerequisites, defined in the solution space, the optimal ownership of each role has to be determined. In order to determine the ownership it is crucial to be willing to compromises, to create a culture of openness, and to accept new distributions of roles and operational influence. Further, design decisions regarding the role of technology in the service modules. In this way, an overall conceptualization of the service system emerges, which comprises all stakeholder, service modules, and exchange relationships. Building on this conceptualization, the business opportunity can be assessed, based on a business case, which serves as basis for the implementation of the service system. In order to ensure fast design progress, key stakeholders (e.g., internal departments, regulation authorities, etc.) should be kept informed and all participating stakeholders should provide transparency regarding their decision-making processes.

Throughout the reflection, it is necessary to ask oneself, whether the designated role and responsibilities are satisfactory and whether the proposed business plan is favorable and beneficiary regarding the own objectives. Additionally, the reflection loop should assess whether the designated partner is still appreciated and the expectations are proven.

Realization Phase

The Realization Phase comprises the final step of the service system design process - 5. Implementation. The Implementation step focuses on managing the go live of the service system.

5. Implementation

The final design step, focusses on the implementation of the service system. In this vein, the organizational frame has to be created. Therefore, the partnership has to be formalized by concluding the necessary contracts (e.g., joint venture or corporate contracts), obtain the regulatory approval by the market authorities, and setting up appropriate reporting structures. Thus, the collaboration ensures an effective, efficient and compliant service provision. Throughout the contractual negotiations the early involvement of experienced legal advisors is pivotal in order to enforce the conceptualized and intended design. However, the formalization of the conceptualized service system, remains a critical point, as crucial decisions have to be made regarding conflicting views, which have been avoided so far. This might cause revisions of the

conceptualization and delays of the implementation process. In order to overcome differences (e.g., different expectations of strategies, roles and responsibilities) a sense of togetherness shall be created.

Besides the organizational framing, the services needs to be prepared, implemented and aligned in order to perform the service provision within the aggregated service system. Afterwards, the service system can be set up and tested. After agreeing to roles and the distribution of responsibilities every partner should focus on their tasks and don't interfere others, except through the agreed ways, which were defined in the organizational frame (e.g., the supervisory boards).

Throughout the reflection, the organizational frame and services needs to be critically assessed, whether they meet the own objectives and requirements. Further, the implementation and the service development itself needs to be reflected and evaluated with regard to time, quality, and budget. Finally, the service system needs to be evaluated, whether it is functioning as intended or not.

6. CONCLUSION

Contributions and Discussion

Our research objective was to develop an empirically based design framework as an initial step for the development of a nascent theory of design and action, which supports incumbents in designing service systems together with a partner from the digital world. In order to solve this class of problems, we conducted an ADR project to develop an instantiated solution based on the case of crowdlending in the financial service industry. We were able to design a CSS by pursuing a systematical and iterative design approach, which builds on the mutual exploration together with a crowdlending platform provider. By formalizing the reflections of each ADR step, we described the aforementioned initial step for the development of a nascent theory of design and action. Based on our research objective, this study presents two major theoretical contributions.

First, we contribute to crowdlending research by providing an illustrative case for the systematical design of an innovative CSS, which has been largely neglected so far. Our findings show that despite crowdlending reflects some kind of disintermediation in the financial service industry, due to information asymmetries and transaction costs intermediaries remain necessary (Bakos 1991; Bakos 1998; Cumming and Zhang

2019; Lin 2015; Mahadevan 2000). However, crowdfunding intermediation exhibit three fundamental differences compared to traditional financial intermediaries. (1) Funding decisions and activities are no longer reserved to professional financial institutions (e.g., banks or venture capitalists), but democratized by opening up to every individual with Internet access and the required financial ability (Belleflamme et al. 2014). Anyhow the dynamics of capital giving on crowdfunding is consistent to traditional forms of funding with strategically acting capital givers looking for quality return with manageable risk (Berns et al. 2018). (2) They provide funding for projects that have limited access to traditional forms of funding due to high investment risk and/or low profitability expectations and that may reflect the long tail of the financial service industry (Liebenau et al. 2014; Schwienbacher and Larralde 2012). Crowdfunding intermediaries make extant use of information technology aiming at serving such projects profitable (e.g., co-creation based on web 2.0 approaches, big data analytics, or process automatization) (Haas et al. 2015). Thus, crowdfunding is based on platform principles, which bring network effects to the fore while other characteristics of traditional funding become less important (Belleflamme et al. 2015; Belleflamme et al. 2018). (3) As opposed to traditional financial intermediaries, crowdfunding intermediaries are not involved in the actual funding process. Crowdfunding intermediaries serve as matchmaker by linking capital seekers and givers directly and by enabling them to exchange capital and value for which they provide the technical or organizational infrastructure on an online platform and ensure quality of the proposed projects (Cumming and Zhang 2019; Fehrer and Nenonen 2019; Liebenau et al. 2014).

Therefore, we extend current research on the functional conceptualization of crowdfunding (Beaulieu et al. 2015; Belleflamme et al. 2014; Tomczak and Brem 2013) by considering crowdlending as a modular service system. Therefore, we decompose the CSS into service modules. The modular decomposition enables the bundling of traditional capabilities of a bank and the novel capabilities of external partners within a CSS, as suggested by Christensen and Raynor (2013). The modular perspective further reveals that crowdlending is not an entirely new way of financial service provision but due to IT and the Internet traditional service modules of financial intermediation (e.g., payment, banking) can be combined with novel service modules (e.g., matchmaking) effectively in order to create innovative CSSs. Thus, we identify twelve constituting service modules, which are performed by four service providing

roles within the CSS. Further, we describe the service module on a process level, by modelling the exchange relationships, and business operations of the involved stakeholders, partners, and roles of CSSs. This in-depth insights in the modular structure and the inner workings of CSSs enables the exploitation of traditional modularization benefits such as flexibility, reuse, variability, and module-wide innovation (Böhmman et al. 2008).

Second, by reflecting and formalizing the single design steps and iterations the ADR approach enables us, to contribute to service science, which calls for “*research, leading to actionable knowledge for systematically designing, developing, and piloting service systems*”, for a multi-stakeholder system perspective and for the provision of according tools and methods to manage them (Böhmman et al. 2014c). Therefore, we are providing a design framework as an initial step for the development of a nascent theory of design and action (Gregor 2006) in form of a multi-step design framework for the systematic design of modular service systems, comprising respective design guidelines and a course of action. As this framework builds on the four categories service system`s research focuses on, namely people, processes, technology, and organization, we are able to contribute by extending the existing body of knowledge in these areas. For the first time, systematic design knowledge for not only services, but service systems and its underlying engineering mechanisms are presented. While past and current literature focused on contributions for either systematic design of services or service innovations or taking a system`s perspective, we combine these two streams. From a general perspective, this is how we contribute to the design of service systems that is relevant for all settings where the experience of incumbents and the innovative and agile character of startups are key to success and need to be combined. This addresses a class of problems that is particularly relevant in the realm of digital transformation where dyadic provider-customer relationships are replaced by partnering approaches as in our ADR project. Through the ADR project, we outline a specific setting in the context of fintech and corporate venturing. Further, the design framework illustrates how new service systems can be formed around single existing or new services and how module-wide innovation can be achieved.

For practice, this paper provides guidance for incumbents throughout the systematic design approach of new service systems together with partner from the digital world. This might encourage incumbents and new market entrants to systematically develop

innovative service systems and exploit white spots together. Therefore, this study provides a five step design framework, comprising a straightforward course of action and respective lessons learned for each step. This precise course of action helps to keep the focus on the design activities and to reduce delays and the waste of money and resources, which enables a more focused and thoughtful design.

Limitations and Implications for Further Research

The presented study comprises some limitations, which pave the way for future research. First, the proposed nascent theory of design and action has been derived by formalizing the learnings from our project. Even though, we made great effort, to ensure the comprehensibility of the design framework, it has been evaluated by qualitative interviews only. It has not been applied by incumbents to design new service systems. Therefore, its prescriptive application might reveal additional insights and lead to further revisions of the design framework. Following this argument, the design framework has been developed and evaluated in crowdsourcing contexts only and might be biased by cultural influences, as it has only been considered within the German-speaking area. Thus, experiences by applying it in other contexts and cultural regions might also lead to new insights, which should be considered for revising the design framework. Finally, the evaluation of the designed CSS has been undertaken shortly after its go live and does not provide longitudinal statements about the sustainability of the design.

We hope that this study and the proposed design framework encourages researchers to investigate the structure and constituting blocks of crowdfunding service systems in more detail. The proposed design framework might serve as an initial step for the development of a nascent design theory for crowdfunding service systems. This might support design approaches to be more structured and less ad hoc.

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