

# Exploiting Exploration: Reintegrating Digital Innovations from Digital Innovation Units

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## Abstract

*In digital transformation, incumbents are pressured to exploit their core business and simultaneously explore opportunities for digital innovation. When pursuing ambidexterity, organizations establish digital innovation units (DIUs) dedicated to digital innovation. Due to the novelty of the phenomenon, prior studies targeted DIUs' design, objectives, and challenges. However, their value lies in reintegrating digital innovations back into the operational organization for use and commercialization, which has been neglected so far. Thus, we analyze the reintegration based on a single-embedded case study of four heterogeneous DIUs. We identify three phases of reintegration activities and trace differences to the contextual factors: innovation orientation, number of involved entities, and ownership. Our contribution is twofold. First, we shed light on the reintegration of DIUs' innovation outcomes for the first time. Second, we extend research on digital innovation and ambidexterity by outlining drivers and inhibitors of reintegration, enhancing our understanding of how organizations can exploit exploration.*

**Keywords:** Digital innovation units, digital innovation, reintegration, ambidexterity, digital transformation.

## 1. Introduction

As organizations seek to approach their digital transformation (DT) to seize the opportunities offered by digital technologies (Hess et al., 2016), they are confronted with a new paradigm of *digital innovation*. Digital innovation is "the creation of market offerings, business processes, or models that result from the use of digital technology" (Nambisan et al., 2017, p. 224). Idiosyncrasies of digital technologies challenge how innovation is created and, ultimately, how value is generated in firms (Fichman et al., 2014; Nambisan et al., 2017). Organizations are forced to simultaneously explore novel opportunities based on digital technologies for long-term survival while at the same time exploiting their core business to ensure short-time

profitability. Balancing both activities is referred to as organizational ambidexterity (March, 1991).

In the context of DT, a popular approach to enable and induce ambidexterity is establishing digital innovation units (DIUs). DIUs are "organizational units with the overall goal to foster organizational digital transformation by performing digital innovation activities for existing and novel business areas" (Barthel et al., 2020, p. 4).

Considering the practical relevance of DIUs to enable the embedding of digital technologies into incumbent firms (Raabe et al., 2021), coupled with the recent negative headlines on their challenges or dissolution (Raabe et al., 2020b; Sindemann & Buttlar, 2021), there is an evident necessity for research on DIUs and their value for organizations.

DIUs are a novel phenomenon; hence, the field of research surrounding them is still young (Barthel et al., 2020). So far, only selected topics have been addressed, such as DIU archetypes and design options (Brauer et al., 2021; Fuchs et al., 2019). Further studies analyzed their overall objectives and activities (Raabe et al., 2021) or challenges (Raabe et al., 2020b). However, we are missing knowledge on DIUs beyond their initial setup and objectives, especially regarding the transition from exploration to exploitation of DIU outcomes.

In establishing DIUs, digital innovation activities are structurally taken out of the core organization. Hence, the reintegration of innovation outcomes is a fundamental function in the context of DIUs as they rarely commercialize the developed innovations themselves. Even though reintegration shapes their overall organizational value (Raabe et al., 2021), "the reintegration of innovations back into the operational parts of the firm has remained almost unexplored so far" (Holotiuk & Beimborn, 2019, p. 2).

Consequently, we lack knowledge on how DIUs reintegrate digital innovations for use and commercialization. Based on the outlined objectives and research gap delineated above, we pose the following research question:

**RQ:** *How are digital innovations from DIUs reintegrated into the core organization?*

We chose an exploratory qualitative case study, analyzing a set of four DIUs within a financial services corporation. First, with our study, we pioneer in investigating the core value creation of DIUs by shedding light on DIUs' reintegration activities. Second, we enhance our understanding of how organizations realize value from their exploration efforts and thus extend research on digital innovation and ambidexterity.

## 2. Theoretical background

### 2.1 Digital innovation

Digital technologies enable and force companies to redefine their business model, expand their product portfolio to an offering of digital products and services, and reorient their strategies (Hess et al., 2016). Digital technologies comprise a set of idiosyncrasies, setting them apart from previous technologies: reprogrammability, data homogenization, and self-referential nature (Yoo et al., 2010). The constitutional properties contribute to their malleable, editable, open, and transferable features (Nambisan et al., 2017), posing challenges and opportunities for established companies.

In reaction to the pressure on organizations to maintain competitiveness, firms engage in digital innovation (Nambisan et al., 2017). In turn, a dedicated research stream emerged, providing insights into activities in the digital innovation process (Kohli & Melville, 2019). Digital innovation is a novel paradigm for research and practice. It is argued that digital innovation requires new organizational forms (Lyytinen et al., 2016), collaboration modes, and capabilities (Svahn et al., 2017) that acknowledge the idiosyncrasies of digital technologies. In research, digital innovation challenges previously held assumptions and calls for novel theorizing (Nambisan et al., 2017). Literature differentiates three digital innovation outcomes: digital business models, digital products and services, and digital processes. Digital business model innovation refers to using digital technologies to change organizational value creation. Digital product and service innovation refers to new products or services that are enhanced or embodied by digital technologies (Lyytinen et al., 2016). Organizations employ digital process innovation to advance business processes with digital technologies (Fichman et al., 2014; Lohoff, 2022). Directed at digital innovation outcomes, the innovation process includes initiating, developing, implementing, and exploiting (Kohli & Melville, 2019).

Especially the financial sector faces a paradigm shift due to digital innovation (Göbeler et al., 2020). While novel technologies like artificial intelligence or big data analytics offer new possibilities to innovate existing processes or offer novel digital services,

incumbents are threatened by new business models and market entrants. This phenomenon is known as financial technology (FinTech) disruption and is the primary driver of this industry's DT (Alt et al., 2018). Still, the industry-wide emphasis on security and stability often results in incumbents being highly unadaptable to environmental dynamics (Göbeler et al., 2020).

### 2.2 Organizational ambidexterity

The differentiation into exploration and exploitation is rooted in organizational learning theory and the organization's fight for scarce resources. Balancing both activities is critical to the organization's survival (Duncan, 1976). While exploitation is associated with refinement, production, and efficiency, providing a short-term and predictable benefit to the organization, exploration activities are connected to search, discovery, play, flexibility, risk-taking, innovation, and experimentation (March, 1991). Exploration is considered to provide a long-term benefit to the organization, though requiring extensive resources with a greater risk of failure. A firm's ability to simultaneously pursue both activities is understood as organizational ambidexterity.

Organizations often struggle to perform both activities and execute them equally. A prominent approach to balancing both activities is altering the firm's organizational design. Here, literature differentiates several modes of ambidexterity, namely, sequential (Duncan, 1976), structural (O'Reilly & Tushman, 2013), and contextual (Gibson & Birkinshaw, 2004). Structural ambidexterity structurally separates both activities. Sequential ambidexterity involves alternating between both activities. Contextual ambidexterity pursues both activities within one unit, shifting modes depending on environmental conditions. While possessing certain advantages, the previously introduced modes of ambidexterity can be inferior in the context of DT, where pressure on firms is intensified by digital technologies (Fuchs et al., 2019). They lack agility, cross-functionality, or necessary inter-connectedness and focus for digital innovation (Holotiuk & Beimborn, 2019).

In response, temporal and hybrid ambidexterity emerged (Holotiuk & Beimborn, 2019; Jöhnk et al., 2020). Temporal ambidexterity assigns employees to either exploration or exploitation for a specific phase, providing them with time and focus for developing innovations during exploration phases while at the same time bridging domains of knowledge, i.e., by sending employees to dedicated units for a certain time (Brauer et al., 2021). Hybrid ambidexterity combines structural and contextual ambidexterity. This mode is realized via concurrent DT initiatives on multiple organizational

levels (Jöhnk et al., 2020). While distinct modes of ambidexterity in the DT have already been addressed, the actual transition from exploration activities to the exploitation of digital innovations and its implications for ambidexterity constitutes a missing perspective (Holotiuk & Beimborn, 2019).

### 2.3 Digital innovation units

DIUs are becoming a popular way of channeling exploration efforts in the DT and structurally embedding digital innovation as distinct departments or even separate legal entities for the main organization (Barthel et al., 2020). Various terms for the phenomenon such as Digital Units (Fuchs et al., 2019), Innovation Hub (Svahn et al., 2017), Digital Innovation Lab (Holotiuk & Beimborn, 2019; Magadley & Birdi, 2009), DT Unit (Chanas et al., 2019), and DT Initiative (Jöhnk et al., 2020) are used. For this study's consistency, we will use the term DIU (Hellmich et al., 2021; Raabe et al., 2021).

Recent research in the field of DIUs has brought forth several archetypes of DIUs, which differ in their objectives, their characteristics, the type of innovation they are focused on, their degree of integration and exchange with the main organization (Holotiuk & Beimborn, 2019), or the innovation outcome (Raabe et al., 2020b). While various classification schemes exist (Brauer et al., 2021), we found the typology and identified ideal types of Barthel et al. (2020) best suited for characterizing DIUs. **Table 1** provides an overview of the ideal types: *internal facilitator*, *external enhancer*, and *external creator*.

**Table 1. Description of DIU ideal types based on Barthel et al. (2020)**

Ideal type	Description
<i>Internal facilitator</i>	This type mainly focuses on digital process innovations (internal orientation), emphasizing existing business areas and processes. This type typically generates and selects ideas, develops innovations, and returns the solution to a specialized department.
<i>External enhancer</i>	This type generally focuses on digital product and business model innovations (external orientation). Focus also lies on existing business areas, approached by novel market offerings. This type typically performs idea selection, prototyping, and development, while other functions perform the implementation and commercialization.
<i>External creator</i>	This type develops new products, services, and business models (external orientation), often covering the complete innovation process. This unit develops digital innovations in new business areas and commonly targets new customer groups.

These archetypes are neither exhaustive nor mutually exclusive. Hybrid types exist in practice

(Barthel et al., 2020) and sometimes represent a momentary DIU evolution stage (Raabe et al., 2020a).

Besides research on archetypes, existing studies have analyzed DIUs' objectives and areas of activity (Raabe et al., 2021), ambidexterity modes (Göbeler et al., 2020), and measures of integration and exchange (Holotiuk & Beimborn, 2019), as well as challenges. Common challenges to DIU's innovation activities are the not-invented-here-syndrome, unclear objectives, insufficient top management support, missing skills, C-level suite conflicts, financial bottlenecks, and part-time employees (Raabe et al., 2020b). Factors identified in recent DIU literature that mitigate these challenges are cross-unit collaboration, top management support (Göbeler et al., 2020), responsibilities and decision rights, and awareness across the organization (Raabe et al., 2020b). DIUs' activities range from idea generation, selection, and development to innovation implementation and commercialization, though the latter is rarely done by DIUs solely or at all (Barthel et al., 2020). Exploitive activities like market commercialization and diffusion often occur in the core organization, e.g., distribution or sales departments (Raabe et al., 2021). To exploit innovations, they have to be reintegrated from the DIU into the main organization, which is the ultimate value creation function of DIUs (Holotiuk & Beimborn, 2019).

However, research has missed shedding light on the reintegration of digital innovations into operational parts of the organization (Holotiuk & Beimborn, 2019). Even though other terms like implementation (Cooper & Zmud, 1990) might seem applicable, reintegration is coined to describe the phenomenon in focus. It refers to integrating digital innovation outcomes from designated DIUs into the core organization (Holotiuk & Beimborn, 2019; Raabe et al., 2021). While negative headlines on the DIUs' failure, dissolution, or challenges are rising (Raabe et al., 2020b), their long-term existence and organizational value are determined by the organizational exploitation of innovation outcomes. Currently, we lack knowledge on how DIUs manage this transition from exploration to exploitation in the form of the reintegration of their innovation outcomes.

### 3. Methodology

Considering the novelty and real-life context of the phenomenon, the scarcity of evidence on the reintegration of digital innovations into the core organization, and the nature of the research question, we chose a qualitative research approach, namely a single-embedded case study (Yin, 2018). This case study type enables data analysis within units and across units within a larger case (Yin, 2018). We analyze four heterogeneous DIUs regarding the reintegration of

digital innovations from these DIUs into operational parts of the organization. Due to the infancy of the research field on the reintegration of digital innovations from DIUs, we follow guidelines on building theory from case studies (Eisenhardt, 1989).

### 3.1 Case selection and sample description

The purpose of the single-embedded case study is to explore the setup and reintegration activities of DIUs. Thus, we applied purposeful sampling for case selection as it is suitable for exploring information-rich cases (Patton, 2015). Further, selecting DIUs from one corporation allows controlling for a certain degree of environmental variation (Eisenhardt, 1989). We selected the sub-units in line with our previously introduced definition of DIU, considering their involvement in the aspect of the inquiry, the reintegration of digital innovations, and their heterogeneity regarding their setup and objectives (maximum variation sampling) (Patton, 2015). The final sample consists of four heterogeneous sub-units within *FinCorp*, a global financial services corporation offering products and services in asset management and insurance. We selected *FinCorp*, as the DT is a substantial challenge for incumbents in the financial sector, where DIUs are becoming a popular approach to address adaptability deficits while simultaneously building up digital innovation capabilities (Göbeler et al., 2020). *FinCorp* is active in over 50 countries with more than 100,000 employees. The selected sub-units vary in age, employees, location, and innovation orientation, as presented in **Table 2**. Further, the DIUs differ regarding their structural embedding in *FinCorp*, where DIU1 operates within an executive department, DIU2 and DIU4 are separate units in the line organization, and DIU3 acts as a separate legal entity.

**Table 2. Overview of sub-units**

Sub-unit	DIU1	DIU2	DIU3	DIU4
Age (years)	2	1	8	6
Employees	12	6	40	30
Location	Onsite	Onsite	Offsite	Offsite
Innovation Orientation	External	Hybrid	Hybrid	Internal

### 3.2 Data collection and analysis

The data collection took place between October 2021 and February 2022. We primarily relied on semi-structured interviews. Permission for the study was obtained at the gatekeeper and employee levels. Contact was made via one author's professional network. The interviewees were selected regarding their DIU affiliation, professional focus, and hierarchical position. The interviewees have an average *FinCorp*-affiliation of

six years, ranging from one to fourteen years, and an average DIU affiliation of two and a half years, ranging from one to five years. We collected between two and three interviews per DIU, resulting in eleven semi-structured interviews. The interviews were conducted via online applications and lasted 61 minutes on average. We conducted the interviews in German or English, depending on the interviewees' language preferences. **Table 3** provides an overview of the interviewees, roles, and duration.

**Table 3. Overview of conducted interviews**

DIU	ID	Interviewee position	Minutes
DIU1	IP01	DIU Head	65
DIU1	IP02	Director	53
DIU1	IP03	Program Manager	67
DIU2	IP04	DIU Head	59
DIU2	IP05	Innovation Manager	79
DIU2	IP06	Transformation Manager	68
DIU3	IP07	Team Lead	53
DIU3	IP08	Associate	58
DIU4	IP09	Head of Development	58
DIU4	IP10	Product Supervisor	63
DIU4	IP11	Senior Developer	44

We designed a semi-structured interview guideline consisting of open and closed questions based on our research question, current literature, and case study guidelines (Yin, 2018). The interview guideline was discussed with different researchers and pre-tested to increase the study's rigor. After an introduction to the research project and general questions regarding the interviewees' background, we split the interview into two parts: **i)** open and closed questions regarding the DIU's history, setup, activity areas, objectives, and challenges based on existing literature, **ii)** open questions on reintegration activities. All interviews were recorded and transcribed verbatim (Miles et al., 2014), stored, coded, and analyzed in MAXQDA. We employed two types of coding for analysis depending on the interview parts. Data from part **i)** was deductively analyzed, leading to 130 sub-codes in seven groups: the DIU setup (Barthel et al., 2020), integration (Holotiuk & Beimborn, 2019), outcome (Wiesböck & Hess, 2020), activities and objectives (Raabe et al., 2021), ambidexterity mode (Göbeler et al., 2020), and challenges (Raabe et al., 2020b).

As the phenomenon of interest is underexplored, we analyzed data relating to **ii)** the reintegration inductively based on guidelines by Gioia et al. (2012), leading to five aggregated dimensions depicted in the result section. We collected secondary data for triangulation (Eisenhardt, 1989). Apart from publicly accessible data, one researcher attended internal meetings and obtained internal company documents. The secondary data consists of eight internal documents (131 pages), two websites, and three documents with field notes. We

applied within-unit and cross-unit analysis to the sub-units of the overall case (Eisenhardt, 1989).

The within-unit analysis of the reintegration was further validated in additional interviews with the most senior respective DIU members before commencing the cross-unit analysis. Two researchers performed data analysis independently, whereas noticeable differences were discussed and resolved (Miles et al., 2014).

## 4. Results

We present our findings in two steps. First, we describe the four DIUs' overall circumstances. Second, we present the results from our cross-unit analysis on the reintegration of DIU's outcomes.

### 4.1 Case description

As a financial service incumbent established over 100 years ago, *FinCorp* faces pressure to remain competitive and seize the opportunities offered by digital technologies. *FinCorp's* DT is being realized via several concurrent DT strategies and initiatives in different parts of the organization. Some of these initiatives are constituted by diverse types of DIUs.

**DIU1** was established in 2020 as part of an organization-wide DT strategy. It acts as a separate unit within the company's business management department to develop and implement novel digital products and services and digitalize existing products to incrementally drive and expand digital business in the wealth management sector. The DIU's members have backgrounds in finance and technology. While operating cross-functionally, DIU1 focuses on collaboration with the distribution function of the organization. The DIU is endowed with a free budget and can autonomously allocate its budget after top management clearance. The outcomes of DIU1 range from concepts over prototypes to fully developed digital products with accompanying business models and scalable digital assets and infrastructure. DIU1 shows substantial similarity to the *external enhancer* type (Barthel et al., 2020).

**DIU2** was founded at the beginning of 2021 during restructuring the organization's operations department to approach innovation holistically. The DIU's goal was to be "*a business engine for novel ideas and transformational trend experts*" (IP05). The members' backgrounds range from transformation and innovation management to venture capital and FinTech. DIU2 has a focus on collaboration with the operations department. DIU2 has "*access to a dynamic budget*" (IP04) and funds after clearance. The outcome of DIU2 consists of concepts and prototypes addressing identified business problems and innovation frameworks. Besides DIU2's

involvement in implementing digital innovations and its structural embedding, DIU2 can be characterized as an *internal facilitator*.

**DIU3** was founded as a digital accelerator with an early-stage investment focus in 2014. In 2018, it was transformed into a strategic corporate venture capital unit dedicated to late-stage investments in digital companies in the fields of "*FinTech, WealthTech, and InsurTech*" (IP07). DIU3 is dedicated to "*driving digitalization and transformation*" (IP07) by investing in companies with digital innovations of strategic relevance. The members' backgrounds stem from mergers and acquisitions, deal advisory, venture capital, and financial business. DIU3 cooperates with a defined selection of operating entities. While DIU3, as a separate legal entity, has financial resources for daily operations, the resources for startup investments are only accessible after a complex approval process involving the organization's top management. DIU3's innovation outcomes can be radical and disruptive and include all digital innovations reintegrated into the organization after the startup investment. Except for taking projects upon request from the main organization and the lack of involvement in idea generation and idea selection as it invests in startups, DIU3 corresponds to the type of an *external creator*.

**DIU4** was founded in 2016 as a largely exploratory and autonomous DIU, which existed separately from the core organization. The unit was repositioned to a different organizational entity in 2019. In 2021, DIU4 was placed within a line organization to bring the developed learnings, skills, and assets closer to commercialization. DIU4 is dedicated to developing process innovations, targeting developers' productivity, and delivering scalable, industrialized, and productized digital solutions in the UX/UI and front-end space to ensure customer-centric and leading digital customer experiences organization-wide. The members' backgrounds lie in software development, engineering, or design. DIU4 is funded within an organization-wide digitalization project with plans to commercialize its outcomes in the future internally. Besides DIU4 being involved in implementing digital innovations and its structural embedding within a line organization, the DIUs design is close to that of the *internal facilitator*.

Commonalities are the combination of internal and external hires, their full-time focus on DIU projects, and intermediate or high degrees of autonomy. All DIUs have the option of accessing financing after clearance. Further commonalities are their rather incremental nature of innovation outcome, except for DIU3.

The DIUs differ in their design, as indicated by their ideal types, where their heterogeneity demonstrates in innovation outcome type, respective innovation orientation, and participation in the innovation process.

## 4.2 Reintegration phases and activities

This section is dedicated to the results of the reintegration across the sub-units. From the inductive analysis, the reintegration of digital innovations from DIUs into operational parts of the organization can be clustered into three phases, including respective activities, as shown in **Figure 1**.

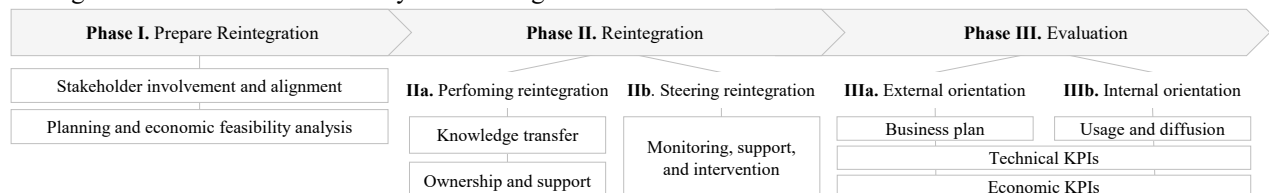
**Phase I:** Regarding the preparation of reintegration, we found similar activities across all DIUs: stakeholder involvement and alignment of interests, scope, and targets, planning, and economic feasibility analysis. DIU1's activities involve joint scoping regarding the outcome and properties with the relevant operating entity, accompanied by an economic feasibility analysis in an "investment case" (IP01). The analysis ensures the value-added, personnel involvement of the operating entity early on, coupled with the alignment of interests and expectations of all relevant stakeholders and the definition and allocation of all roles and responsibilities to "clarify who is responsible for what" (IP03). DIU2 pitches the project to decision-makers and conducts economic feasibility analysis to ensure the value-added, obtains a C-level mandate, and aligns the interests of all stakeholders. DIU3 conducts economic feasibility analyses to ensure the value-added of the DIU outcome. Other steps involve the alignment of the startup and the relevant operating entity as the resulting "accountability is quite important" (IP08), as well as the alignment of interests of all parties. DIU3 obtains the buy-in of the operating entity and formalizes it with a "partnership case between startup and operating entity" (IP07). At DIU4, the definition and design of the digital innovation take place in preparation for the reintegration. Considering existing organization-wide standards and the preparation of detailed and comprehensive documentation, DIU4 conducts a digital component analysis. The analysis is clustered as target alignment and scoping on a technical level. Results of this phase show that initial input in terms of problems, interests, and objectives stems from interaction with the core organization, emphasizing the reintegration aspect.

**Phase II:** This phase differs depending on the number of involved entities. Type IIa. is a two-entity reintegration between the DIU developing the outcome and the operational entity as a future user or owner (DIU1 and DIU4). Type IIb. is a three-entity reintegration between the entity delivering the

innovation or project management, the operational entity as the target entity, and the DIU as a steering entity (DIU2 and DIU3).

**IIa. Performing reintegration:** The "handover of the digital innovation to the client" (IP02) occurs during the end-to-end testing between DIU1 and the operating entity after the development. During this phase, support processes and concepts for evaluation are put in place. Similar to the provision of the solution for testing purposes at DIU1, DIU4 centrally provides the digital innovation for access and adoption by all entities or people in the organization who are familiar with it in a short reintegration, i.a., via informal channels "because that's where you reach the most developers who say: cool, there's something new we're going to try" (IP10). Unfamiliar employees are onboarded in knowledge transfer sessions. DIU1 follows similar activities regarding knowledge transfer via documentation and direct information exchange. While the reintegration is concluded after the abovementioned activities, DIU1 generally retains a degree of ownership, supports the operating entity, and actively enhances digital innovation without a defined ending, giving the process a cyclic nature. "We are not 'provide and gone,' but 'provide and stay' to continue to co-develop and support" (IP02). DIU4 also retains ownership, provides support during and beyond reintegration, and continuously enhances the innovation based on internal adopter feedback. "It has no endpoint; we develop new features every week. With changes come new ideas from the developers, we respond to" (IP11). The incremental nature of DIU4's outcomes positively affects reintegration: "the scope is rather small, we can quickly go into breadth" (IP10), "with complex solutions, we sometimes have a technical not-invented-here-syndrome, not with incremental ones" (IP09).

**Phase IIb.** When steering reintegration, the DIU's main activity is to monitor and support and "take action where necessary to ensure the project happens" (IP04). At DIU2, reintegration is executed by the organization's project management. It starts with the handover to the project management and knowledge transfer to all involved parties. Next, the project management begins the reintegration and accompanying change management. The reintegration at DIU3 consists of a handover, integration, and knowledge transfer, mainly carried out by the startup owning the digital innovation in collaboration with the operating entity. While the reintegration process could present the exit point for the



**Figure 1. Reintegration phases and activities**

DIU, a certain degree of ownership is retained with monitoring, support, and mediation beyond reintegration. Whereas a cyclic nature characterizes the performing reintegration process, steering reintegration follows a relatively linear process with a defined end.

**Phase III:** Evaluation refers to the reintegration project and the evaluation of the innovation itself. Measures depend on the DIU's innovation orientation and are not mutually exclusive within one DIU.

**IIIa. Evaluation of externally-oriented innovations** involves "measures to monitor the achievement of the business plan" (IP01). With DIU1's and DIU3's product innovations intended for B2B or end-consumers, we found that evaluation was linked to the achievements of previously defined business plan criteria: "Recently we had a successful integration. It was one of the fastest projects ever, it was on time, on budget, everybody was happy" (IP08).

For **IIIb. Evaluation of internally-oriented innovations**, we found the usage and diffusion criteria split up into quantitative and qualitative measures. "All source code is stored in GitHub. That gives us a KPI; we see 800 developers in 800 projects using it - that's how we justify our work. In parallel, we ask the developers: How much time does this tool save you daily?" (IP09). The second evaluation level applies to both innovation types. It concerns technical KPIs like the number of bugs in the solution or "the number of technical complaints from the counterparty" (IP02). Economic KPIs like cost reduction or profit increase mark the third evaluation criteria, indicating the digital innovation's value on the adopter side. "Assets under management or volume of sales or revenue" (IP08), "it should always bring 15 percent savings or profit increase as standard value" (IP05), and "Do we generate flows over it?" (IP03).

#### 4.3 Reintegration drivers and inhibitors

Next to the three reintegration phases, we identified drivers and inhibitors affecting reintegration, as presented in **Table 4**.

**Table 4. Drivers and inhibitors of reintegration**

Factors affecting reintegration		DIU			
		1	2	3	4
Drivers	Top-down support and communication	x	x	x	x
	Co-creation	x	x		x
	Aligned objectives and expectations	x	x	x	
	Involvement and counterparty ownership	x	x		
	Continuous (co-)ownership	x	x		x
	(Continuous) knowledge transfer	x	x		x
Inhib.	Misalignment of objectives	x	x		
	Missing commitment/ ownership of reintegration counterparty	x			x

First, top-down support for digital innovation and its reintegration emerged as a relevant driver, "sponsors at the top level who are behind it, that we have their commitment" (IP07). It led to easier and faster access to financial and personnel resources, higher prioritization, and reduced resistance on the counterparty side.

Second, co-creation can drive reintegration: "We don't have reintegration problems because we develop customer-centric based on our partners' specific needs. Our first MVP is wanted from the start" (IP01).

Third, aligned objectives and expectations drive reintegration, especially in non-standardized and complex reintegrations, as misunderstandings and resource conflicts are discussed in advance. "We have to define at the beginning in which form and when we hand over what. [...] Then the handover takes place without discussion" (IP04).

Fourth, involving the operating entity is crucial: "What helps us is engaging in co-innovation and not be a cloud castle in which something is developed" (IP05). "Involving the people early and making it theirs" (IP03) incentivizes members of the counterparty to accept the innovation and take the initiative. This "creating co-conspirators" (IP05) is often achieved by "demonstrating the digital innovation's relevance and urgency to the counterparty" (IP04).

Fifth, the DIU side's continuous ownership of the innovation outcome drives reintegration. Knowledge of the innovation outcome and availability to support the operating entity affects reintegration positively.

Sixth, starting an early and continuous knowledge transfer before and during the reintegration emerged as a measure, as it enables the operating entity to get familiar with the innovation outcome. "We announce in advance. [...] They know what's coming and do not try to kill the project in the weakest moment" (IP05).

Emerging inhibitors negatively influence reintegration. Misalignment leads to the parties working towards different objectives; "if you don't have the same goals, [...] you have extreme difficulties" (IP02). "They can't align themselves then you have chaos, disagreements and then nothing works that means standstill" (IP03). It can lead to reintegration delays, failed reintegration, or "stopped operative collaboration" (IP01).

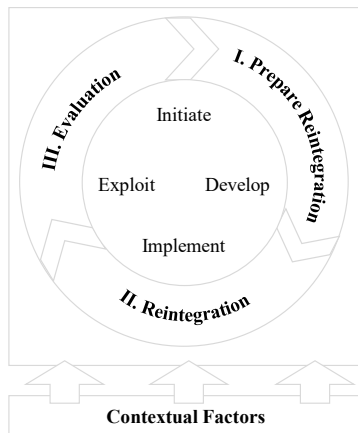
The counterparty's missing commitment or ownership to the innovation can also inhibit reintegration; "if it works or not depends on the will of the people" (IP03).

Other unit-dependent themes inhibiting reintegration were, i.a., "legacy systems and long-established teams [...] which also slow down and complicate these processes" (IP11) and "scarcity of resources and slow or complicated processes" (IP06).

## 5. Discussion

As the DIUs differed regarding their setup, they exhibited a certain level of complementarity. Among the four analyzed DIUs, all three ideal types are present at *FinCorp*. Regarding DT strategy, the analyzed DIUs were not established as part of one coordinated and deliberate DT strategy but rather as the result of emergent strategy (Mintzberg, 1994). The existence of multiple complementary DIUs on different organizational levels enables *FinCorp* to realize hybrid ambidexterity (Jöhnk et al., 2020).

One of the main findings is constituted by the heterogeneity of the reintegration activities by DIUs. The heterogeneity is partly explainable by certain contextual factors. Three factors affect reintegration: i) the number of involved entities, ii) the innovation orientation, and iii) the future owner or user. The presence of contextual factors affecting reintegration support the notion that the internal environment shapes digital innovation (Kohli & Melville, 2019). We mapped the reintegration from DIUs along the digital innovation process (Kohli & Melville, 2019) to synthesize our findings in **Figure 2**.



**Figure 2. Digital innovation reintegration framework**

We found that reintegration activities strongly connect to the overall digital innovation process; initiating and developing occur parallel with preparing for reintegration, namely aligning interests and the economic feasibility analysis. In this phase, all DIUs operate rather homogeneously. Implementation and exploitation are linked to the actual reintegration, where the DIUs' actions and involvement vary depending on the number of stakeholders involved. In parallel to the exploitation of the digital innovation outcome, the evaluation can, in cases, restart the digital innovation initiation and reintegration. Evaluation varies depending on the digital innovation orientation. This finding is in line with the requirement that evaluation for DIUs should distinguish between their innovation orientation (Haskamp et al., 2021).

DIUs can take on a performing and steering role in reintegration. When the DIU performs reintegration, it follows a cyclic nature. In these cases, the idiosyncrasies of digital technologies are used for continuous innovation and reintegration (Yoo et al., 2010). With external innovations, insights in usage data are used to restart innovation processes. Internal usage data combined with qualitative feedback is used to enhance internally-oriented innovations. The characteristics of digital technologies allow for fast deployment and centralized access to innovation outcomes for the organization. The cyclic paradigm was especially observed in DIU4's innovations. It can be rooted in the progressed evolution of this DIU in terms of i) processes and experience, ii) technical infrastructure, iii) core organization acceptance, and iv) the incremental nature of digital process innovations.

We also identified reintegration drivers and inhibitors. Top-down support from management is often considered crucial to the overall DIU success (Raabe et al., 2020b). Meanwhile, the existence of further drivers emphasized that there is a "limit to how much managerial fiat can dictate the processes and outcomes" (Kohli & Melville, 2019, p. 209).

Reintegration drivers also involve collaboration mechanisms, namely co-creation in the development and ownership of the organizational entity and *DIU* side. Meeting demands related to digital innovations is often only achievable by integrating the counterparty early in the innovation process (Wiesböck & Hess, 2020). Results indicate that (internal) co-creation can drive reintegration. Previous literature emphasizes the relevance for organizations to embrace openness with external actors in the shape of innovation ecosystems (Lyytinen et al., 2016; Svahn et al., 2017). However, this paradigm was also relevant in internal co-creation with the DIU and the target entity in this specific case.

Further drivers include actively pursuing aligned interests of the involved parties, innovation ownership by the counterparty, and early and continuous knowledge transfer. Here, our findings support the notion that promoting DIU-business collaboration across all stages of the digital innovation process ultimately contributes to the DIU value (Raabe et al., 2020b). Another driver refers to the continuous DIU ownership and provision of support during and beyond reintegration. The relevance of ownership to steering digital innovation's social and technical reintegration has recently been highlighted (Holotiuk, 2020). This understanding was constituted by the role of the process owner on the counterparty side as a "future user, who was willing to take over process ownership after exploration" (Holotiuk, 2020, p. 12). We can extend this perspective to the relevance of ownership on the *DIU* side, managing reintegration jointly with the operating



entity. Besides, we found hints that the DIUs encompass different evolution stages. They prevail not only by years of existence but maturity in digital innovation activities, visualized by the cyclic nature of innovation reintegration. The progressing maturity and cyclic nature point towards exploiting initially explorative activities. With close integration of DIUs and exploitation of their explorative digital innovation efforts, *FinCorp* might be heading towards a digitally mature state through continuous digital innovation.

## 6. Contributions and Implications

In answer to the lack of understanding regarding the value creation of DIUs in the transition between exploration and exploitation, this study sheds light on the reintegration activities of digital innovation outcomes of four DIUs in a financial service corporation. The study contributes to IS literature in two ways. First, our study responds to calls for research on the interaction between DIUs and the main organization (Raabe et al., 2020a), along with the reintegration of digital innovations (Holotiuk, 2020). This study demonstrates the reintegration heterogeneity of digital innovations from DIUs back into the core organization depending on the number of stakeholders: the DIU's role (performing vs. steering) and innovation orientation (internal vs. external), as well as the future solution owner (ownership). For our analysis, we rely on and apply existing DIU frameworks (Barthel et al., 2020; Raabe et al., 2021; Raabe et al., 2020b). We show how the DIUs' setup is linked to how they ultimately deliver organizational value. We derive a framework characterizing the reintegration of digital innovations, comprising three phases and designated activities. Further, we mapped the reintegration phases alongside the overall digital innovation process (Kohli & Melville, 2019) and adjusted them to account for mature reintegrations' cyclic nature.

Second, we contribute to research on organizational engagement in digital innovation (Nambisan et al., 2017). *FinCorp* embraces hybrid ambidexterity to democratize innovation. The study contributes to contemporary research on DIUs as a structural design option to embed digital innovation and provides a nuanced perspective on how *FinCorp* manages the transition between exploration and exploitation through reintegration. While this area has been touched upon (Holotiuk, 2020), this study is the first to investigate the reintegration of innovation outcomes. As the management of DIUs puzzles management due to challenges to their functioning, our results can serve as an initial foundation on how DIUs deliver value to the main organization. Here, we emphasize the relevance of

(internal) co-creation, collaboration and exchange, and ownership as drivers.

This study provides implications for practitioners to realize hybrid ambidexterity and leverage mechanisms to mitigate reintegration inhibitors and strengthen drivers. First, co-creation, objective alignment, and ownership measures must be implemented to prepare for reintegration. Second, managers should foster stakeholder exchange, as primarily social factors threaten reintegration. Third, practitioners should differentiate evaluation metrics on innovation orientation. Further, managers should define responsibilities and support the DIU for organization-wide awareness. Measures like establishing an internal platform could enable continuous exchange and knowledge transfer across all reintegration phases, foster collaboration, and further digital innovation.

## 7. Limitations and future research

The study's limitations may provide impulses for future research. First, while other firms in the financial industry engage in similar digital innovation activities, their setup might differ. Actions might deviate further in other sectors and with different value creation structures. Yet, we leveraged *FinCorp's* intra-organizational heterogeneity to derive an aggregated framework for applicability beyond the specific context. Future studies can apply and extend the framework to account for other settings. Second, we primarily relied on interviews with DIU members in an initial attempt to characterize reintegration. Future research can incorporate additional sources, i.e., the DIU's counterparty, to explore the acceptance and use of digital innovations. Also, future research can investigate the (challenging) role of the not-invented-here-syndrome concerning different DIU setups and digital innovation reintegrations. At *FinCorp*, we found evidence of different DIU maturity stages indicated by their positioning and cyclic digital innovation reintegration. Future studies can dig deeper into the evolution of DIUs linked to the firm's overall DT.

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