

The Organizational Design of Digital Innovation Labs: Enabling Ambidexterity to Develop Digital Innovation

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Abstract. Digitalization requires firms to concentrate necessary capabilities around the development of digital innovation. Particularly, firms are experimenting with setting up digital innovation labs (DILs), which present internal but separate organizational units dedicated to the development of digital innovation. However, there is limited knowledge on how DILs develop digital innovation. To understand how DILs enable ambidexterity and, thus, develop digital innovation, we conducted an exploratory single-case study comprising an organizational as well as a team level analysis with 20 interviews to provide deep insights into the organizational design of a DIL. We uncover the organizational design features of DILs and show how they enable ambidexterity. These findings allow us to explain how DILs develop digital innovation. Furthermore, we find DILs to enable a new way to achieve ambidexterity. We discuss our findings in light of the ambidexterity and digital innovation literature.

Keywords: Digital Innovation Labs, Organizational Design, Ambidexterity, Digital Innovation, Digital Transformation.

1 Introduction

In the era of digitalization, keeping up with a fast-changing business environment is challenging [1]. The benefits of innovation in times of digitalization emerge from “combinations of digital and physical components” [2]. Accordingly, digital innovation incorporates digital technologies into innovations and provides new business opportunities or increases internal efficiency [3], but “to gain intended benefits [of digital innovation, firms have to make] significant organizational changes” [4].

Due to the novelty and disruptive potential of digital technologies, some of the existing organizational designs seem to be insufficient to provide the right environment both to explore new innovations based on digital technologies and to exploit their potential for the firm’s business [3]. There is the risk that firms fail to make needed adaptations and adjustments to their organizational design due to high uncertainties, the high pace of changes in the environment, and the connected high risks. So far, there is a low understanding of the organizational capability to develop digital innovation [1].

Accordingly, firms have made several attempts recently to increase their innovation power by bundling required capabilities for the development of digital innovation [5]. Firms formed dedicated and separated specialized organizational units. These

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units are separated from the operational parts of the organization in many terms such as location, mindset, collaboration, and communication. As their primary focus is on digital innovation, they are termed ‘Digital Innovation Labs’ (DILs). So far these DILs have not been the center of research around innovation and organizational restructuring. The benefits of innovation labs, as well as the preparation of re-integration of innovations, remain almost unexplored [6] and there is little knowledge about how these DILs can help to capture new opportunities while leveraging existing resources of the firm.

Whereas digital innovation is a recent phenomenon [2,5], to balance exploration (new opportunities) and exploitation (leverage existing resources) is a long-discussed capability of firms. Although this tension can never be entirely eliminated, firms aim to actively balance exploration and exploitation and in doing so try to maintain their competitiveness [7]. To successfully manage this trade-off is termed ‘ambidexterity’. Ambidexterity is mainly viewed as two different types: structural ambidexterity refers to managing the trade-offs by implementing ‘dual structures’ [8]; contextual ambidexterity means to simultaneously balance the trade-off by leveraging features of the organizational context within units, teams, or individuals [9]. Although contextual and structural ambidexterity present certain advantages, they are inferior for digital technologies and the transformative change due to digitalization as the strict structural separation of and the missing focus due to simultaneity of exploitation and exploration are unfitting. Hence, by implementing DILs firms are deviating from the existing types of ambidexterity which leads to the following questions:

RQ1: How are Digital Innovations Labs implemented to enable ambidexterity?

Based on a single case study, we analyze the organizational design of a DIL and its contribution to the firm’s ambidexterity efforts. Our study is placed in the financial service industry and the analysis includes the organizational and team level. We aim to explain how a DIL helps firms to balance exploration and exploitation. Moreover, we focus on how ambidexterity contributes to digital innovation success. Our findings disentangle the organizational design of DILs and point into the direction of a new type of ambidexterity. Finally, we discuss the design of DILs and our evidence for a new type of ambidexterity.

2 Background

2.1 Digital Innovation

During the last decades, the rapid change in technology increased the need for digitization within organizations [4]. Whereas digitization is the method of converting and transforming objects, processes or items, which used to be analog, into digital ones [4], digitalization refers to the “sociotechnical process of applying digitizing techniques to broader social and institutional contexts that render digital technologies infrastructural” [10]. Thus, digital technologies are omnipresent in everyday life and require firms to integrate them. With the integration of more digital technology into their business processes [2,10], firms are deviating from their proven, existing, and traditional innovation paths [11]. In fact, “to gain intended benefits [of digital innova-

tion firms have to make] significant organizational changes” [4]. As a result, firms are undergoing substantial organizational changes and traditional behavior patterns codified in key beliefs, routines, and procedures are adapted [12]. Due to the connected changes and challenges, digital innovations bring a number of “competing concerns” with them, which makes the adoption of digital technologies difficult [13]. Nonetheless, their importance is further increasing and “digital innovation has grown steadily to become the primary driver of business innovation” [4].

2.2 Ambidexterity

To incorporate the development of innovation in the organizational design, the concept of ambidexterity was first introduced by Duncan (1976). March (1991) theorizes ambidexterity as the fight for scarce resources of the entire organization. The resources have to be allocated between explorative and exploitative activities. Consequently, ambidexterity is defined as “simultaneously pursu[ing] both incremental and discontinuous innovation [...] from hosting multiple contradictory structures, processes, and cultures within the same firm” [14]. The allocation of resources toward one extreme of the ambidextrous continuum hinders the performance of the other one. Hence, the only way to stay competitive in the long run, firms are required to excel at both – exploration and exploitation – along with balancing and combining the two. To achieve ambidexterity and manage the balance of exploration and exploitation a number of ambidexterity types have been brought forward. The two most established types are *structural* and *contextual* ambidexterity.

Structural ambidexterity is the “ability to simultaneously pursue both incremental and discontinuous innovation” [14]. Thus, the organizational design of firms is utilized to provide a unit(s) for exploration and units for exploitation. Tushman and O’Reilly [14] support the idea of two separate structures which were first introduced by Duncan [8]. *Contextual ambidexterity* is originally conceptualized as “the capacity to simultaneously achieve alignment and adaptability across an entire business-unit” [15]. By setting appropriate programs, contextual ambidexterity allows individuals to allocate their time between exploration and exploitation, partly based on their own judgments.

Next to structural and contextual ambidexterity, *sequential ambidexterity* proposes to balance exploration and exploitation by reorienting organizational structures over time. First formulated by Tushman and Romanelli [16], the concept allows “firms adapt to environmental shifts by realigning their structures and processes [in] a sequential process” [17]. However, to change the course of a firm between long periods of exploitation and short periods of exploration [18], firms must refocus a lot of resources in order to manage changing organizational conditions, which can be especially difficult for large firms. Thus, as exploration is a lengthy process this approach seems reasonable for a stable or slowly altering business environment. Due to the inflexibility and high resources intensity firms often refrain from the sequential approach to ambidexterity.

2.3 Digital Innovation Labs

Digital Innovation Labs (DILs), are a promising approach to balance exploration and exploitation is a novel way and provide the appropriate structure for the development of digital innovation. In the face of a high-paced changing environment and high uncertainty, a new output-oriented and agile approach is needed [19]. DILs provide a unique structure as part of the organizational design that addresses the challenges of digitalization, but so far is only insufficiently understood. Although the academic literature has addressed aspects around spin-offs or corporate ventures, there is a lack when it comes to the understanding of the design parameters and work routines of DILs due to the following reasons: First, DILs serve as a focused and separate unit for developing digital innovations. Accordingly, the innovation development in DILs is not limited to creating new business models (as it is the case for corporate ventures). Second, DILs are small structures with people temporarily transferred from the remaining organization. However, the goal is to achieve a complete ‘reintegration’ of outcomes (e.g. innovations) or the workforce (e.g. teams or people) at a later stage. Third, firms utilize a new approach to innovation by creating separate organizational units for digital innovation, which is in contrast to other innovation processes. Traditionally, innovation has been integrated into the organizational structure (e.g. contextual ambidexterity [8]). Fourth, since digital innovation refers to new or substantially altered products, processes, or business models based on digital technologies [4], it requires a much deeper collaboration of the different units and backgrounds; particularly, DILs relocate and collocate people from the business and IT units to provide mutual interactions (e.g. cross-functional teams); this is different to previous organizational design such as spin-offs. Fifth, adjusted forms of collaboration in these labs (e.g. iterative software development, agile project management, and design thinking) are observable (often thereby also creating a new culture and environment for innovation in the DIL). This has so far not been covered in the literature in the context of DILs – research has so far treated adapting the organizational design and digital innovation separately.

2.4 Organizational Design

There is a number of difficulties associated with developing innovation [3,13]. Thus, the organizational design of firms aims to reduce complexity, enable knowledge sharing, recognize ideas, and appreciate opportunity [20]. Nonetheless, firms tend to favor exploitation over exploration [21]. By implementing DILs the organizational design creates niches to develop innovations and protect them from “innovation killers” [20]. We analyze how the design of DILs enables ambidexterity based on six features of organizational design: First, the *motivation or vision* which led to the formation of the DIL is characterized by the firm’s strategic intent. A shared vision between DIL and firm is of utmost importance to effectively manage the trade-off between exploitative and exploratory innovation [21]. Second, *setup and alignment* of a DIL are characterized by key organizational design elements. Important is the interrelation between the DIL and the remaining organization (with the operational parts). Third, *governance*

captures measures taken in order to alleviate conflicts of structural or temporal separation of exploration and exploitation. Reporting lines provide a level of control and support the coordination of tasks or projects. Fourth, *employees and staffing* addresses the acquisition of the right people for the DIL. DILs mainly work with internal people but based on the required skills the right people have to be selected. Fifth, *operations* of the DIL is defined by the applied work routines. The goal of either exploration or exploitation has to be connoted with the individual work routines [15]. Sixth, *culture* is characterized by the level of risk-taking, speed, and openness. Literature suggests, that exploitative and explorative units work with vastly different working cultures [21].

3 Method

To gather information on the formation of Digital Innovation Labs (DILs) and to analyze ambidexterity enabled by DILs, we conducted a single case study. For our case study research, we followed the recommendation given by Yin [22]: Our research question is of exploratory nature and aims to extend extant theory instead of testing existing insights. Second, our research on DILs requires a small “extent of control over behavioral events”, and hence, justifies the case study approach. Third, we observe a high “degree of focus on contemporary events” as the DIL phenomenon is a current issue on the management agenda [23]. Hence, the contemporary nature of the event, the expendable control over behavioral events, and the explorative nature of our research suggest a case study approach. We use the positivist, exploratory case study approach to determine the theoretical underpinnings of our phenomenon under study [24].

The case study firm has been among the first to set up a DIL and, thus, has a lot of experience. The DIL is part of the digital transformation of the firm and receives high management attention. The selected case is a financial service firm. The financial service industry is becoming highly digital and, hence, the pressure to innovate and withstand competition (e.g. fintechs and insurtech) is high. Pseudonyms are used in the following and firm-related terms are anonymized. We refer to the firm as *Case-Bank* and to the DIL as *Digilab*. CaseBank is a large international commercial bank with more than 40,000 employees. The bank offers financial services to two types of customers: large B2B clients (Corporate Banking) and B2C and small B2B clients (Retail Banking). The traditional financial core services are payments, deposits, credits, and foreign-trade-finance. To consolidate all digital transformation activities, the Digilab has been founded as a new organizational unit at the beginning of 2016. Importantly, the unit is staffed with internal people who are temporarily dispatched from their actual team (various business units) along with external people. The unit is organizationally separated from the remaining firm but still located in the same city as the headquarters. Thus, the Digilab represents a revelatory case to study the DIL phenomenon and its impact on the firm’s ambidexterity making it appropriate for exploratory single case study research [22,24].

We collected data using qualitative interviews. We conducted two sets of interviews – first for the overall organizational design of the Digilab (Interviews organizational level – IO) and second for the team setup of two projects inside the Digilab (Interviews project level – IP). The data collection followed the recommendation of Yin [23] and Eisenhardt [25] and we used semi-structured interviews for qualitative data collection. Semi-structured interviews provide the needed alignment to our research focus and, still, provide enough flexibility to capture the entire phenomenon in its full diversity [26]. We leverage the alumni network of our university as well as used the personal network of the researchers. Due to the unique network and our close contact to the bank, we were able to identify and approach the appropriate key informants at CaseBank.

In total, we conducted 20 interviews – 10 of those for the organizational design of the Digilab and 10 of those to study the team structure of the Digilab (table 1). For the first set of interviews (IO1 – IO10), we focused on a broad range of opinions and perspectives from across the organization to capture the full dimension of the organizational design. Thus, interviewees have been selected from a diverse set of corporate divisions that were involved in the setup of the Digilab: Customer Segments, HR, IT, and Strategy, among others. The second set of interviews (IP01 – IP10) was targeted at the team-level inside the Digilab. We scanned all the projects of the Digilab and selected two projects as CaseBank operates in two different segments and the teams are set up in the Digilab accordingly. Project X represents corporate banking and project Z represents retail banking. We contacted all relevant project roles: product owner (PO), scrum master (SM) as well as expert staff (ES) and IT staff (IS). If several subprojects are working on the same topic, they are bundled in a cluster headed by a cluster leader (CL). All interviews were conducted in person, recorded and, transcribed. Following the semi-structured interview approach, the interview guideline consisted of open-ended questions to ensure all issues relevant to the interviewee can be discussed. We used the outlined organizational features of DILs as the fundament for our guideline. Furthermore, we added questions about how innovations are developed in the Digilab and how exploration and exploitation are balanced.

Table 1. Interviewees of the two sets of interviews

No.	Project	Role	Background	Length
IO1	Back Office		Manager of back-office activities and Endeavor Executive	61 min
IO2	Lab Mgmt.		Administration and management of the Digilab	55 min
IO3	Retail Banking		Business development Retail Banking and Endeavor Executive	58 min
IO4	Design Studio		Developing user interface and design concepts for the Digilab	57 min
IO5	Retail Banking		Manager for payments and dispatches employees to the lab	63 min
IO6	Inhouse Cons.		Staffs Digilab with consultants and Digilab founding member	69 min
IO7	Corporate Strat.		Manager of Strategy & Development and supervisor of Digilab	54 min
IO8	IT		Heads the IT function and IT-infrastructure provider	48 min
IO9	HR		Domain Lead of Digilab – Endeavor for Human Resources	63 min
IO10	Corporate B.		B. development Corporate Banking and Endeavor Executive	59 min

IP1	PZ	SM	Sales manager in segment 2	68 min
IP2	PZ	PS	Salesperson in segment 2	68 min
IP3	PZ	PO	Project manager back office	62 min
IP4	PX	PO	Team leader for process users in segment 1	49 min
IP5	PX	PS	User of the process in segment 1	78 min
IP6	PX	CL	Project manager in segment 1	54 min
IP7	PX	SM	Project manager in segment 1	57 min
IP8	-	PM	Head of department in segment 1	47 min
IP9	PX	IS	External consultancy company; IT	35 min
IP10	PZ	IS	External consultancy company; IT	31 min

We coded all the collected data using MAXQDA. Based on qualitative content analysis following Mayring [27], a coding strategy aligned with the DIL design features and in particular the theoretical foundation was developed. All our codes represented different content categories according to the ambidexterity theory. During the coding, we connected the text passages to the corresponding codes – thereby creating coded text segments. The connection of coded segments and the theory allowed deeper interpretations of the relevant patterns of the phenomenon and how the DIL enables ambidexterity [22,24]. Subsequently, we condensed all coded segments to a set of codes using an iterative approach. In total, we identified 1417 coded segments. We integrated subcodes based on inductive coding to integrate any emerging insights. Our coding technique ensured all final codes are connected to ambidexterity theory and entail organizational design features. Based on the positivist case study approach, the findings uncover a new perspective on how the organizational design of firms can enable ambidexterity [24]. Accordingly, we present how the Digilab is implemented and how features of the Digilab enable ambidexterity.

4 Findings

4.1 The Design Features of DILs

Motivation and Vision. The formation of the Digilab is motivated by the changed business environment and by the goal to become more digital. The **aftermath of the financial crisis** is still a major challenge and confronts CaseBank with confining regulations and low-interest periods. Hence, CaseBank struggles with being profitable. Furthermore, due to competition and new players in the market, **customer expectations** have drastically increased and are difficult to satisfy:

“Or when I register as a new customer to Netflix, I can start watching a movie right away. That's the expectation of the customer.” (IO2)

The competitive landscape in the banking industry changed as **new market entrants** from the technology industry increase the competitive pressure (IO10). If CaseBank is not able to address these changes and transforms within the next three years, nobody will need a bank as it is today anymore. IO9 adds that any bank, which has not successfully dealt with digitalization, will no longer exist in two years from now.

“An even bigger topic right now are Google, Apple, and Amazon (...). They have a completely different view on this situation and that’s why we have to ask ourselves: How can we remain competitive?” (IO5)

Based on these motivations, IO2 explains that the vision of the Digilab is to provide a **technological eco-system**, which allows CaseBank to cooperate with different external partners and offer digital services via Application Programming Interfaces (APIs). The product portfolio and the IT are aimed to have a more modular structure. IO6 adds that the DIL has to enable CaseBank to **learn much more about digital technologies** such as artificial intelligence and big data to leverage customer data and develop digital services. IO7 reports rethinking existing services and processes and transforming them into the digital world is a key objective, otherwise, CaseBank cannot survive:

“I have to start questioning all of my internal processes to make them attractive for our customers in the digital era. I have to internalize and understand, that I will only play a relevant role for my customer if I’m doing this. Then, I have a clear understanding of the necessity of digitalization” (IO7)

Based on the vision the **strategic roadmap is implemented as a top-down process** and prioritizes processes and products with high proportions of manual work, where digitalization will have the biggest impact. The goal is to digitalize 80% of these processes. Still, all interviewees are in unison that the IT backbone is currently the bottleneck. IO3 emphasizes that the **renewed IT backbone** is the foundation for innovation.

Setup and Alignment. CaseBank concentrates all its digital transformation projects inside the Digilab – a separate and concentrated organizational unit – to make use of different practices, people, and social interactions. The Digilab is a separate structure within the existing structure along with a different organizational set-up and location (IO7). The **spatial separation** between Digilab and the remaining organization is crucial to facilitate the fulltime work model. Otherwise, the old responsibilities and duties of the remaining organization would distract the members of the Digilab. Moreover, spatial separation has a psychological effect of leaving the old world and entering a new world, which further supports the creation of a new corporate culture (IO6). Furthermore, all interviewees mentioned **co-location** as being beneficial, which means that all project team members from business, IT and other departments are located in the same building. IO6, IO5, and IO8 believe, that the co-location concept is crucial for the successful application of agile work practices and faster execution of ideas:

“Bring people together in one room and then magic happens.” (IO6)

To maintain the connection to the remaining organization, **acceptance** of the Digilab in the entire organization is crucial. According to the interviewees, the perceptions of the Digilab are highly diverse. Whereas some perceive the Digilab as a foreign body inside the organization due to the lack of a connection on an operational level (IO2), others provide great support (including senior management and executives) as they recognize the required urgency for the digital transformation (IO2, IO5, IO6, and IO7). The strong commitment of the board of directors and CEO are greatly appreciated in the Digilab and support its acceptance. To make the Digilab widely known in

the remaining organizations, there is a lot of **internal marketing**, like articles and podcasts to report about the project and progress of the Digilab. Still, IO10 points out that the marketing of the Digilab has a lot of potential, but ultimately is the only way to improve the acceptance of the Digilab within the organization and secure further support. The results of the exploration activities of the Digilab must be visible to foster acceptance.

Governance. Since a lot of projects are end-to-end projects and are affecting several business units, the Digilab is **governed by the strategy unit**. Being subordinate to the strategy unit allows better coordination and fewer conflicts within CaseBank. Furthermore, the organizational differentiation of business segments does not correspond to the project set-up of the Digilab (IO2). For instance, projects of Corporate Banking and Retail Banking are highly aligned in the Digilab which allows developing solutions for both segments and leverage synergies. Attaching the Digilab to the central strategy unit is better than handing over responsibilities about the Digilab to one of the business segments (IO7 and IO10). The governance of the Digilab is mainly given by the **structure of the projects**, the so-called Endeavors (the name has been changed for anonymity). There are nine endeavors at the moment, each consisting of one Executive and several Domain Leads, Product Owners and teams. The Endeavors are less hierarchical than typical project set-ups, more team-orientated, and cross-functional (IO3). Inside the Digilab the Endeavors are fairly autonomous satellites without any structural connection (IO5). Accordingly, IO4 values that teams are set up in the **project teams** of the Endeavors with a clear focus on the innovation task. The team members are governed by these teams to reduce potential conflicts with the remaining organization. IO6 complements that everyone in the Digilab works full-time and is dedicated to a single project. Still, the Digilab is internally organized as a **matrix organization**, since the teams are organized cross-functional (IO2). There are two reporting lines. On the one hand, the Digilab members are still linked to their actual team (where they are dispatched from and will return to). On the other hand, they report to their project team in the Digilab. Due to the temporal dispatching, there is only a thin line between the matrix organization and a temporal project organization (IO3). Management must ensure that the Digilab does not remain just a building with many project teams but also emphasizes the ties to the teams in the remaining part to ensure Digilab members can return (IO6).

To govern the overall activities of the Digilab two boards are installed. The Digilab Board is the most **important committee** (IO2). The Digilab Board consists of selected members of the board of management of CaseBank, holds a meeting every four to six weeks, and allocates the innovation budget between the Endeavors. Endeavor Executives are responsible for an Endeavor, report to the Digilab Board, and can pitch for a budget. Reporting to the Digilab Board and not directly to one of CaseBank's board member maintains the concentrated and focused approach on innovation and prevents the creation of business silos. Endeavor Executives are organized in the Board of Endeavor Executives. They hold a meeting every week, to enhance the coordination between the Endeavors (IO2). This board is empowered to decide on all innovation and transformation issues, solve strategic conflicts, and identify new Endeavors (IO7):

“It is important that the Endeavor Executive is empowered. It was important to us, that everything that has to be decided, can be decided by him (...) That is new.” (IO6)

Employees and Staffing. Endeavor Executive are heading the Endeavors in the Digilab and hold end-to-end responsibility of the transformation. They are not dedicating 100%, but only 40% of their working time to the Digilab. The Endeavor Executive also holds a senior manager position in the remaining organization to **transfer project results and align innovation developments**. Depending on the Endeavor’s size and complexity and to maintain small team sizes, so-called Domain Leads are installed between the project teams and Endeavor Executive. They manage the autonomous project teams of the Endeavor, link the teams with the Endeavor Executive, provide resources and budget, and align the teams (IP3). All project teams have a **small team size** of only up to seven people to allow intensive collaboration. The teams are mainly managed by themselves following the **Scrum approach**: Decision making is a team task that is carried out by the team along with the product owner (PO) who has the decisive function to align the tasks (IP1, IP3, IP6, IP9). This an almost hierarchical-less approach (IP1-IP10). The team gets a budget and must implement as many functions as possible (IP3). Which product features are implemented and their order is the responsibility of the PO who makes these **decisions together with the team** (IP1, IP6, IP9). Contrary, the Endeavor Executive and Domain Leads are more input givers and problem solvers than decision-makers (IP6, IP7). Decision-making by the team members increases the speed of decision-making (IP1-IP10). All team members focus 100% on their Digilab tasks, there are no other duties from previous positions in the remaining organization (IP3).

The team is staffed with people from the business segment and IT personnel. Together they develop the product in **cross-functional collaboration** (IP4, IP5, IP6, IP7). Whereas business people develop user stories further, IT people develop the code (IP1, IP3, IP4). The intensive collaboration of business and IT staff allows high speed of development (IP5, IP6, IP8, IP9, IP10). The multi-disciplinarity of team members within the agile project teams enables the exchange between different disciplines and fosters digital innovation (IO4). Further, teams are supported by a **scrum master** (SM). The SM ensures productivity by removing obstacles and resolving problems in the progress and intervenes when the PO or Domain Leads have too many requirements that cannot realistically be met by the team in time. This might be due to too large packages or too little time. Hence, moderating as part of the scrum format is important (IP1, IP7). The **product owner** is responsible for the functionalities of the product or process and ensures the final outcome (IP1). Through a vision and prioritization of the tasks on the project board, the PO shapes the limits of the product. Based on this input requirements are translated into user stories. The execution of the prioritized user stories is then the duty of the team (IP3, IP9).

People are selected for the Digilab based on **“attitude over skill”** (IO3). Generally, people with high motivation work in the Digilab. Next to the technical skills like the understanding of IT in general and the (legacy) IT of the bank (IO2, IO6, IO7, IO8) and know-how about the intermediary functions between business and IT, soft skills like openness for something new (IO6, IO7), courage and commitment to invest a

little extra (IO6, IO9, IO10), willingness to change (IO6, IO7, IO8), and knowledge about digitalization and customer-centricity (IO4, IO8) are really important.

Operations. Routines of the projects in the Digilab mainly originate from the **scrum method**. Agile principles for software development in the Digilab replaced the waterfall models. The teams perform dailies to present tasks and discuss problems (IP1, IP4, IP9). All tasks (in form of user stories) are attached to the board and in accordance with the team, the team members assign themselves to tasks (IP4) which provides a high level of transparency in the team (IP1, IP7). During the ‘sprint reviews’, the results of the last sprint are reviewed. In the ‘retrospective’ the project teams discuss their approach. The sprint review is a content format that looks at the product or process itself, whereas the retrospective focuses on collaboration and method (IP1, IP2, IP6, IP7).

“In the end, it is just about increasing productivity in IT. The important thing is the proper methodology, like Scrum and Kanban“ (IO8)

With the creation of the Digilab, the whole **innovation process** of CaseBank has changed, too. The main task of the Digilab is the transformation of the CaseBank into a digital technology company, which means building a modern and modular IT backbone and digitalizing of 80% of all relevant processes (IO2). Whereas CaseBank is historically really bad at recognizing trends and ideas at an early stage, the Digilab leverages the novel organizational setup and the proximity to technological advancements to detect trends and change. Moreover, the Digilab provides an environment for the **implementation of innovative ideas**, which are considered to be relevant for the transformation. Scanning for trends is left to CaseBank’s incubator. In contrast to the Digilab, the incubator analyzes the markets as well as the technology trends for potentials. The Digilab uses ideas identified from both internal (e.g. the incubator) and external sources to implement and test digital innovation using prototypes among others.

“Do we have the power involving our people in 50 different trends (...) to identify whether that’s relevant for us or not - prototypes, investing in IT, and partnerships? (...) we invest in the right things“ (IO7)

Culture. The culture of the Digilab is very **open, supportive** (IP3, IP6) and strongly characterized by personal responsibility, voluntariness, and flexibility (IP2, IP4, IP5, IP8). Everyone helps each other and efforts are made to work together to finish all tasks (IP1, IP9, IP10). The organization of work is **less formal**, the team and the entire Digilab is more casual and direct (IP2, IP5, IP7, IP8, IP9). This enabled by a high level of intrinsic motivation of all team members and further stimulated by the proximity to the executive board and the high importance of the Digilab for CaseBank’s strategy (IP2, IP7). The integration of external people also reflects the culture of the Digilab and hardly compares to the traditional culture of CaseBank (IP7). The external people bring many **new impulses** to their teams (IP5, IP8). Whereas, the culture of the remaining organization is heavily focusing on risk and failure aversion (IO5, IO6), **seeing mistakes as something positive** to learn from and improve in the next attempt is rooted in Digilab’s culture (IP2, IP5). It is also important to have the courage to say that the chosen path was wrong leading to stop a project if it does not

receive positive feedback. A canceled project can be a ‘success’ as no further resources have been wasted (IP8).

Through these new impulses, the Digilab triggers a **cultural change** in the whole organization of CaseBank. By the temporal transfer of people to the Digilab and the subsequent return to the ‘actual’ teams in the remaining organization, the culture of the entire organization is gradually changing. The Digilab pushes the organization to do things differently, experiment more, and be more entrepreneurial (IO2).

“We need a safe place. (...) We will use this place to teach our employees the new culture and methodology. And when they go back, it will positively influence the culture of the bank (...) That’s why we founded the Digilab” (IO7)

4.2 The Transition from Exploration to Exploitation

Both projects we analyzed are working on process innovation, but for the two different segments of CaseBank. The aim of both projects is to increase efficiency (IP6) and save time (IP1, IP2). Internal processes are completely rethought to make the branches of Casebank and/ or the back office more efficient. The project teams are doing pioneer work in creating technical prerequisites for a platform with several applications allowing work and data to be shared (IP4, IP6). They aspire to future reusability of their innovations to ensure long-term value and strategic positioning of the firm (IP6, IP3). Our analysis reveals how this transition from exploration to exploitation is achieved:

First, both projects define their success in the **acceptance** of their processes by the users. This is mainly determined by the use and backed by various statements in our interviews like “only the users can measure the success” (IP1) or it needs to “support the user and unburden the process” (IP4). Hence, the projects focus their efforts to implement the process innovation that is “easy to use” (IP5), has an “attractive user interface” (IP2), and “no instructions are needed” (IP2). The goal is that the users perceive an added value through support in their daily business (IP5, IP6) which decreases the need to justify technical meaningfulness of the innovation.

Second, to increase the usage of the new processes, both teams make sure that users have confidence in the software (IP6) that it works without flaws (IP9). We found a lot of support for the importance of **technical functionality** as only this can convince the user to use the process and, hence, make the transition from exploration to exploitation successful. To make the process a success, the software should work (IP5) and be ready for rollout (IP10). To better react to user feedback, agile software development must be adapted to a stronger focus on functionality (IP6). This does not contradict iterative software development but stresses the importance of functionality to ensure usage.

Third, **re-integration** enables the transition from exploration to exploitation through finding a user, who was willing to take over process ownership after the exploration in the Digilab. Project X even integrated the user as part of their team (IP6). The team justifies the procedure by the importance of ensuring that the responsible person later knows the process, the development steps (IP5), and can steer the – social and technical – re-integration. For the re-integration, the user will function as the

business owner of the process and together with the project team instruct the IT function for technical support (IP2). This close interaction bridges the times of development in the Digilab (exploration) and the later usage of the process in the remaining organization (exploitation). Future process owners are given the opportunity to veto (IP3) and contribute.

5 Discussion and Conclusion

Based on the findings, we can uncover many important aspects of the organizational design of one particular DIL (table 2). First, the DIL's motivation and vision focus on the exploration of the digital business landscape with the raised customer expectations and new market players. Using digital technologies to develop digital innovation for new processes and renewed IT is a top priority. Second, the DIL consists of project teams who are separated from the remaining organization concentrated in the DIL and are 100% dedicated to a project (i.e. Endeavor). Third, the DIL is closely linked to the top management and a committee aligns all projects. Fourth, the DIL is staffed with internal employees (from the remaining organization) who are temporarily dispatched from their 'actual' team and co-located in the DIL. Fifth, team members give each other feedback and feedback is used to iteratively improve the prototypes of the digital innovations. Sixth, the culture provides an open and informal exchange among team members where change is valued and mistakes are used to improve.

The features of the organizational design enable ambidexterity. Although the features contain elements of structural (two separated organizational units), contextual (some individuals and some teams are switching between exploration and exploitation),

Table 2. Ambidexterity outcomes from the DIL features

DIL features	Ambidexterity outcome	
Motivation and Vision	<ul style="list-style-type: none"> • Exploration of the digital business landscape • Use insights to develop new digital innovation 	<ul style="list-style-type: none"> • Exploration focuses on digital innovation and leveraging the potential of digitalization
Setup and Alignment	<ul style="list-style-type: none"> • Separated and dedicated unit without interference • Temporarily-moved, internal people are co-located in the DIL 	<ul style="list-style-type: none"> • Separated team for exploration but linked to remaining part (exploitation)
Governance	<ul style="list-style-type: none"> • Close link to the strategy unit to be aligned to the top management • DIL committee aligns and orientates the projects 	<ul style="list-style-type: none"> • Exploration is linked to the strategic needs of the firm and complements the exploitation efforts
Employees and Staffing	<ul style="list-style-type: none"> • People work in agile, autonomous, and cross-functional teams • Teams are small and organized on SCRUM principles 	<ul style="list-style-type: none"> • Exploration benefits from various backgrounds, experiences, and knowledge
Operations	<ul style="list-style-type: none"> • Work is organized based on daily meetings and feedback is utilized • Trends are directly transferred into prototypes and tested 	<ul style="list-style-type: none"> • New insights of the exploration are iteratively developed and tested early

Culture	<ul style="list-style-type: none"> • Changes are valued and seen as new opportunities • The informal, direct, and innovation-open culture is spread around 	<ul style="list-style-type: none"> • Exploration is not only valued in the form of innovation but also a new culture
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and sequential ambidexterity (the DIL can be seen as the digital vanguard of the firm and, thus, be an organizational unit one innovation cycle ahead of the remaining organization), there are unique aspects of this type of ambidexterity: The ‘temporal’ aspect focuses on a switch between exploration and exploitation on an individual level. People join the DIL for a limited amount of time – but always focus 100% of their capacity on either exploration (i.e. DIL) or exploitation (i.e. remaining organization). Hence, people fully concentrate on their tasks which reduces the drawbacks of difficult self-coordination or inefficiency due to the duality of tasks associated with contextual ambidexterity [28]. By transferring on a ‘temporal’ but not on a permanent basis, the old ties to the remaining organization enable easier re-integration of innovations and reduce issues concerning the too strict separation of structural ambidexterity [29]. Moreover, the DIL allows the temporary transfer of a small number of people, hence it does not require the entire organization to shift from exploration to exploitation and vice versa as conceptualized by sequential ambidexterity. Hence, we find several features of DILs currently not covered in the ambidexterity literature. The evidence of our analysis points into the direction of a new type of ambidexterity centered on the temporary but full-time transfer of people in a separate unit (i.e. DIL) to intertwine exploration and exploitation [30].

From our analysis, we can derive several implications. Our study contributes to the literature on ambidexterity by showing how a new form of ambidexterity can be achieved through the formation of a DIL. To our knowledge, this is one of the first studies to uncover ambidexterity based on a ‘temporal’ transfer of people in an incumbent. Ebers [31] describes a similar approach to ambidexterity being predominantly applied by startups. Further, we show how the design of the organizational structure (i.e. the DIL) along with the ambidexterity is applied to make innovations successful by mastering the transition from exploration to exploitation. Applying this new type of ambidexterity allows employees to quickly develop digital innovations by going in the DIL (exploration) and continue working on the idea afterward (exploitation). This reduces any potential loss of know-how during the transition. Furthermore, our study provides insights into the microfoundations of ambidexterity and proposes a new way to solve the “phenomenon of organizational drifting” [32]. DILs allow balancing exploration and exploitation without drifting to one of the extremes. Our findings provide several managerial implications and assist managers in setting up a DIL. We find that DILs are promising to master digital transformation and design organizations.

Our study is limited as the interviews only provide certain perspectives to the phenomenon under study. More interviews, as well as more cases, would allow deeper insights and a validation of our observations. As we have only conducted a single case study, the question remains to what extends our findings are generalizable. We derived several aspects of the organizational design of DILs but did not test for their interrelation or dependence. Further research can use these factors to analyze other

DILs and determine how they enable ambidexterity. The first indications towards a new approach to ambidexterity are provided by us but research needs to further disentangle possible overlap with existing types of ambidexterity. Additionally, different configurations on how to realize ambidexterity via a temporal transfer of people are a promising research avenue. We see our research as pioneer work in the field of DILs. Our DIL design features uncover how the organizational structure of DILs is designed and how DILs enable ambidexterity. We encourage further research to explore more aspects of DILs and DILs in other industries. The link between changes in the organizational design and digital innovation is promising to understand what makes digital transformation successful. Our insights into the design of DILs are laying the foundation.

References

1. Kohli, R. & Melville, N.P., 2018. Digital Innovation: A Review and Synthesis. *Information Systems Journal*, 29(1), pp.200–223.
2. Yoo, Y., Henfridsson, O. & Lyytinen, K., 2010. The New Organizing Logic of Digital Innovation: An Agenda for Information Systems Research. *Information Systems Research*, 21(4), pp.724–735.
3. Yoo, Y., Boland, R.J., Lyytinen, K. & Majchrzak, A., 2012. Organizing for Innovation in the Digitized World. *Organization Science*, 23(5), pp.1398–1408.
4. Fichman, R.G., Dos Santos, B.L. & Zheng, Z. (Eric), 2014. Digital Innovation As a Fundamental and Powerful Concept in the Information Systems Curriculum. *MIS Quarterly*, 38(2), pp.329–A15.
5. Nambisan, S., Lyytinen, K., Majchrzak, A. & Song, M., 2017. Digital Innovation Management: Reinventing Innovation Management Research in a Digital World. *MIS Quarterly*, 41(1), pp.223–238.
6. Magadley, W. & Birdi, K., 2009. Innovation Labs: An Examination into the Use of Physical Spaces to Enhance Organizational Creativity. *Creativity and Innovation Management*, 18(4), pp.315–325.
7. March, J.G., 1991. Exploration and Exploitation in Organizational Learning. *Org. Science*, 2(1), pp.71–87.
8. Duncan, R.B., 1976. The Ambidextrous Organization: Designing Dual Structures for Innovation. In *The Management of Organization Design*. New York: North Holland, pp. 167–188.
9. Gibson, C. & Birkinshaw, J., 2004. The Antecedents, Consequences, and Mediating Role of Organizational Ambidexterity. *Academy of Management Journal*, 47(2), pp.209–226.
10. Tilson, D., Lyytinen, K. & Sørensen, C., 2010. Digital Infrastructures: The Missing IS Research Agenda. *Information Systems Research*, 21(4), pp.1–12.
11. Henfridsson, O., Mathiassen, L. & Svahn, F., 2014. Managing Technological Change in the Digital Age: The Role of Architectural Frames. *Journal of Information Technology*, 29(1), pp.27–43.
12. Tripsas, M., 2009. Technology, Identity, and Inertia Through the Lens of “The Digital Photography Company.” *Organization Science*, 20(2), pp.441–460.
13. Svahn, F., Mathiassen, L. & Lindgren, R., 2017. Embracing Digital Innovation in Incumbent Firms: How Volvo Managed Competing Concerns. *MIS Quarterly*, 41(1), pp.239–253.
14. Tushman, M.L. & O’Reilly III, C.A., 1996. The Ambidextrous Organization: Managing Evolutionary and Revolutionary Change. *California Management Review*, 38(4), pp.8–30.
15. Birkinshaw, J. & Gibson, C., 2004. Building Ambidexterity into an Organisation. *MIT Sloan Management Review*, pp.47–55.
16. Tushman, M.L. & Romanelli, E., 1985. Organizational evolution: A metamorphosis model of convergence and reorientation. *Research in Organizational Behavior*, 7, pp.171–222.

17. O'Reilly III, C.A. & Tushman, M.L., 2013. Organizational Ambidexterity: Past, Present, and Future. *The Academy of Management Perspective*, 27(4), pp.324–338.
18. Gupta, A.K., Smith, K.G. & Shalley, C.E., 2006. The interplay between exploration and exploitation in SMEs. *Academy of Management Journal*, 49(4), pp.693–706.
19. Fecher, F., Winding, J., Hutter, K. & Füller, J., 2018. Innovation labs from a participants' perspective. *Journal of Business Research*, 86.
20. Garud, R., Tuertscher, P. & Van De Ven, A.H., 2013. Perspectives on Innovation Processes. *Academy of Management Annals*, 7(1), pp.775–819.
21. O'Reilly III, C.A. & Tushman, M.L., 2008. Ambidexterity as a Dynamic Capability: Resolving the Innovator's Dilemma. *Research in Organizational Behavior*, 28, pp.185–206.
22. Yin, R.K., 2009. *Case Study Research: Design and Methods*, New York: Sage Publications.
23. Keles, A., 2017. Digital Labs – Deutsche Konzerne auf dem Innovationspfad. *Crisp Research*. Available at: <https://www.crisp-research.com/publication/digital-labs-deutsche-konzerne-auf-dem-innovationspfad/> [Accessed August 1, 2019].
24. Paré, G., 2004. Investigating Information Systems with Positivist Case Research. *Communications of the Association for Information Systems*, 13(1), pp.233–264.
25. Eisenhardt, K.M., 1989. Building Theories from Case Study Research. *Academy of Management Review*, 14(4), pp.532–550.
26. Myers, M.D. & Newman, M., 2007. *The Qualitative Interview in IS Research: Examining the Craft*. Information and Organization.
27. Mayring, P., 2015. Qualitative Content Analysis: Theoretical Background and Procedures. In C. K. A. Bikner-Ahsbals & N. Presmeg, eds. *Approaches to Qualitative Research in Mathematics Education: Examples of Methodology and Methods*. Dordrecht: Springer, pp. 365–380.
28. Vahlne, J.E. & Jonsson, A., 2017. Ambidexterity as a dynamic capability in the globalization of the multinational business enterprise (MBE): Case studies of AB Volvo and IKEA. *International Business Review*.
29. Raisch, S., Birkinshaw, J., Probst, G. & Tushman, M.L., 2009. Organizational Ambidexterity: Balancing Exploitation and Exploration for Sustained Performance. *Org. Science*, 20(4), pp.685–695.
30. Holotiuk, F. & Beimborn, D., 2019. Temporal Ambidexterity: How Digital Innovation Labs Connect Exploration and Exploitation for Digital Innovation. In *Proceedings of the International Conference on Information Systems*. Munich.
31. Ebers, M., 2017. Organisationsmodelle für Innovation. *Schmalenbachs Zeitschrift für betriebswirtschaftliche Forschung*, 69(1), pp.81–109.
32. Gregory, R.W., Keil, M., Muntermann, J., Mähring, M., Keil, M. & Mähring, M., 2015. Paradoxes and the Nature of Ambidexterity in IT Transformation Programs. *Information Systems Research*, 26(1), pp.57–80.