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# Pathways to Developing Digital Capabilities within Entrepreneurial Initiatives in Pre-Digital Organizations

## A Single Case Study

Robert Keller · Philipp Ollig · Patrick Rövekamp

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**Abstract** To enable new digital business models, pre-digital organizations launch entrepreneurial initiatives. However, in developing the required digital capabilities, pre-digital organizations often face challenges as they are marked by the ways they have historically established their organizational identity. Research on how pre-digital organizations can develop digital capabilities remains scarce. This study draws on a single case study to illustrate potential pathways for the development of digital capabilities. Two key characteristics are identified: the source of digital capability development and the set-up of the actors involved. The authors synthesize four possible pathway manifestations, discuss the dynamic nature of pathway combinations, and suggest that managing a portfolio of pathways may be crucial for pre-digital organizations. Therefore, the study contributes to a better understanding of digital transformation in pre-digital organizations. Furthermore, it provides guidance for

practitioners to reflect on when deciding which pathways to follow.

**Keywords** Digital transformation · Digital capabilities · Pre-digital organizations · Corporate entrepreneurship · Organizational identity

## 1 Introduction

Digital technologies continue to drive a fundamental transformation among businesses (Chanias et al. 2019; Henfridsson and Bygstad 2013) and entrepreneurship (Nambisan 2017). From the perspective of established pre-digital organizations (PDOs), changing customer expectations (Gregory et al. 2018) and innovative business models (Bharadwaj et al. 2013) transform the organizational context (Vial 2019; Yoo et al. 2012). In particular, born-digital competitors have driven a consolidation of traditional industries (Hakala et al. 2020; Tumbas et al. 2017). PDOs perceive this development as both an existential threat and a game-changing opportunity (Sebastian et al. 2017).

In response, these organizations can launch entrepreneurial initiatives (EIs) to adopt digital technologies (Shen et al. 2018). Thus, digital entrepreneurship within organizations may help to establish new business models and transform existing organizations (Nambisan et al. 2019). Within their EIs, PDOs must develop digital capabilities that enable them to use digital technologies for novel products, services, operations, and/or business models (Lucas et al. 2013; Matt et al. 2015). However, PDOs face challenges in their digital transformation (DT), including leveraging their existing capabilities (Grant 1996a), (re)aligning resources (Yeow et al. 2018), and modifying existing structures (Jöhnk et al. 2020). Thus, depending on

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their individual situation, PDOs may follow alternate pathways that require specific strategic actions (van der Meulen et al. 2020).

Moreover, PDOs find themselves marked by their existing organizational identity (OI) (Ross et al. 2016; Svahn et al. 2017) rooted in their provision of non-digital products or services (Wessel et al. 2020). Hence, scholars have theorized that EI activities can lead to the emergence of new OIs (Baiyere et al. 2020; Wessel et al. 2020) that conflict with existing operations (Jöhnk et al. 2020; Svahn et al. 2017).

Pathways to develop digital capabilities for organizational entrepreneurship differ, yet research on these variations remains scarce (Wiesböck and Hess 2019). Moreover, scholars have identified a need for research on the conflicts of emerging OI within DT (Baiyere et al. 2020; Wessel et al. 2020). Despite the extensive research on DT and digital entrepreneurship, to the best of our knowledge, the pathways to developing digital capabilities in PDOs have received limited scholarly attention (Fürstenau et al. 2020). Therefore, this study constitutes a first step toward a better understanding of these pathways. Thus, we pose the following research question: *How do the pathways for developing digital capabilities differ within a PDO?*

To answer this research question, we conducted a single case study of FoodLtd (anonymized company name), a Germany-based PDO in the fast-moving consumer goods industry (a non-digital company with non-digital products). The organization has a global presence, over 15,000 employees, and has been in operation for 100 years. Drawing on 26 interviews conducted from 2017 to 2020, we analyzed six EIs that aimed to develop the company's digital capabilities.

The remainder of this paper proceeds as follows. First, we introduce digital entrepreneurship in pre-digital organizations and discuss how they build digital capabilities through digital transformation. Second, we outline the research method and introduce the case study. Third, we present our findings and characterize four pathways to developing digital capabilities. Finally, we conclude with a summary, outline future research opportunities, and discuss the implications and limitations of our work.

## 2 Theoretical Foundations

### 2.1 Digital Entrepreneurship in Pre-Digital Organizations

Digital technologies include emerging information, computing, communication, and connectivity technologies (Bharadwaj et al. 2013; Denner et al. 2018). Such technologies include the Internet of Things as well as social,

mobile, analytics, cloud, and platform technologies (Legner et al. 2017; Vial 2019). The nature of digital technologies differs from traditional information technology because of their re-programmability, homogenization of data, and self-referential nature (Yoo et al. 2010). Digital innovation refers to innovation enabled by such digital technology and, thus, comprises novel processes, products, services, and business models (Nambisan et al. 2017).

Firms incorporated long before the emergence of digital technologies are referred to as pre-digital organizations (Chanas et al. 2019), industrial-age firms, (Hanelt et al. 2021), or, in the case of small- and medium-sized family-controlled firms, family-owned Mittelstand (Soluk and Kammerlander 2021). Frequently, they are simply referred to as incumbent firms, for example, see Svahn et al. (2017) or Vial (2019). These organizations are understood to be “established companies belonging to traditional industries” (Chanas et al. 2019), such as manufacturing, production, or retail. Hence, PDOs face the dual challenge of adopting new digital technologies and integrating them into their own existing technologies and structures (Ciriello et al. 2018; Drechsler et al. 2020). In contrast, born-digital organizations, such as Amazon, Facebook, and Tencent (Chanas et al. 2019; Tumbas et al. 2017), leverage new digital technologies (Nambisan et al. 2020), and in doing so, challenge and change the existing rules of value creation and capture (Henfridsson 2020; Iansiti and Lakhani 2020). Therefore, the proliferation of digital innovation is blurring the industry boundaries of PDOs (Fichman et al. 2014; Henfridsson et al. 2018). Furthermore, born-digital organizations influence the expectations and experiences of consumers, which requires PDOs to adapt their offerings (Yoo 2010).

In reaction, PDOs aim for digital entrepreneurship that involves “ventures and transformation of existing businesses by creating novel digital technologies and/or novel usage of such technologies” (Shen et al. 2018). Thus, organizations launch EIs to face the challenges of digital ventures and transformation within their established structures (Nambisan et al. 2019). Therefore, a PDO's approach to EIs differs significantly from that of born-digital organizations and start-ups as it must overcome organizational barriers, yet it may also leverage existing assets (Steininger 2019). Wiesböck and Hess (2019) provide a detailed account of organizational structures, IT application portfolios, culture, and capabilities as factors contributing to the successful incorporation of digital innovation.

## 2.2 Building Digital Capabilities within Digital Transformation

When pursuing digital EIs, PDOs must develop the necessary capabilities (Warner and Wäger 2019). Across the literature these capabilities are commonly referred to as organizational (Chan et al. 2019; Matt et al. 2015) or digital capabilities (Ross et al. 2016; Soh et al. 2019; Wessel et al. 2020; Wiesböck and Hess 2019), although these studies do not specifically focus on the development of these capabilities for implementing DT. Fischer et al. (2020) apply a business process management lens to examine capabilities to be developed, while various other scholars have analyzed such developments through the lens of dynamic capabilities (Karimi and Walter 2015; Törner and Henningsson 2019; Warner and Wäger 2019; Yeow et al. 2018), indicating that complex capabilities, such as dynamic or digital capabilities, may consist of combinations of simpler capabilities (Wheeler 2002). Therefore, existing organizational capabilities impact an organization's ability to utilize and deploy its resources (Grant 1996b), which in turn impact the development of digital capabilities.

PDOs must understand digital capabilities beyond those of their existing IT functions (Legner et al. 2017). Traditional IT capabilities describe a firm's ability to manage IT resources to support business strategies and processes (Lu and Ramamurthy 2011). In contrast, digital capabilities are classified by Wiesböck and Hess (2019) as those that "allow organizations to use digital resources for innovation purposes." Furthermore, digital capabilities enable organizations to use digital technologies to support decision-making (Fürstenau et al. 2020). In the context of PDOs, we understand digital capabilities to include all capabilities required for digital EIs to pursue digital ventures and the transformation of existing businesses. Therefore, digital capabilities exceed the capabilities required for IT functions, but they also comprise capabilities concerned with, for example, entrepreneurial, continuous, or cultural change, and balancing collaboration and competition in respective innovation ecosystems.

Born-digital organizations are inherently used to adopting emerging digital technologies (Hou et al. 2020; Tumbas et al. 2017). In contrast, PDOs may have followed the same business model and value creation path for years or even decades (van der Meulen et al. 2020), and they were not founded with digital capabilities (Svahn et al. 2017). However, PDOs must consider existing organizational structures (Vial 2019) when launching EIs that develop digital capabilities. Hence, approaching DT through EIs is an ongoing process to building up (digital) capabilities to refresh or replace (parts of) organizational business models (Chanias et al. 2019; Warner and Wäger 2019). Moreover, in the case of family-owned Mittelstand

firms, Soluk and Kammerlander (2021) subdivide the process into three stages: (1) process, (2) product and service, and (3) business model digitalization.

However, depending on their individual situation, PDOs may follow alternate pathways that require specific strategic actions (van der Meulen et al. 2020). Woodard et al. (2013) conceptualize possible strategic actions as design moves and draw on option value theory to measure existing opportunities. Consequently, regarding DT, PDOs have different pathways to develop new digital capabilities. Previous studies on DT have identified several aspects characterizing such pathways. First, the sources of digital capability development can range from organic, on the one hand, to inorganic, on the other (Wiesböck and Hess 2019). Therefore, an organization may develop capabilities internally, strive for partnerships, rely on external sourcing (Hess et al. 2016), or execute digital mergers and acquisitions (Hanelt et al. 2021). However, complete external sourcing may impede the development of capabilities within the PDO. Ritala et al. (2021) propose that employees' individual-level entrepreneurial orientation is positively associated with a PDO's overall DT strategy performance. Second, pathways relate to changes in a PDO's organizational culture, leadership, structures, and employee roles and skills (Vial 2019). For example, cross-functional teams, rapid decision-making, and executive support were found to be key internal enablers of DT (Warner and Wäger 2019). Further, Zimmer (2019) argues that DT implementation unfolds either from the bottom-up or top-down.

## 2.3 Emerging and Existing OI within Digital Transformation

In addition, the OI of the PDOs originates from long-standing non-digital products or services and historically grown organizational structures (Ross et al. 2016; Svahn et al. 2017). The concept of OI consists of deliberations on what an organization is (Albert and Whetten 1985; Whetten and Mackey 2002) and how members make sense of what the organization claims to be (Corley and Gioia 2004; Gioia and Thomas 1996). Moreover, OI is relational among members, flexible in changing environments, and reproduced through ongoing communicative activities across people and organizations (Whitley et al. 2014). Over the last few decades, several contributions have been made at the intersection of OI and information technology built on case studies, such as in electronic trading (Barrett and Scott 2004; Barrett and Walsham 1999) and medical organizations (van Akkeren and Rowlands 2007). Scholars note that social form and social action are crucial in studying how technology is altering organizations (Barley et al. 2007). For example, Tyworth (2014) show that for two

organizations in the criminal sector, different OI led to different information technology processes, despite both organizations fulfilling the same function. In addition, Alvarez (2008) demonstrates that OI may support the implementation of technology but hamper its use. Furthermore, organizations need to be mindful in leveraging information technology within interorganizational collaboration as it may facilitate collaboration, but it may change the OI (Gal et al. 2008).

Concerning DT, Wessel et al. (2020) suggest that the introduction of new value propositions within DT impacts OI. Therefore, new emerging OIs can conflict with the existing OI during the DT process (Baiyere et al. 2020). Scholars have previously examined how OI conflicts become apparent in organizational barriers such as inertia and resistance (Vial 2019), leading to an increase in organizational tensions (Gregory et al. 2015; O'Reilly and Tushman 2013).

Svahn et al. (2017) highlight conflicts between the identities of a PDOs core organization and its digital business. The latter differs from the former in that products equipped with digital technologies are not finished after production but are changeable throughout their life cycle. Soh et al. (2019) suggest that managerial responses to such conflicts may be either defensive, which causes DT to stall, or receptive, mitigating tensions and opening new value creation paths.

Although OI and the adoption of digital technologies are interrelated, existing research omits the pathways that organizations have for implementing digital technologies. Pathways trigger a shift in an organization's trajectory that is not yet fully formed and coexists side-by-side with established trajectories (Henfridsson and Yoo 2014). On different pathways, OI claims imposed by DT strategy and top management (Whetten 2006; Whetten and Mackey 2002) meet and interact with more dynamic OI understandings that emerge within the execution of EIs (Corley and Gioia 2004; Gioia et al. 1991; Gioia et al. 2000). To the best of our knowledge, it has not yet been theorized how organizations may use pathways and their characteristics to manage existing and emerging OI.

### 3 Research Method

#### 3.1 Data Collection and Analysis

We used a single case study (Yin 2017) to analyze how FoodLtd approaches pathways to developing digital capabilities. Single case studies allow the investigation of a case within its natural context, allowing researchers to gain an understanding of the phenomena (Chan et al. 2019; Fürstenau et al. 2020; Svahn et al. 2017; Yeow et al. 2018; Yin 2017). As our aim is to unravel how pathways to

developing digital capabilities differ within PDOs, we draw on a single case, which forces us to devote our attention to the case of FoodLtd. Although we expect digital capabilities to exist in a wide range of different situations, due to the unexplored character of the research domain a single case study may be appropriate to explore potential patterns (Yin 2017).

We chose FoodLtd in the fast-moving consumer goods industry as a typical incumbent organization whose industry is under pressure from digitalization. Therefore, we conducted 26 semi-structured interviews and gathered additional data from other sources (informal conversations, field observations, internal presentations and documents, and publicly available media information) to triangulate our findings (Myers and Newman 2007). This helped us to broaden our understanding of the organization's situation (Table 1).

We used a semi-structured approach intended to elicit stories from the organization (Myers and Newman 2007). The interviews started with a brief introduction identifying the participating researcher, interviewee, and research project. The interviews intended to elicit the interviewee's understanding of DT activities to enable paths to new value creation. Interviewees were also asked to describe the challenges accompanying DT implementation at FoodLtd. During the interviews, we adapted the questions to shift the focus of the interview depending on the interviewees' knowledge and expertise (Myers and Newman 2007). Example questions included the following:

- Can you tell us about the firm's EI? How have you pursued the initiative? Please reflect on what has been successful and what has not. (Request examples)
- What capabilities have you developed within your EI/EIs? How were these capabilities developed? Why where they approached in this way? (Request examples)
- Can you think of the conflicts you have had with the core organization? How did you manage them? (Request examples)

**Table 1** Overview of the collected data

Type	Amount	Documented
Interviews	26	1,444 min of transcripts
Informal conversations	47	Notes from 33 h of conversation
Observations	22	Notes from 65 h of observation
Internal documents	414	–
Public data	40	206 pages



Taking a purposive snowball sampling approach, we also asked the interviewees to provide us with further contacts and secondary documentation material if applicable. We recorded all interviews with the permission of the interviewees, and subsequently transcribed and analyzed a total of 1,444 interview minutes (Table 2).

For data analysis, we first produced a full case write-up for each interview, which allowed us to become immersed in our data (Yin 2017). Second, we used qualitative content analysis techniques and analyzed the data using MAXQDA (Mayring 2014). Two authors systematically analyzed the interviews word-by-word in two subsequent coding rounds. In line with Miles and Huberman (1994), we conducted an initial inductive coding round, wherein we looked for recurrent phenomena and relations among them. During this round, we extended our coding scheme whenever new topics emerged from our data. We visualized and clustered our data and made use of annotations (code comments) and theoretical memoing to preserve emerging explanations

and coherences (Saldaña 2016). In the second coding round, we amended and refined the constructs and propositions to understand the causality between FoodLtd's DT activities (especially their EIs) and the development of digital capabilities. During data analysis, all authors discussed the coding approach, eventual ambiguities, and preliminary findings from the joint coding sessions. Finally, we used our empirically induced findings and theoretical arguments to derive a timeline of activities at FoodLtd and the development of digital capabilities.

### 3.2 Case Settings

In its industry category, FoodLtd is a global leader that operates several lines of business, including asset investments such as production facilities. However, since 2016, questions have arisen about the impact of digital technologies, which are transforming this established industry. Initially, FoodLtd considered responding to the changing

**Table 2** List of interviews

#	Role of the Interviewee	Experience	Type	Duration
1	Head of Marketing & Business Model Development	> 10 yrs	Video Call	48 min
2	Management Business Model Development	> 10 yrs	Video Call	90 min
3	Management Business Model Development	> 10 yrs	Personal	72 min
4	Management Business Model Development	> 10 yrs	Video Call	69 min
5	Business Model Development	5–10 yrs	Personal	65 min
6	Business Model Development	< 5 yrs	Video Call	64 min
7	Business Model Development	< 5 yrs	Personal	47 min
8	Business Model Development	< 5 yrs	Personal	52 min
9	Business Model Development	< 5 yrs	Personal	43 min
10	Head of Corporate Strategy	> 10 yrs	Video Call	45 min
11	Corporate Strategy	5–10 yrs	Personal	65 min
12	Corporate Strategy	5–10 yrs	Personal	55 min
13	Corporate Strategy	< 5 yrs	Video Call	65 min
14	Head of Digital Marketing	> 10 yrs	Personal	48 min
15	Head of Digital Marketing	> 10 yrs	Personal	26 min
16	Digital Marketing	5–10 yrs	Personal	57 min
17	International Marketing	5–10 yrs	Personal	66 min
18	International Marketing	> 10 yrs	Personal	62 min
19	International Marketing	5–10 yrs	Personal	56 min
20	International Marketing	5–10 yrs	Personal	50 min
21	International Marketing	5–10 yrs	Personal	45 min
22	International Marketing	5–10 yrs	Personal	51 min
23	International Marketing	5–10 yrs	Video Call	57 min
24	Head of Cultural Change	> 10 yrs	Personal	56 min
25	Cultural Change	5–10 yrs	Personal	45 min
26	Cultural Change	5–10 yrs	Video Call	45 min

behavior and needs of their end consumers by offering novel digital services. Even though digital and local delivery platforms were beginning to have a significant impact on their industry, these developments were only perceived as a long-term threat to the existing business model. However, FoodLtd sought opportunities to focus on the introduction of digital business models. Therefore, FoodLtd decided to develop a DT strategy and build digital capabilities by launching various EIs.

## 4 Findings

### 4.1 Internal Context and Digital Transformation Strategy

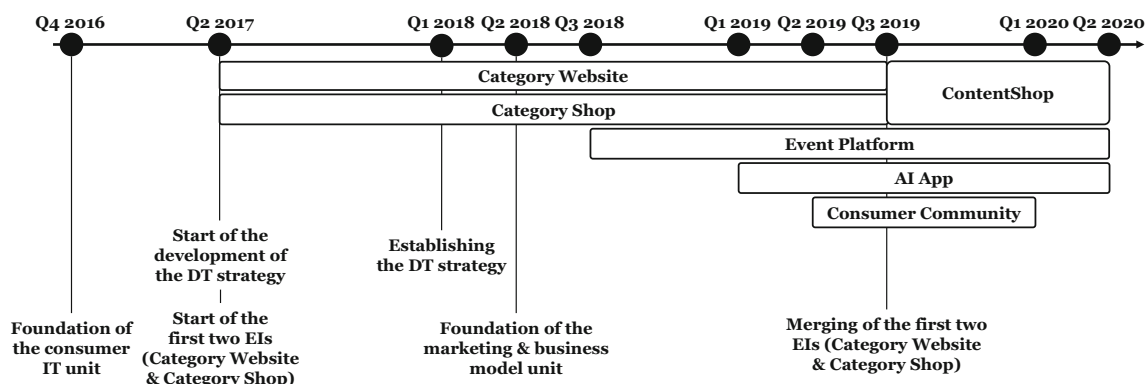
Historically, FoodLtd organized its production, logistics, and IT functions centrally. This strategy allowed the firm to exploit and profit from supply economies of scale. However, to maintain close relationships with retailers and end-customers, sales and marketing activities were decentralized among FoodLtd's national subsidiaries. Facing consumers, these subsidiaries historically developed several digital touchpoints, including branded websites, apps, and social media offerings. However, since these activities did not focus on FoodLtd's supply economies of scale, the global IT function did not actively manage these solutions. Instead, the subsidiaries commonly outsourced IT functions to digital marketing agencies. Nevertheless, at the end of 2016, FoodLtd was increasingly interested in the “digital” elements of its strategy, and the organization's perspective began to shift.

To unlock digital business models, the CEO encouraged a focus on building digital touchpoints with end consumers. FoodLtd founded a new unit, “consumer IT,” to centrally develop the capabilities necessary for the adoption of digital technologies. Existing units were expected to leverage digital technologies to unlock potential business

models. In 2017, consumer IT began hiring staff. Meanwhile, beginning in Q2 2017, the strategy unit developed a comprehensive DT strategy that FoodLtd officially incorporated into its business strategy in Q1 2018. In parallel, together with consumer IT, the first two EIs (CategoryWebsite and CategoryShop) began to take their first steps (see Fig. 1 and Table 3). Against this backdrop, FoodLtd noticed that in implementing the new strategy, existing organizational capabilities (often) became unusable. Thus, further digital capabilities – in addition to the company's existing capabilities – would be necessary for the adoption of digital technologies.

*“These [entrepreneurial initiatives] are all things that have little to do directly with our core business because they involve completely different capabilities, different KPIs, and different complexities, (...) away from the competencies we have today. We can't really bring our marketing expertise to bear, we can't really use our sales team for it and certainly not our own production and supply chain.”* – #10, Head of Corporate Strategy.

In response to this need, in Q2 2018, FoodLtd founded a new unit to develop its marketing and business model. This unit would coordinate the EIs and develop further necessary digital capabilities. The two existing EIs joined together, and EI employees were termed “business model developers.” From Q3 2018 onwards, the unit hired more staff and introduced three more EIs: Platform in Q3 2018, AIApp in Q1 2019, and ConsumerCommunity in Q2 2019 (Table 3). Furthermore, in Q3 2019, FoodLtd merged the EIs CategoryWebsite and CategoryShop to bundle the development of digital capabilities and unlock a joint business model, forming the EI ContentShop, which strived for cash flow profitability. Finally, ConsumerCommunity ended because of the unsatisfactory results of a prototype in Q1 2020 (see Appendix A for a more detailed description of the individual EIs. The Appendix is available via <http://link.springer.com>).



**Fig. 1** Digital entrepreneurship at FoodLtd

**Table 3** Entrepreneurial initiatives at FoodLtd

Initiative	Description
CategoryWebsite (Q2 2017 – Q2 2019)	CategoryWebsite is a recipe website meant to form the basis for a future digital business ecosystem of FoodLtd. The EI started as a joint initiative between the marketing and business model unit, consumer IT, and a local country from which the idea for CategoryWebsite emerged. The EI aimed to adopt social and mobile technologies to offer a novel consumer experience. However, in Q2 2019, the EI was stalled due to a lack of profitability and changing deliberations on its business model. It was then merged with CategoryShop into ContentShop
CategoryShop (Q2 2017 – Q2 2019)	FoodLtd bought several digital e-commerce websites within CategoryShop to build a multi-national online shop, with the intention of further developing it into a multi-sided digital platform. However, while the acquisitions were successful business models individually, FoodLtd struggled to re-apply the acquired resources and decided to (first) develop a modular infrastructure for the platform
ContentShop (Q3 2019 – ongoing)	In Q3 2019, ContentShop started as a joint initiative merging CategoryShop and CategoryWebsite, striving to combine both business models. Besides these ambitions, they discovered that digital capabilities built in CategoryWebsite were re-applicable in other contexts of the DT at FoodLtd
EventPlatform (Q3 2018 – ongoing)	EventPlatform is a multi-sided digital platform for baking events. After the business model unit developed a prototype independently in a first phase, it feared facing similar challenges as CategoryWebsite, when working with other units at FoodLtd. Therefore, it approached PlatformPartnerLtd, which possessed the capabilities necessary to foster the EI in a second phase. The partnership officially started in Q2 2019, with EventPlatform being launched successfully within weeks by building on the partner's digital infrastructure capabilities and the business model unit's entrepreneurial capabilities
AIApp (Q1 2019 – ongoing)	AIApp started as a partnership in Q1 2019. While trying to identify potential venture ideas, the business model unit came across AIPartnerLtd. In discussions, they jointly developed an idea for a business model around services for the consumer goods sold by FoodLtd, which would leverage AIPartnerLtd's capabilities in advanced analytics, especially machine learning. After formalizing a partnership, they launched AIApp within months in several countries at the same time
ConsumerCommunity (Q2 2019 – Q1 2020)	ConsumerCommunity was an idea developed by the business model unit in Q2 2019: A digital value co-creation social platform leveraging FoodLtd's non-digital product end-consumers. With ShopCommunityLtd they found an internal partner that was operating in another country and one of the previous e-commerce acquisitions of CategoryShop. However, while building a joint prototype, the EI faced severe conflicts: ShopCommunityLtd intended to launch an extensive version of ConsumerCommunity, but they had differing understandings of what the EI should be. Moreover, ShopCommunityLtd's capabilities around building e-commerce infrastructure were found to be not re-applicable. Thus, validation of the business model failed, and the EI ended.

#### 4.2 Characterizing Pathways to Build Digital Capabilities (at FoodLtd)

To develop digital business models, FoodLtd implemented a range of EIs. Their implementation was a dynamic process between learning and making decisions, such as establishing new units or starting, merging, and ending EIs. However, FoodLtd lacked digital capabilities. Furthermore, with the implementation of each new EI, FoodLtd faced uncertainty about how the concrete business model would look and which specific digital capabilities it would require. Therefore, we observe that FoodLtd used – and, if necessary, readjusted or combined – different pathways to develop digital capabilities. We find that different pathways have an impact on whether a business model can be established successfully (cashflow profitability); these pathways also affect the speed of digital capability build-up, the re-applicability of the capability in other DT contexts, and whether there are conflicts with current OI.

However, we distinguish two initial pathway-differentiating characteristics within the EIs that FoodLtd pursued in line with the literature.

First, pathways may differ in the *source from which they amass digital capabilities*. The source may be either *inorganic* (e.g., acquisitions or partnerships of FoodLtd) or *organic* (e.g., in one unit, or across multiple units, within the organization). However, we note that even when FoodLtd followed an organic pathway, it hired new staff, which may indirectly include an inorganic capability development (e.g., consumer IT hiring staff with specific know-how for developing CategoryWebsite). Second, the pathways may differ in the *setup of the actors involved in developing digital capabilities*. Internally, the set-up might range from being fully integrated within the PDO to being fully decoupled. Further, PDOs may rely completely, partially, or not at all on external partners. Hence, a pathway's set-up may be either *independent* (e.g., no other actors,



either internally or externally) or *interdependent* (e.g., via external partnerships or across units).

We synthesized four pathways alongside these two characteristics from FoodLtd's EIs (Table 4): capability acquisition, nascent partnership, multi-unit orchestra, and (new)unit head-start. From these, we identified how

potential pathways differ in terms of how they materialize in the organizational context of a PDO.

#### 4.3 Capability Acquisition

If an organic build-up is not possible or would require an unjustified effort, PDOs may amass digital capabilities by

**Table 4** Observed pathways at FoodLtd, their characteristics, and materializations

PDO Pathway	Capability Acquisition	Nascent Partnership	Multi-Unit Orchestra	(New-)Unit Head-Start
EIs at FoodLtd	CategoryShop	EventPlatform (Phase II), AIApp	CategoryWebsite, ContentShop, ConsumerCommunity	EventPlatform (Phase I), ConsumerCommunity (Future Phase)
<b>How is the pathway to developing digital capabilities characterized?</b>				
Source of digital capability development	Inorganic	Inorganic	Organic	Organic
Set-up of involved actors	(Tending toward) Independent	Interdependent	Interdependent	Independent
<b>How had the pathway materialized in the DT of FoodLtd?</b>				
Pathway requirements were given with/when/if ...	... Organic build-up of digital capabilities not possible or lacked justified efforts. ... Concrete business model was known and a long-term commitment available. ... PDO knows how to evaluate and acquire digital firms	... orgAnic build-up of digital capabilities was not possible or lacked justified efforts. ... Openness towards how the business model develops over the course of the partnership. ... PDO knows how to partner with digital firms	... High acceptance of failure and changing routes as well as necessary efforts. ... A leadership commitment or vision that gave long-term orientation. ... PDO wants to take an internal approach to develop digital capabilities	... decoupling from PDO's structures and freedom to choose methods/tools. ... business developers with talent to and skills on digital technologies were available. ... PDO wants to take an internal approach to develop digital capabilities
Speed of digital capability development	High (due to direct acquisition of necessary digital capabilities)	High (as partner provided the necessary digital capabilities)	Low (as units need time to determine how to approach the build-up)	Medium (alongside validating a business model and its foundation)
Chance of successful business model establishment	Medium (only if digital capabilities were usefully combined)	High (if partners were adequate for digital capability development)	Low (as units searched for business models while developing digital capabilities)	Medium (the pathway alone was not comprehensive for establishing a business model)
OI conflicts during development	Low (due to the avoidance of complex actor constellations)	Medium (dependent on the attitude and capabilities of the partners)	High (due to the diverse background of the pre-digital units)	Low (as decoupling from all structures was possible)
Digital capability re-applicability in other DT contexts	Medium (digital capabilities are business model specialized)	Low (even though digital capability variety may be available, re-applying them was not the EIs focus)	High (a broad variety were developed, including the capability of applying these in other DT contexts)	Medium (the digital capabilities were only of help for validating business models)

acquiring them via an inorganic source. However, a relatively concrete idea for a business model is necessary to identify appropriate acquisitions. Further, in acquiring a company, a commitment to pursuing this business model is implicitly made, since acquisitions are oriented toward the longer-term and require a high level of upfront effort (e.g., investment). The capability acquisition pathway tends to be independent as long as the acquisition's digital capabilities are sufficient to enable the business model.

*"We want to build that [business model] up and we have zero expertise in this business model yet. (...) [The acquisitions] were more about the know-how than the sales."* – #9, Business Model Development.

Within FoodLtd, the EI CategoryShop was independent of other internal and external actors. The EI decided to acquire the required digital capabilities to establish the business model. However, FoodLtd was not experienced in acquiring digital capabilities, which delayed the acquisition process. Therefore, the mergers and acquisition department had to learn how to identify capability acquisition targets and evaluate them accordingly. Following this, the EI acquired several e-commerce companies with the intention of merging them into one digital platform business model. However, the EI struggled to re-apply the individual digital capabilities of the different acquisitions toward that goal.

Overall, OI conflicts within FoodLtd did not arise as the emerging OI related to CategoryShop remained separate from the existing OI of FoodLtd. However, OI conflicts arose when the ConsumerCommunity EI tried to leverage the digital capabilities of ShopCommunityLtd. Ultimately, OI conflicts were one of the crucial reasons why the EI failed.

#### 4.4 Nascent Partnership

Instead of an acquisition, a PDO can partner with another (or multiple) organization(s) to unlock a digital business model. In this case, partners collaboratively develop the required digital capabilities, thereby leveraging their existing organizational capabilities. However, the pathway requires a certain degree of openness toward the development of the business model over time, and an agreement must be found that motivates all partners to join. Then, all partners remain interdependent as each contributes part of the digital capabilities required to develop the business model. Similar to capability acquisition, a partnership involves a long-term commitment. However, in agreement with the partner, a PDO may also use the partnership to test the potential of a so-far-unvalidated business model.

*"I want to highlight that, as a strength (...): FoodLtd is not doing this alone, but we're bringing in a partner who somehow has an area of expertise (...). At the same time, it is also a commitment that we say, we found a new company*

*for it (...) to really build something sustainable (together)."* – #3, Management Business Model Development.

In the case of FoodLtd, examples include the EIs AIApp and the second phase of EventPlatform. In both, the partners iteratively contributed what was needed to the development of digital capabilities to unlock the business models. Moreover, building necessary digital capabilities was relatively fast as both partners were able to contribute their existing capabilities. The business models were then successfully established. However, one prerequisite was that FoodLtd had to learn how to identify and seize digital start-ups for partnerships. At the outset, interdependence with partners was perceived as critical. However, in focusing on the business model's potential impact on DT strategy, FoodLtd found responses that led to openness toward partnerships. However, the digital capabilities of the business models were not re-applicable in other DT contexts at FoodLtd. Although the partners developed a variety of capabilities along the business model's nascent inception, we found that the partners treated the digital capabilities as if they were exclusive to the partnerships. As such, while applying the digital capabilities to other contexts of DT might be possible, doing so may be a source of potential OI conflict, not necessarily within the PDO, but in the context of the partnership.

#### 4.5 Multi-Unit Orchestra

If a PDO has an idea for a new business model, the multi-unit orchestra pathway organically develops a variety of digital capabilities alongside the development of a business model in an EI. Therefore, different units work together and are interdependent. Owing to the organic and interdependent characteristics, the pathway to building digital capabilities lies fully within the PDO's existing structures. Thus, the pathway requires an acceptance that failure is highly probable, as are changes to the route mid-journey, both of which would require additional resources (e.g., personnel or budget). Therefore, a long-term vision by top management serves as orientation, yet such a vision may also be a burden by limiting the ability of the PDO to accept deviations from initial routes.

*"If we can work together, great, because we have the same goal, the same values, the same passion, much easier (...). I wouldn't say "cherry-picking," but we use what is simply there in the company and simply recombine it in a different way"* – #3, Management Business Model Development.

In the case of FoodLtd, examples include the EIs CategoryWebsite, ContentShop, and ConsumerCommunity. Whenever different units in the EIs tried to develop digital capabilities together from within FoodLtd's structures, the

development was comparably slow. Furthermore, if the PDO lacks a shared vision of how to approach digital capability development across units, the capability development may be further slowed down; for example, CategoryWebsite faced OI conflicts in establishing how to execute the EI within FoodLtd. In addition, neither of the EI business models examined (CategoryWebsite and ConsumerCommunity) were profitable. Only in combination with the digital capabilities gained inorganically through CategoryShop, was a business model for CategoryWebsite successfully established within ContentShop. Furthermore, the pathway was subject to various additional OI conflicts, such as the concurrent deliberations of top management and the EI units for CategoryWebsite and ConsumerCommunity. However, once digital capabilities were developed, it became apparent that they could be re-applied in different contexts of DT in FoodLtd. For example, CategoryWebsite (and then ContentShop) had not only developed digital capabilities to enable their business model but also developed digital capabilities to adopt digital technologies within the structures of FoodLtd. As such, these EIs could transfer digital capabilities to other contexts of DT at FoodLtd.

#### 4.6 (New)Unit Head Start

If a PDO has an idea for a digital business model, the (new-) unit head-start pathway can organically validate and refine how it may be established and identify the digital capabilities necessary to do so. With the (new-) unit head start, a single unit is responsible for driving the EI. Therefore, working independently and decoupling from PDO structures is necessary. However, FoodLtd used the pathway only as a starting point and not to develop the digital capabilities required to establish the business model itself.

*“The CEO said he doesn’t want us to be tied up by the big tanker (of FoodLtd). But that we also simply have the freedom to do things and not have to follow all the rules. Hopefully, I think there are a lot of advantages from this.”* – #5, Business Model Development.

In our case study, an example of this is the first phase of EventPlatform. The EI pursued validation independent from other internal and external actors so that it could move forward comparably quickly. In such cases, resources are used relatively efficiently (e.g., avoiding stress on the budget). Digital capabilities to determine concepts for business models were developed upfront. Then, FoodLtd found this capability to be re-applicable to other EIs. However, FoodLtd later changed the pathway to a nascent partnership (EventPlatform second phase) and multi-unit orchestra (ConsumerCommunity). Therefore, FoodLtd only examined the pathway in terms of which digital capabilities

would be necessary for the EventPlatform business model, rather than developing these capabilities and establishing it successfully. Furthermore, the OI conflicts that may arise between the new business model and the existing OI within a PDO in this early stage were avoided, for example, EventPlatform was able to present a successful validation of the idea without any conflicts.

## 5 Discussion

Digital entrepreneurship enables PDOs to face the challenges of digital ventures and transformation within their established structures (Nambisan et al. 2017). Therefore, PDOs launch EIs, which develop the required digital capabilities for new digital business models (Metzler and Muntermann; Svahn et al. 2017). Drawing on our findings, we conceptualize the trajectories of EIs as pathways to developing digital capabilities (Drechsler et al. 2020).

Existing organizational capabilities can provide components for the development of digital capabilities (Grant 1996b; Wheeler 2002). As PDOs have existing organizational capabilities, they do not always need to develop digital capabilities from zero. We observe that, in the partnership pathway, both partners provide their existing capabilities, which, when successfully combined, yield the required digital capability. Moreover, in line with Legner et al. (2017) we observe that IT capabilities are not sufficient for developing these digital capabilities. However, existing research suggests that distinctive IT capabilities foster more complex capabilities (Lu and Ramamurthy 2011). Nevertheless, we do not focus on specific digital capabilities, but on how the pathways for developing these capabilities differ. Our theoretical contributions are threefold.

First, in line with the literature, we identify two PDO pathway characteristics: the source of digital capability development, which ranges from organic to inorganic (Wiesböck and Hess 2019), and the set-up of actors involved, which ranges from dependent to interdependent. Hence, the characteristics represent a continuum on which pathways can manifest in organizations. Consistent with previous studies (Keller et al. 2019; Vial 2019; Warner and Wäger 2019), our findings indicate that the constellation of pathway characteristics influences the speed, re-applicability, and potential OI conflicts during digital capability development (as well as if a venture is successfully established).

Second, the theory suggests that OI influences the adoption of digital technologies. On the one hand, different identities at the outset of adoption may lead to different outcomes (Tyworth 2014). On the other hand, adoption may lead to different value propositions that trigger an

emerging OI (Wessel et al. 2020). However, beyond OI and adopting digital technologies, pathways serve as another unit of analysis.

While Alvarez (2008) suggests that OI can lead to both supporting and hampering the adoption of technology across different stages of an organization's development, we observe that organizations can bypass OI conflicts by following inorganic or independent pathways. The EI can avoid conflicts with the existing PDO organization by keeping the existing and emerging OI separate from one another (e.g., FoodLtd developed a new platform business model in EventPlatform). Conversely, interdependent pathways, such as the nascent partnership and multi-unit orchestra pathways, encourage discussions about a new OI from the outset. However, while the nascent partnership develops a new OI between the partners and their (potentially pre-existing) OI, the cross-unit orchestra develops an emerging OI in discussion with different units of a PDO.

Third, DT theory contains competing concerns regarding how an organization must handle (Svahn et al. 2017) the building of digital capabilities through the adoption of digital technologies (Vial 2019). Therefore, we propose that PDOs should strategically decide when to follow which pathway to develop digital capabilities, depending on their organizational context and goals. Thus, organizations can choose from a set of different options and directly influence which trade-offs must be managed.

In our data, we find an organization changing an EI's pathway, for example, for CategoryShop once the successful establishment of a business model for CategoryWebsite moved into focus. However, in our case, we find that FoodLtd did not deliberately choose the pathways but realized differences in the EIs' manifestations during operation. Nevertheless, we find evidence that different pathways have implications that organizations should be aware of in decision-making. We find that the successful establishment of a business model must not inevitably be the permanent goal of an EI, but rather it should be a temporal one. The scope of an EI may change over time and, thus, so do their pathways, for example, the re-applicability of digital capabilities might be viewed as being more impactful to the overall DT. Thus, pathways to developing digital capabilities are highly dynamic processes that are part of crafting and implementing DT strategies (Chanas et al. 2019). Hence, there is no best pathway to developing digital capabilities that a PDO should follow. Rather, we propose that a PDO should follow different pathways within its various EIs.

## 6 Conclusion, Limitations, and Future Research

In digital entrepreneurship, PDOs launch EIs to build their digital capabilities and adopt digital technologies. These EIs follow different pathways. Drawing on insights from a single case study, we analyze these pathways within a PDO's DT and find two characteristics: the source for developing digital capabilities and the set-up of actors involved in developing digital capabilities. Moreover, we contribute to the literature on digital entrepreneurship by introducing EI manifestations as temporal pathways to approaching DT. Further, we argue that within a PDO's DT, the pathway influences the speed, re-applicability, and potential OI conflicts in developing digital capabilities. Depending on the organizational context and digital business model, organizations may pursue and readjust different pathways over time. Managing these portfolios might be crucial for success. For scholars, this finding may provide a starting point for analyzing which pathways exist, how they change over time, and how pathways depend on the required digital capability.

Practitioners can use these two characteristics as guidelines for assessing their DT activities. Furthermore, they may find the four synthesized pathways (direct acquisition, nascent partnership, multi-unit orchestra, and (new-)unit head start) helpful for structuring their own portfolio of chosen pathways. In particular, they may find guidance in reflecting on how to avoid OI conflicts. Ultimately, practitioners can use our findings to make deliberate decisions about a pathway to develop digital capabilities.

Our research has limitations that could stimulate further research. Although the two characteristics of pathways are in line with existing literature, drawing on a single case study restricts our results in that other characteristics may be overlooked due to case specifics (e.g., industry, PDO history, DT strategy, and EIs). Furthermore, we recognize the risk of biased experts, which we address by triangulation of our data sources. Analyzing more cases and synthesizing more than the four identified pathways might be useful in revealing more ways in which pathways and their characteristics differ. We do not analyze whether a pathway is limited to developing certain digital capabilities and/or EIs or look at concrete digital capabilities. Moreover, we do not present evidence on the temporal interdependence of digital capability build-up. While our findings suggest how a pathway's characteristics influence the materialization of the pathways within FoodLtd's DT, we cannot claim that these explanations can be generalized, especially since we discuss the characteristics as a continuum. Thus, to address these limitations, we suggest future research should collect additional data and explore digital entrepreneurship and its pathways to build digital

capabilities. Further research may also investigate the role of digital technologies in developing a digital capability.

Furthermore, existing research may contribute to understanding how digital capabilities can be developed, particularly in terms of outsourcing and the importance of complementary assets in a digital context (Helfat and Raubitschek 2018; Jacobides et al. 2018; Teece 2018). Likewise, the literature on business process management and ambidexterity deals with required capabilities that may be relevant to digital innovation and transformation alongside pathways (Mendling et al. 2020; O'Reilly and Tushman 2013; Röglinger et al. 2018). Therefore, we hope that further research will provide additional perspectives on the complex build-up of digital capabilities in PDOs.

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