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# Crowdworking: Nurturing Expert-Centric Absorptive Capacity

**Elham Shafiei Gol,[a] Michel Avital,[b,*] Mari-Klara Stein[c]**

[a] Brunel Business School, Brunel University London, London UB8 3PH, United Kingdom; [b] Department of Digitalization, Copenhagen Business School, 2000 Frederiksberg, Denmark; [c] Department of Business Administration, Tallinn University of Technology, 12616 Tallinn, Estonia
*Corresponding author
**Contact:** elham.shafieigol@brunel.ac.uk, https://orcid.org/0000-0001-9173-4162 (ESG); michel@avital.net, https://orcid.org/0000-0002-9089-441X (MA); mari-klara.stein@taltech.ee, https://orcid.org/0000-0002-8916-2158 (M-KS)

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**Abstract.** Absorptive capacity, or the organizational capability to identify, assimilate, and apply new knowledge for commercial ends, is a key determinant of how organizations successfully generate value from external sources of knowledge and sustain a competitive advantage. Crowdworking—a novel form of digitally mediated work—allows organizations to hire on-demand highly skilled external experts to leverage their knowledge, skills, and networks. The approach of integrating crowdworking into organizations is increasingly gaining traction among large corporations seeking to harness the knowledge in external communities for value generation. Building on an in-depth embedded case study in a large organization that relies on two established crowdwork platforms, we explore how the organization developed its crowdworking-related absorptive capacity to generate value from external experts. We find that the crowdworking-related absorptive capacity phenomenon is a particular instance of expert-centric absorptive capacity that organizations develop by retaining on-demand external experts. We also find that this capacity can be developed through two idiosyncratic configurations of orchestrated and distributed routines that integrate external experts and utilize their knowledge in the host organization. These findings offer new insights into the prevailing modus operandi related to harnessing external knowledge in today's organizations.

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**Keywords:** absorptive capacity • crowdworking • routines • future of work • digital economy

## 1. Introduction

Organizations increasingly engage with external communities for value generation, using opportunities provided by an ever-growing multitude of digital services and offerings in the environment (Altman et al. 2022). Crowdworking, as a form of digitally mediated employment (Kittur et al. 2013, Durward et al. 2016), provides a new, exciting opportunity for such value-generating external engagements (Ahn et al. 2016, Gol et al. 2019b). Organizations experimenting with crowdworking have taken it far beyond its humble beginnings as a way to outsource routine microtasks to cheap labor on platforms like Amazon Mechanical Turk (Gol et al. 2019b, Katz and Krueger 2019). Nowadays, knowledge-intensive crowdworking involving complex tasks enables organizations to exploit skills, innovations, and knowledge from a large crowd of experts (Tate et al. 2017, Gol et al. 2019b). By providing organizations with versatility and quick access to an extensive pool of skilled (and often inexpensive) experts on a short-term basis, knowledge-intensive crowdworking can provide not only cost savings and on-demand scalability but also, a strategic competitive advantage and a potential source of innovation (Anya 2015). This added value is generated because knowledge-intensive crowdworking, unlike microtask crowdworking, allows organizations to bolster their internal capabilities with external experts and their complementary knowledge (Chiu et al. 2014, Heimstädt et al. 2023).

Generating value from organizational engagements with external knowledge relies on a governance structure of "managed ecosystems" (Altman et al. 2022),[1] where organizations must cultivate subtle capabilities to shepherd communities and manage data and intellectual property in the environment (Altman et al. 2022, p. 85). Crucially, generating value also relies on organizational "absorptive capacity" (AC)—that is, the ability to identify, assimilate, and apply new external knowledge to commercial ends (Cohen and Levinthal 1990, Spithoven

et al. 2010). Although absorptive capacity has been studied to the point of reification (see Lane et al. 2006 for a review), subsequent theoretical advancements of the concept suggest that the particular details of its domain-specific microfoundations, which are crucial for creating absorptive capacity, are not well understood and have not been empirically examined despite their importance (Lewin et al. 2011, Roberts et al. 2012). In this paper, we thus explore the question of *how organizations develop crowdworking-related absorptive capacity*. We opt for a phenomenon-driven approach (Monteiro et al. 2022), where we empirically follow a specific kind of "managed ecosystem"—crowdworking—that is being tested in large organizations as a new way to bring in expertise from outside their boundaries. Crowdworking is a dynamic emerging phenomenon that can offer revelatory insights on timeless issues facing organizations—in this case, the issue of how to hone an organizational ability to take advantage of new external knowledge. Building on the phenomenon-driven theorizing approach (Gregory and Henfridsson 2021, Monteiro et al. 2022), this study aims to identify how organizations develop absorptive capacity to generate value from engagements with external experts more generally.

A large multinational pharmaceutical company (hereinafter called "Pharma") that has integrated two knowledge-intensive crowdwork platforms—Upwork and Proteams—presented us with an opportunity to explore how the organization developed its absorptive capacity within the crowdworking domain to generate value from engagements with external experts through an in-depth embedded case study (Yin 2014). We find that the organization develops crowdworking-related AC through idiosyncratic configurations of routines that bring the capability to life (Lewin et al. 2011). Broadly, we suggest that organizations can develop crowdworking-related AC through two configurations of routines—orchestrated and distributed—which help the host organization integrate external experts and utilize their knowledge. Overall, we find that the development of absorptive capacity in the crowdworking domain is expert centric. Specifically, expert-centric absorptive capacity entails that, in addition to the abilities of the organization to identify, assimilate, and exploit external knowledge, the absorptive capacity also includes the abilities to identify, assimilate, and "exploit" (i.e., benefit from) external experts. Furthermore, the routines that nurture crowdworking-related AC are largely expert centric—and conspicuously *not* knowledge centric—thereby focusing on communication with external experts, management of experts and their work, and only lastly, the application of their work results. More generally, we posit that in domains where organizations aim to engage specific external individuals (e.g., crowdworking, freelancing) rather than organizational partners (e.g., research and development (R&D) alliances, outsourcing, offshoring) or generate ideas (e.g., crowdsourcing, open innovation contests), expert centricity is essential to the development of absorptive capacity and thus, to the ability to effectively leverage the external engagement for commercial value.

By explaining and illustrating how organizations develop absorptive capacity in the domain of knowledge-intensive crowdworking, this study offers three key contributions. First, we offer a microlevel explanation of how organizations can develop domain-specific absorptive capacity to generate value from diverse engagements with external experts. Second, we move beyond the gig-economy conceptualizations of the crowdworking phenomenon and provide evidence of the legitimation and institutionalization of crowdworking as an established form of work in organizations that extends the range of commercial value that crowdworking can provide for organizations. Third, we highlight the potential supplementary role of crowdworking as a new source of innovation and creativity in organizations.

The remainder of this paper is structured as follows. Next, we articulate the theoretical foundations of the study and then outline the research design, including data collection and analysis methods. We then delineate the findings and discuss key insights arising from this study.

## 2. Theoretical Background

### 2.1. Absorptive Capacity: A Domain-Specific, Multidimensional Organizational Capability Built on Routines

Absorptive capacity refers to the ability of an organization to draw on its environment for valuable opportunities and knowledge (Ahn et al. 2016). Although the strategic and competitive importance of absorptive capacity is widely acknowledged (Easterby-Smith et al. 2008, Lewin et al. 2011, Roberts et al. 2012), what absorptive capacity is and how it looks in practice are heavily debated (Lane et al. 2006).[2] There are three key takeaways from these debates that are important for our conceptualization of absorptive capacity.

First, absorptive capacity can be thought of as an organizational resource (i.e., the stock of relevant knowledge an organization possesses at a particular point in time) or an organizational capability (i.e., the ability to absorb knowledge) (Lane et al. 2006, Roberts et al. 2012). In the context of organizational engagements with external experts, such as with crowdworking, what matters for capturing value is the organizational *ability* to absorb knowledge from these experts on a continuous basis (Blohm et al. 2013, Lifshitz-Assaf 2018). Thus, we conceptualize absorptive capacity as an organizational capability. Specifically, we see absorptive capacity as "the ability of a firm to recognize the value of new, external information, assimilate it, and apply it to commercial ends" (Cohen and Levinthal 1990, p. 128).

Second, absorptive capacity can be studied as a uni- or multidimensional construct (Lane et al. 2006). Despite the original definition by Cohen and Levinthal (1990) referring to three dimensions, much of the subsequent research measured absorptive capacity as a unidimensional construct (Lane et al. 2006). We follow more recent studies that treat and study absorptive capacity as multidimensional (Roberts et al. 2012), focusing on three dimensions (see Table 1): "identification, assimilation and exploitation of external knowledge" (Vanhaverbeke et al. 2008, p. 14). Explicitly separating the dimensions of absorptive capacity allows researchers to determine the nature of the processes that underlie these dimensions and their interrelationships (Lane et al. 2006). Thus, we examine the routines that constitute absorptive capacity and bring it to life (Lewin et al. 2011).

Third, the manifestation of absorptive capacity in practice as an organizational capability can be perceived as a general ability to utilize externally held knowledge (Lane et al. 2006) or as a domain-specific ability that is tailored to R&D, outsourcing, open innovation, and so on (Lewin et al. 2011, Roberts et al. 2012). In the context of organizational engagements with external communities, the type and purpose of the community matter to how organizations can best assimilate and apply knowledge from the specific community. Thus, crowdworking-related AC differs from R&D-related AC and open innovation-related AC (Lewin et al. 2011). To capture this domain specificity, it is necessary to open the "black box" of absorptive capacity capability and explore its constituent processes or routines (Lane et al. 2006, Easterby-Smith et al. 2008, Lewin et al. 2011). Following Lewin et al. (2011), we conceptualize absorptive capacity as domain specific (i.e., crowdworking-related AC) and as constituted by idiosyncratic, firm-specific routines. This conceptualization aligns with the behavioral theory of the firm (Cyert and March 1963, Argote and Greve 2007), which regards routines as the building blocks of organizational capabilities (Dosi et al. 2000, Winter 2003).

Table 2 summarizes insights from the extant empirical research[3] examining the routines used by organizations to develop absorptive capacity in various domains where they engage external partner organizations (R&D, offshoring, and outsourcing), external communities (open innovation and crowdsourcing), or individual external experts (freelancing and crowdworking).

Table 2 highlights the importance of domain specificity in how organizations develop absorptive capacity. Although the domains are not mutually exclusive and have some overlaps, the routines uncovered in empirical studies demonstrate distinct differences in foci. For example, R&D-related absorptive capacity is developed through routines focused on managing a few carefully selected and known R&D partners. Conversely, open innovation-related absorptive capacity is developed through routines focused on integrating large and unknown communities. Outsourcing- and offshoring-related absorptive capacity is developed through routines focused on creating synergies between client and vendor organizations. Although research on freelancing-related absorptive capacity is scarce, existing studies suggest it can be developed through routines focused on using freelancers as a source of external knowledge (i.e., knowledge integrators and implementers) and by integrating freelancers into the firm's workforce.

**Table 1.** Dimensions of Absorptive Capacity

| Dimension of absorptive capacity | Definition | Common building blocks (routines) considered in prior research |
|---|---|---|
| Identification | Identification refers to the organization's capability to identify and assess new external knowledge (Cohen and Levinthal 1990, Vanhaverbeke et al. 2008). In addition to discovering new knowledge, the ability to recognize the value of this knowledge is a substantial component of identification that is necessary to trigger the absorption of such knowledge (Todorova and Durisin 2007). | *Communication* between the external source of knowledge and the organization as well as among the firm's subunits. *Recognizing the value* of new knowledge (Cohen and Levinthal 1990, Todorova and Durisin 2007). |
| Assimilation | Assimilation refers to the organization's capability "to analyze, process, interpret, and understand the information obtained from external sources" (Zahra and George 2002, p. 189) as well as to "facilitate combining existing knowledge and the newly acquired and assimilated knowledge" (Zahra and George 2002, p. 190). | *Understanding* and *internalizing* new knowledge (Zahra and George 2002, Todorova and Durisin 2007). |
| Exploitation | Exploitation refers to an organization's capability "to refine, extend, and leverage existing competencies or to create new ones by incorporating acquired … knowledge into its operations" (Zahra and George 2002, p. 190). This is an organization's capability to harvest and integrate knowledge into its operations. It also involves retrieving knowledge that has already been generated and internalized for use. | *Use* and *implementation* of new knowledge (Cohen and Levinthal 1990, Zahra and George 2002, Todorova and Durisin 2007). |

**Table 2.** Routines That Support Absorptive Capacity Development in Particular Domains

| Domain/routines | R&D | Open innovation and Crowdsourcing | Offshoring and Outsourcing | Freelancing and Crowdworking |
|---|---|---|---|---|
| Knowledge-centric routines | Transfer knowledge from specific external knowledge sources (e.g., key suppliers and customers) (Zhang et al. 2022).<br>Develop knowledge complementarity (knowledge overlap and diversity) between R&D alliance partners (Richard et al. 2023). | Establish internal and external knowledge-integration mechanisms (e.g., coordination, sharing) (Ruiz et al. 2020).<br>Develop overlap between a firm and open community knowledge bases (Teigland et al. 2014). | Collect and ensure big data accessibility (to cultivate a knowledge base) (Jia et al. 2023). | Gain a detailed understanding of innovations, products, and services codeveloped with freelancers (Kozica et al. 2014).<br>Use freelancers as a source of external knowledge (as integrators and implementors of external knowledge) (Kozica et al. 2014). |
| Organization-centric routines | Adopt practices that transcend both inter- and intraorganization boundaries (e.g., perspective taking, unification, replication) (Omidvar et al. 2017).<br>Forge R&D partnerships between bigger and smaller partner organizations and between partners with technological similarities (Bouncken et al. 2023).<br>Establish a dedicated R&D unit to better manage an extensive flow of external knowledge (Bianchi et al. 2016). | Develop firm-specific (i.e., befitting firm's innovation mode) absorptive processes (e.g., social integration, job rotation) (Weidner et al. 2023).<br>Forge strategic alliances with viable communities and healthy ecosystems (Shaikh and Levina 2019). | Practice transformational leadership in vendor organizations and outcome-based control in client organizations (Jia et al. 2023).<br>Establish local knowledge spillovers (e.g., spinoffs) in vendor organizations (Ngo and Thornton 2022). | Collaborate with recruitment agencies and online labor platforms (Kozica et al. 2014). |
| People-centric routines | Involve specific external consultants in R&D activities to achieve larger innovation outputs (Bianchi et al. 2016). | Develop absorptive abilities of individual employees within the firm (Teigland et al. 2014, Weidner et al. 2023). | Improve the technological and functional expertise of the people in client organizations (Oesterle et al. 2022). | Ensure that freelancers are treated justly in terms of compensation and other benefits in comparison with regular employees (Kozica et al. 2014).<br>Practice intensive or looser forms of integration of freelancers into the firm depending on knowledge complementarity (Kozica et al. 2014). |

Table 2 also highlights that the nature of the routines matters. Empirical research on how organizations develop absorptive capacity in various domains involving external engagements shows a strong emphasis on what we label knowledge-centric and organization-centric routines. These routines are used to engage directly with the external sources or entities (e.g., organizations, units, communities) involved in the desired knowledge absorption. In contrast, routines we label as people centric (i.e., those that focus on the individual people involved) are not as widely used and are seldom explored. Here, the focus has primarily been on routines associated with the abilities of individuals, whether they are external experts or internal knowledge absorbers.

Next, we consider the underlying domain of interest—crowdworking—and its implications for absorptive capacity.

## 2.2. Crowdworking-Related Absorptive Capacity

We begin with a brief overview of crowdworking followed by a consideration of absorptive capacity in the domain of crowdworking.

**2.2.1. Crowdworking.** Crowdworking is a new and fast-growing model of digitally mediated employment (Kittur et al. 2013, Gol et al. 2019b); with an estimated 26% annual growth, the number of people engaged with crowdwork platforms is expected to increase to 540 million globally by 2025 (Margaryan 2019). Crowdworking involves various types of compensated work organized through online labor platforms that connect job providers and workers across the world (Kittur et al. 2013). There are two predominant types of crowdwork: routine work (i.e., microwork) and knowledge-intensive work. Routine work refers to work tasks that are accomplished in seconds or minutes. These tasks are typically repetitive, with low skill requirements and low payments—for example, tagging pictures, filling in surveys, and data entry (Deng et al. 2016). In contrast, knowledge-intensive work involves larger and more complex tasks that require specialized and professional skills. This type of work involves higher payment and takes a longer time to accomplish from hours to months. Examples of knowledge-intensive crowdwork tasks include web development, software and graphic design, video production, and data analysis (Gol et al. 2019b).

Crowdworking and crowdsourcing share many similarities, as both involve job providers advertising opencalls for input into specific tasks. However, there are also a few key differences. First, crowdworking involves only remunerated work, whereas crowdsourcing is often voluntary. Second, knowledge-intensive crowdworking, in particular, involves matchmaking; job providers actively seek workers whose skills and experiences match their job requirements and then retain their services on a full- or part-time basis. Thus, although crowdsourcing is focused on *sourcing ideas* from the crowd, knowledge-intensive crowdworking is focused on *sourcing expertise* to perform a job (Kittur et al. 2013, Mladenow et al. 2014, Gol et al. 2019b). As a result, job-providers have different goals with crowdsourcing and crowdworking. The focus on ideas means that crowdsourcing is often utilized to contribute to open innovation (Schlagwein and Bjorn-Andersen 2014, Fayard et al. 2016), R&D (Schroll and Mild 2011), and new product development (Mladenow et al. 2014). Meanwhile, crowdworking is often utilized for more operation-oriented activities; job providers are interested in experts who can solve business problems quickly and effectively (Durward et al. 2016, Gol et al. 2019b). Third, knowledge-intensive crowdworking, with its complex projects and extensive project management requirements, also involves considerable cocreation and multiple iterations of exchange between the job provider and the external experts (Margaryan 2016, Schörpf et al. 2017, Gol et al. 2019a). Conversely, in crowdsourcing, cocreation is generally limited to collaboration among participants developing their ideas in response to the provider's call (Mattarelli et al. 2018).

Despite the obvious potential benefits of sourcing expertise on demand, organizations are only beginning to explore the options for using crowdworking on a continuous basis to address specific complex needs (Anya 2015, Durward et al. 2016, Gol et al. 2019b). In the knowledge-intensive crowdwork context, identifying the experts with the right knowledge and skills, managing a relationship with external experts, and integrating these experts into the workforce become core issues (Altman et al. 2021). Previous research on crowdsourcing, open innovation initiatives, and absorptive capacity in organizations can shed light on some of the routines involved in building absorptive capacity[4] in similar domains of "managed ecosystems" (Altman et al. 2022). For example, crowdsourcing-related AC can be built on intermediation routines, such as proposal collection, to identify the right contributors and mediation to provide contact with known sources (Aquilani et al. 2017). Practices such as framing innovation opportunities (Fayard et al. 2016), dismantling disciplinary knowledge boundaries (Lifshitz-Assaf 2018), and clarifying responsibilities for crowdsourcing platforms and employees (Blohm et al. 2013) can also be seen as important routine-based AC building blocks in the open innovation context. Generally, both the crowdsourcing and open innovation literatures emphasize the importance of practices that help overcome barriers associated with openness (e.g., risk aversion) and bringing in external ideas (e.g., "not invented here" syndrome) (Aquilani et al. 2017).

**2.2.2. Crowdworking-Related AC: Bringing People in.** Traditionally, absorptive capacity is seen as the capability to generate value from *external knowledge* by identifying, assimilating, and exploiting it. In the domain of knowledge-intensive crowdworking, organizations must develop the capability to generate value from both *external experts* and *external knowledge*. In crowdworking, external experts are often involved in key project management activities, such as task management, feedback, and quality assurance (Schörpf et al. 2017, Gol et al. 2019a). This ensures that the expert's tacit and experience-based knowledge (Sheng 2019) is also leveraged in the workflow. However, it also means that valuable external knowledge that organizations may wish to retain and exploit is not readily separable from the external experts. Thus, organizations must integrate external workers (as temporary staff) and absorb their knowledge. When we extend insights from prior research (Blohm et al. 2013, Kozica et al. 2014, Aquilani et al. 2017, Lifshitz-Assaf 2018) to the domain of knowledge-intensive crowdworking, it becomes clear that cultivating crowdworking-related AC is challenging because organizations have to deal with barriers related to bringing in both external people *and* their knowledge. Thus, organizations need to embrace external experts beyond their role as valuable sources of knowledge.

We draw on the knowledge management foundations of absorptive capacity (Easterby-Smith et al. 2008), on literature about the role of experts in the mediation and application of knowledge (Stehr and Grundmann 2011), and on evidence of the stimulating effect of intellectual capital on innovation (Engelman et al. 2017) to propose that crowdworking-related AC expands the conceptualization of absorptive capacity to include external experts and their knowledge. This view aligns well with the codification and personalization perspective on knowledge (Hansen et al. 1999), which submits that knowledge includes both a codified dimension (i.e., expert crowdworkers' skills and explicit knowledge; e.g., what is mentioned on their profiles) as well as a personal dimension (i.e., the expert crowdworkers' tacit knowledge, social relationships with the organization, etc.). Although the former can be seen as a resource to be exploited, the latter must be seen as human capital in which to invest (Minbaeva 2017). Thus, a comprehensive understanding of how absorptive capacity is developed in domains of organizational engagements with external experts, such as crowdworking, needs to consider the absorption of *both* experts *and* their knowledge (Vanhaverbeke et al. 2008). In sum, in this study, we define absorptive capacity as the identification, assimilation, and "exploitation" of both external experts and their knowledge.

## 3. Research Design

The underlying research question and the contemporary and not fully understood nature of the crowdworking phenomenon call for qualitative research aimed at expanding theory on how organizations can develop the ability to leverage knowledge from new kinds of external engagements. Our interest in how organizations develop crowdworking-related AC also made the choice of qualitative research particularly appropriate, as it allows us to be sensitive to "context" (i.e., domain) and focus on "activity sequences as they unfold" (i.e., routines) (Maitlis 2005, p. 24).

We adopted the case study method to inductively build a theory grounded in empirical data (Eisenhardt 1989). We used the embedded case study approach (Yin 2014) because our case (Pharma) includes more than one unit of analysis in a single case, and the embedded design allows us to explicitly consider variations across subunits within the case (Yin 2014). The case company, Pharma, is involved with two different crowdworking platforms—Upwork and Proteams—and is executing various routines to accommodate the two partnerships. This context provided a favorable foundation for theory building. The embeddedness of the two units of analysis (i.e., the two crowdworking platforms) in the same context of Pharma allowed for meaningful comparisons across the configurations of routines constitutive of crowdworking-related AC, making it possible to both capture firm-specific idiosyncrasies and form a reasonable basis for analytical generalizability (Lee and Baskerville 2003).

### 3.1. Field Site

The study was conducted in Pharma—a large multinational organization headquartered in Europe with approximately 42,000 employees across 80 countries. This context is well suited to research on knowledge-intensive crowdworking and absorptive capacity for two main reasons. First, Pharma is known for its pursuit of knowledge-based excellence. Second, Pharma is one of the first mature organizations worldwide to apply crowdworking at a large scale and on a continuous basis as part of its strategy to strive for knowledge-based excellence. Accordingly, Pharma has started to transfer its complex projects (e.g., web development), which used to be handled through traditional outsourcing,[5] to knowledge-intensive crowdwork platforms. Pharma's experimentation with more continuous utilization of crowdworking began after successful pilot projects showed that crowdworking could deliver results with the same or higher quality at a substantially lower cost and faster delivery compared with outsourcing. In September 2018, the organization developed and implemented their corporate crowdworking (CCW) portal (hereinafter "the portal"), which serves as a gateway to direct employees to Upwork and Proteams, the two crowdworking platforms currently on board. By the end of our main data collection period (end of 2019), about 270 projects in different categories—mostly software development, data visualization, translation, and video making—had been completed through the two crowdworking platforms. By the end of 2022, this number had grown to about 2,000 completed projects.

Upwork (founded in 2015) is a well-known and successful knowledge-intensive crowdwork platform with a large pool of highly skilled workers (about 12 million) located worldwide and offering various types of professional work (e.g., development, design, translation, and accounting). Upwork collaborates with Pharma as an external crowdwork platform with no access to Pharma's internal systems. Proteams (founded in 2016) is a knowledge-intensive crowdwork platform with a small number of highly skilled workers (about 1,400) who can help with information technology (IT) projects (e.g., web development, mobile app development, data analysis, and robotic process automation). Proteams collaborates with Pharma as an internal crowdwork platform, with two of Proteams' project managers and a few freelance experts hosted at Pharma. On an as-needed basis, Proteams can access certain internal systems of Pharma.

To initiate crowdworking projects, Pharma employees need to fill out a request form in the portal and provide further information, such as the category of the project (e.g., software development, translation, video making),

the title and description of the project, and its level of confidentiality (e.g., "strictly confidential," "confidential," "internal use," or "public"). The portal directs the employee to the appropriate crowdworking platform based on the provided information. If the project does not involve confidential information, the employee gets direct access to Upwork, where the employee can identify and hire on the fly the best-available experts for the project. However, if the project involves confidential information, the employee is directed to portal administrators who decide whether Upwork or Proteams is best suited for the project. If Proteams is selected, the portal administrators introduce the employee to the Proteams project managers to begin negotiations about project specifications.

### 3.2. Data Collection

To explore how crowdworking-related AC is developed, we collected data through semistructured interviews, participant and field observations, and casual interactions. We followed these with open-ended and theory-driven thematic analysis (Bowen 2008) to gain a comprehensive understanding of this emerging phenomenon (Eisenhardt 1989, Yin 2014). We conducted 37 open-ended and semistructured interviews face to face or online with the team behind the corporate crowdworking initiative, Pharma employees, and Upwork and Proteams staff. Data were gathered over a period of six months, from June to November 2019, and each interview lasted between 30 and 60 minutes. We conducted four additional follow-up interviews in 2022 to further fine-tune the analysis. All interviews were recorded and transcribed.

Among the corporate crowdworking team members, we interviewed the team leader, the purchasing manager, and the associate manager. Among Pharma employees, we interviewed those who had used the portal to approach the two crowdworking platforms for their projects. The employees were from different countries (e.g., Denmark, Brazil, the United States, and China). Among the Upwork staff, we interviewed the project manager and the technical support staff member who were available on the portal to help Pharma employees. The staff members of Upwork were in the United States, and they were assigned to work with Pharma remotely. Among the Proteams staff, we interviewed the project manager who was placed at Pharma and one of the Proteams freelance workers who was also placed in house at Pharma. The crowdwork platform staff members we interviewed were intimately involved in the efforts to set up value-generating crowdworking-related routines at Pharma. We did not collect data from crowdworkers assigned to work on the projects, as they could tell us little about Pharma's routines.

Additional data were collected through participation in formal and informal meetings with the corporate crowdworking team at Pharma as well as through emails and phone calls with the relevant stakeholders in Pharma, Upwork, and Proteams. In addition, documents including the descriptions of the platforms, the general description of crowdworking at Pharma, sample contracts, and reports on ongoing and completed crowdworking projects were collected and examined. Finally, more than nine hours of observational data were collected, including participation in corporate team meetings with Upwork and Proteams as well as exploration of confidential portal content via one of Pharma's internal computers. Table 3 shows an overview of the collected data.

### 3.3. Data Analysis

We followed the procedures delineated by Miles and Huberman (1994) to perform qualitative data analysis through data reduction and data display, which led to an explanation of how crowdworking-related AC is developed at Pharma. Preliminary data analysis was conducted during the interviews to enable iterative adjustments to interview questions in later stages, and follow-up questions were posed via email and telephone. Once data collection was complete, we coded and analyzed the data, including interview transcripts, observation notes, and documentary evidence.

In the first stage, we focused on open coding of Pharma's efforts to develop crowdworking-related AC (i.e., identifying different routines related to crowdworking and expertise integration at Pharma) (see the appendix). We then categorized and refined the codes based on both theory and data to arrive at the key configurations of routines constituting the three dimensions of crowdworking-related AC in the different units of analysis (e.g., centralized and mediated communication with crowdworkers versus decentralized and direct communication with crowdworkers, facilitated versus self-service project management, and iterative versus immediate project delivery).

In the second stage, we focused on explanation building (see Figure 1), grouping different identified configurations of routines together (differentiating the orchestrated and distributed models of developing crowdworking-related AC). Given that we consider absorptive capacity a dynamic capability built on routines, the analysis emphasized what people *do* (identifying the important routines and activities) rather than what their positions and roles are. The data analysis reached a theoretical saturation when the categories were well developed and no new categories, dimensions, or patterns emerged during analysis.

## 4. Findings

We find that Pharma develops crowdworking-related AC through two configurations of routines: the "orchestrated" model and the "distributed" model. The first model nurtures AC through orchestrated routines of approaching, assessing, and integrating external experts

**Table 3.** Summary of Data Sources

| | Pharma corporate crowdworking team | Pharma employees | Upwork staff | Proteams staff |
|---|---|---|---|---|
| Interviews | *6 interviews*: a group interview, an interview with the head of the project, two interviews with the team managers, two interviews with team associate managers | *26 interviews*: 26 interviews with Pharma employees | *2 interviews*: an interview with the project manager, a group interview with the project manager and online support worker | *3 interviews*: two interviews with the project manager, an interview with the in-house crowdworker |
| Observations | *1 observation session*: Approximately six hours of observation of the corporate portal via Pharma's internal computer (e.g., content of the portal, employee forms, employees' comments about their experience with crowdworking, provided learning videos, samples of employees' projects that have been done via crowdworking, etc.) | None | *1 observation session*: Approximately one and a half hours in the formal monthly meeting between the Upwork team and the corporate crowdworking team of Pharma | *1 observation session*: Approximately two hours in the informal meeting between Proteams project managers and the corporate crowdworking team of Pharma |
| Documentation | Emails with follow-up questions and answers after the interviews, phone call transcripts with clarifying information, help documentation, system reports | Emails with follow-up questions and answers, employees' testimonials and videos on portal, phone call transcripts with follow-up questions and answers | Emails with follow-up questions and answers after the interviews | Emails with follow-up questions and answers after the interviews, phone call transcripts with clarifying information, help documentation (e.g., platform description) |
| Meetings | *3 meetings*: An introduction with team associate manager, an introduction meeting with new members of the team, a meeting with team and three guests | None | None | None |

as well as implementing their knowledge for Pharma's benefit. The second model nurtures absorptive capacity through distributed routines of approaching, assessing, and integrating external experts as well as implementing their knowledge for Pharma's benefit. Both models together constitute Pharma's way of developing crowdworking-related AC through routines that bring to life the abilities to identify, assimilate, and "exploit" external experts *and* their knowledge. The idiosyncratic combination of the two models allows Pharma to develop domain-specific AC that enables both the integration of a smaller pool of external experts into their workforce and the absorption of the knowledge of a larger pool of external experts.

Next, we provide a detailed explanation of the two models and how Pharma develops crowdworking-related AC through the identified routines.

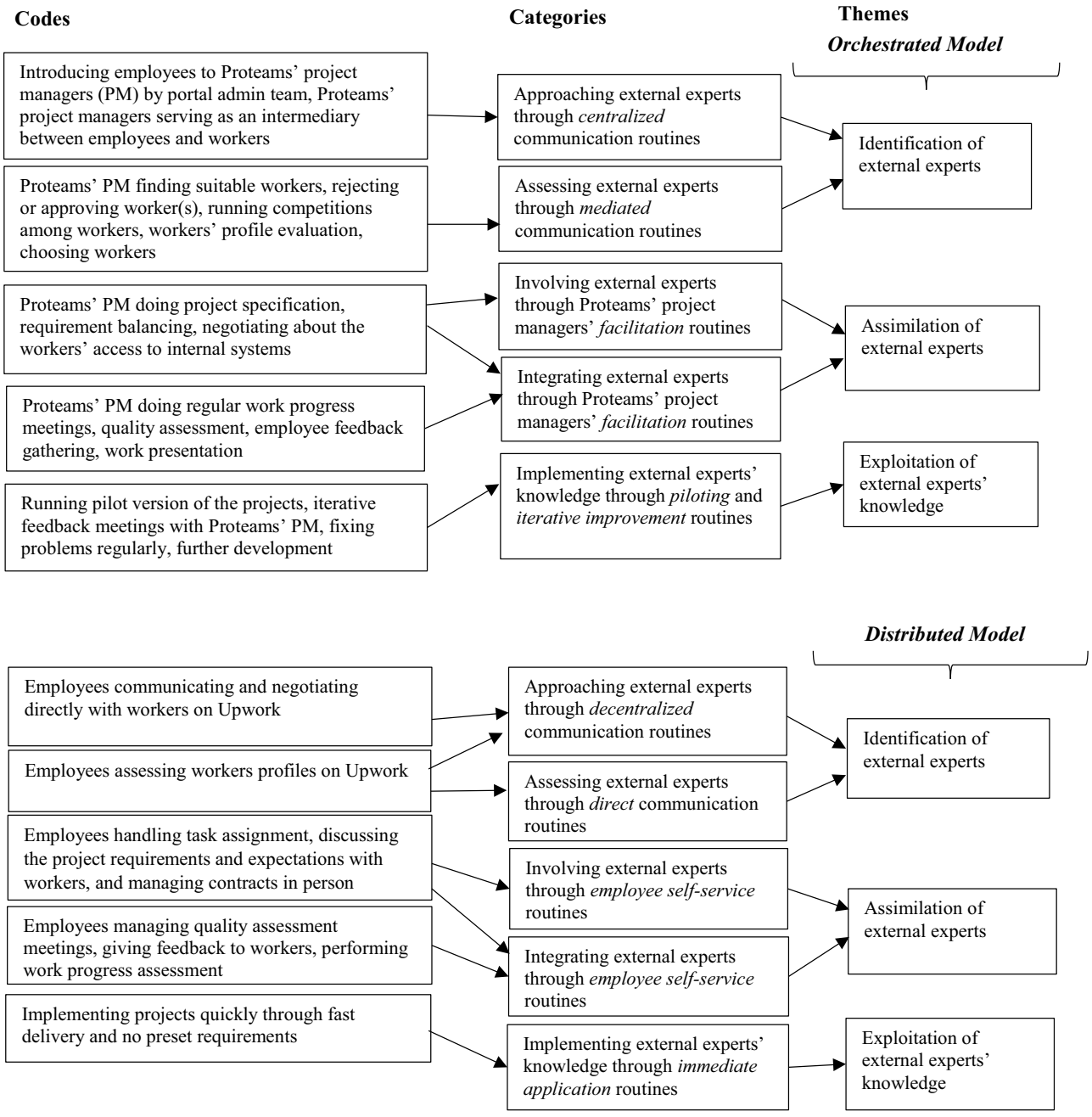
## 4.1. Developing Crowdworking-Related Absorptive Capacity: Orchestrated Model

In this section, we present the orchestrated model of developing crowdworking-related AC. The orchestrated model involves the Proteams crowdwork platform. The model consists of several routines of orchestration where one actor assumes the role of a (central) coordinator and directs the activities of other actors (through centralization, mediation, and facilitation). After Pharma employees complete a portal request form, including project category, title, description, and confidentiality level, those with high-confidentiality projects are directed to Proteams managers for specification negotiations under the guidance of portal administrators. In our case, several of the Proteams crowdwork platform staff members (project managers who work daily at Pharma's offices on a continuous basis) orchestrate the process of hiring on-demand labor on the platform for specific projects and help run the projects, pilot results, and fix problems. The Proteams project managers play the role of intermediaries between Pharma's employees and the pool of highly skilled workers on the Proteams platform and direct the activities of both sides. They are also responsible for managing financial and security risks in a project.

Next, we recount how the different routines within the orchestrated model enable Pharma to develop crowdworking-related absorptive capacity (Figure 2).

**4.1.1. Developing Crowdworking-Related Identification Capability: Orchestrated Model.** Identification refers to an organization's ability to recognize and assess new

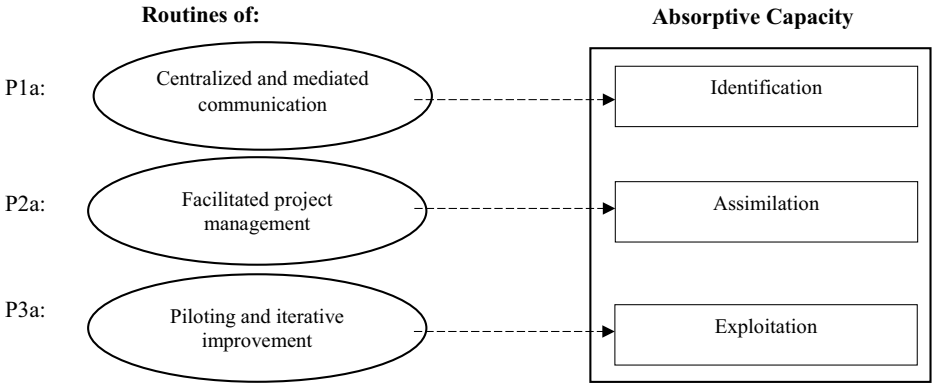
**Figure 1.** Explanation Building: Orchestrated and Distributed Models of Developing Crowdworking-Related AC




external knowledge (Cohen and Levinthal 1990, Vanhaverbeke et al. 2008). In the context of knowledge-intensive crowdworking, this means being able to approach and assess expert crowdworkers for their expertise and skills. This dimension of absorptive capacity is built on successful communication between the external source of knowledge and the organization as well as recognition of the value of the external knowledge (Cohen and Levinthal 1990, Todorova and Durisin 2007, Vanhaverbeke et al. 2008). In the orchestrated model, routines of centralized and mediated communication with the relevant external experts are the building blocks of Pharma's identification capability.

***4.1.1.1. Centralized Communication Routines.*** The foundation for centralized communication is a general contract between Pharma and Proteams. The contract includes general terms and conditions, Pharma's standards and rules, special services, and data protection agreements in order to manage data and intellectual property. For instance, the Proteams workers located in house at Pharma sign the General Data Protection

**Figure 2.** The Orchestrated Model of Developing Crowdworking-Related AC




*Note.* P, proposition.

Regulation (GDPR) and nondisclosure agreement (NDA) once, as the first step of their collaboration. In comparison, with crowdworkers hired on a project-by-project basis and not located in house, the Proteams project managers ensure that GDPR and NDA agreements are signed for each project. Hence, Pharma employees feel safe working with the external experts without concerns about data breaches: "You have [the portal administration] there working as a middleman to make sure that everything is within compliance, within the requirements … that who you get there has been assessed, has been approved to work with [Pharma], so you don't have to worry about that." The Proteams project managers manage the daily interactions with the crowdworkers and Pharma employees once a project starts through different communication tools, such as email, Zoom, Skype, or in-person meetings: "[Pharma's employees] are rarely in contact with the worker. That is not [our] way of working. We are the filter and negotiate with them [the crowdworkers and Pharma employees] to receive their insight … we use a lot of different collaboration tools with our freelancers, they are all onboarded to a different collaboration tool once they work with us … With [Pharma employees] we use their tools that they enable so that's primarily Skype [now Teams], email, physical meetings, and stuff like that."

Hence, within the orchestrated model, communication routines are centralized, and the Proteams' project managers become the central actors who communicate with both Pharma's employees and the external experts. By reducing the burden of negotiating different terms and conditions as well as budget and time constraints, which are critical for the company, this centralized routine reduces the financial and security risks for Pharma related to identifying the best external experts (cf. Brown and Potoski 2003).

***4.1.1.2. Mediated Communication Routines.*** Communication routines with Proteams project managers as middlemen also mediate the assessment of the pool of crowdworkers. Project managers assess crowdworkers' knowledge and find the worker(s) whose skills are best suited to the employee's project by investigating the workers' profiles and evaluating the quality of their previous work.

> When we have all the project information, we submit the description into the [Proteams] platform … and then the teams from our end [crowdworkers registered on the platform] can bid on the project … We can then do the pre-scanning [of their skills, experiences, reputation, etc.] and reject or approve, and … then we can take that selection to the client … We have phone and web meetings with the candidates selected for [Pharma] especially. Many of the candidates have senior profiles and they are locally present … so we build relations by phone and coffee talks, if possible. We mainly discuss their skills and experience, so we know how they match the assignments created for us by [Pharma]. Also, if they have previous experience in [Pharma], we identify this before submitting their candidacy. Finally, we broker the best hourly or total rate before presenting this to [Pharma].

The assessment is heavily relational and people focused, with an emphasis on assessing the expert worker holistically, in the hope that identifying the "right" expert will result in high-quality outcomes and new knowledge generation.

In sum, we find that in the orchestrated model, Pharma develops its crowdworking-related identification capability through centralized and mediated communication routines with external experts. Managed by Proteams project managers, the centralized and mediated communication routines allow Pharma to reduce the costs and risks associated with approaching and assessing new external experts. Thus, we propose Proposition 1a in the crowdworking domain.

**Proposition 1a.** *Organizations develop an ability to identify new external experts through centralized and mediated communication routines.*

**4.1.2. Developing Crowdworking-Related Assimilation Capability: Orchestrated Model.** Assimilation refers to an organization's ability to absorb new external knowledge

and combine it with existing knowledge (Zahra and George 2002, Todorova and Durisin 2007). In the crowdworking domain, this dimension of absorptive capacity is developed by involving and integrating the "right" external experts into the organization by onboarding them into specific projects where they can best apply their expertise. In the orchestrated model, routines of facilitated project management are the building blocks of Pharma's crowdworking-related assimilation capability.

#### 4.1.2.1. Facilitated Project Management Routines.

Most of the projects performed through Proteams are IT-based projects, such as software development, design and development of mobile apps, and data analytics. These projects include a medium to high level of complexity and a high level of confidentiality because of the need to access Pharma's internal systems. Facilitated project management routines are needed to enable Pharma to successfully involve and integrate external experts into these complex and confidential projects. These routines include the game plan, coordination, and consolidated feedback.

#### 4.1.2.2. Game Plan.

In the orchestrated model, the Proteams project managers set up one or more meetings with the Pharma employees at the beginning of their collaboration. They aim to understand the project and shape it to best meet the employee's target: "I and my partner [another project manager] are typically in contact with the client [a Pharma employee] at first. So, we do the needs analysis based on the first meeting, and then we create a specification [based] on how we understand the task and the information we need from the client … we try to understand what is feasible to do, what is not feasible, what access [to internal systems] is good to have." Furthermore, the project managers negotiate with crowdworkers to explain the project and requirements and involve them in scoping the project, as explained by the in-house Proteams worker: "We always try to minimize the information asymmetry by asking many questions. So, it is better to ask twice rather than create something that is not needed or required … We usually have a meeting with the managers and then they explain their problem to us and then we brainstorm, try to come up with a solution for that and then it's just going back and forth, a lot of iterations."

Game plan activities increase Pharma's ability to involve new external experts by minimizing information asymmetry, leveraging their insights, and empowering Pharma employees to comprehend what unique expertise they need to solve their business problems. Game plan activities are illustrated by the following employee comment on working with Proteams: "In our department, we needed to restructure [X website] completely, to make it more intuitive and lighter to navigate. With the multiple meetings [with the Proteams project managers], we got the proper consulta[tion] on what the final product would look like and how to best solve our problem."

#### 4.1.2.3. Coordination.

Proteams project managers divide complex projects into smaller tasks and assign those tasks to suitable crowdworkers. Project managers also coordinate workers assigned to the same project through weekly online meetings, Slack channels, and face-to-face meetings. Moreover, they discuss and analyze the project with Pharma employees: "We typically set up teams for each project [to negotiate] different tasks [with external experts] and assign those tasks to them … Then, we need someone with technical understanding to combine tasks and run the project, so we add a technical expert to the team, and we, as project managers, correspond and analyze the project with the [Pharma employees]."

Such coordination activities, which mediate between the external experts and Pharma employees, increase Pharma's ability to integrate the external experts into Pharma's projects and the organization in general.

#### 4.1.2.4. Consolidated Feedback.

Proteams project managers set up regular meetings with the crowdworkers to check on the progress and quality of work and to provide feedback: "In terms of quality, having the filter between the freelancer and the client gives us [project managers] an opportunity to actually review everything that's going through. We use SharePoint—the platform that [Pharma] is providing, we use e-mails." Proteams project managers also set up separate meetings with Pharma's employees to present the project and receive feedback that they can consolidate and convey to the crowdworkers, as one Pharma employee noted: "We do regular meetings to check up on how the project is going and [find out] if there are any new requests that we need to add." Consolidated feedback activities increase Pharma's ability to integrate external experts into Pharma's projects by iteratively working with crowdworkers and Pharma employees. These sessions make it possible to onboard expert crowdworkers into projects and to inform Pharma employees of what expertise the crowdworkers can deliver.

As with identification, we observe that the facilitated project management routines are heavily relational and people focused, with an emphasis on helping Pharma to onboard the external experts and to facilitate collaboration between Pharma and the experts in solving business problems and cocreating commercial value. The game plan routines empower Pharma to facilitate the initial involvement of external experts in its projects, whereas coordination and consolidated feedback routines empower Pharma to continuously integrate them into the work. Overall, these routines are the building blocks of Pharma's crowdworking-related assimilation capability. Thus, we propose Proposition 2a in the crowdworking domain.

**Proposition 2a.** *Organizations develop an ability to assimilate new external experts through facilitated project management routines.*

**4.1.3. Developing Crowdworking-Related Exploitation Capability: Orchestrated Model.** Exploitation refers to an organization's ability to harvest new external knowledge and merge that knowledge with its existing operations (Zahra and George 2002). Thus, exploitation involves routines that allow organizations to implement and use new knowledge (Cohen and Levinthal 1990, Zahra and George 2002, Todorova and Durisin 2007). In the orchestrated model, routines of piloting and iterative improvement are the building blocks of Pharma's crowdworking-related exploitation capability, as described next.

***4.1.3.1. Piloting and Iterative Improvement Routines.*** Proteams project managers usually run projects in a pilot form for a certain period of time to receive feedback from Pharma employees. This feedback is used during meetings aimed at improving the project and fixing problems to best meet the employees' requirements, as described by the project manager: "We started [the project] in either August or September and we delivered the first draft of the whole thing in October, that was the first phase of the project, the second phase was then delivered in December. So, three months to do everything, it was very fast, very effective, the team very flexible to understand the user requirements … Then, we kept going back and forth until we had a final product." Moreover, a Proteams' crowdworker located in house at Pharma noted: "We also of course work with the clients to create an optimal solution [after the first delivery] because of course they are the client so we try to tailor the final product to their needs and their expectations."

Depending on the complexity of the deliverable, piloting before delivery (to fine-tune the outcome) can potentially take months, and regular improvements and maintenance are needed after delivery, as explained by one Pharma employee: "If I go by the most complex projects, I would say it [piloting time] could be months, 3–4 months … there are projects that are ongoing because there are always some changes to be made, there is always some data source to be updated … some of the projects require regular maintenance so they are never finished." Iterative improvements after delivery may also turn into further crowdworking projects: "I have been mostly engaged and working with Proteams and we do regular meetings to check up on how [the delivered project] is going and if there are any new requests that we need and now we're thinking we need an app because people want to do it on their phones [instead of computers] and how do we proceed and so forth" (Pharma employee). Therefore, piloting (before delivery) and iterative improvement (after delivery) increase Pharma's ability to gradually implement and use new knowledge provided by expert crowdworkers in fully functioning business products of commercial value.

In sum, we find that in the orchestrated model, piloting and iterative improvement routines managed by Proteams project managers empower Pharma to successfully implement and use the knowledge provided by external experts. Overall, these routines are the building blocks of Pharma's crowdworking-related exploitation capability. Thus, we propose Proposition 3a in the crowdworking domain.

**Proposition 3a.** *Organizations develop an ability to exploit external experts' knowledge through piloting and iterative improvement routines.*

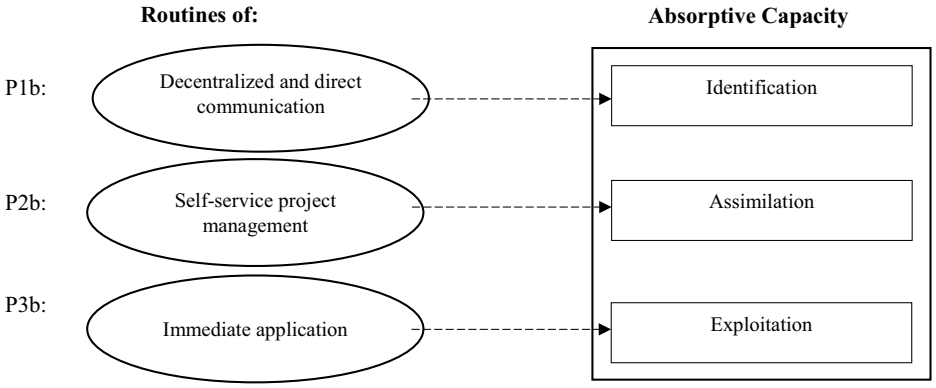
## 4.2. Developing Crowdworking-Related Absorptive Capacity: Distributed Model

In this section, we present the distributed model of developing crowdworking-related AC. The distributed model involves the Upwork crowdwork platform. The model consists of several routines of distribution where the task of directing the activities of others is distributed among all, and often self-directed, actors (through decentralization, direct communication, and self-service). After Pharma employees complete a portal request form, including project category, title, description, and confidentiality level, those whose projects neither involve highly confidential data nor require access to Pharma's internal systems are directed to the Upwork platform through a personalized log-in page that Upwork designed specifically for Pharma. Employees of Pharma use the Upwork platform to identify and retain ancillary labor on a project basis. No Upwork crowdworkers or project managers are located in house at Pharma. Thus, Upwork is at the disposal of Pharma's employees as a self-service portal. The Pharma employee is responsible for selecting qualified workers, negotiating their contracts, and managing the work. In contrast to the orchestrated model, in the distributed model, identification (the first dimension of absorptive capacity) is built on decentralized and direct communication routines; assimilation (the second dimension) is built on employee self-service routines; and exploitation (the third dimension) is built on immediate application routines (see Figure 3).

**4.2.1. Developing Crowdworking-Related Identification Capability: Distributed Model.** In the distributed model, routines of decentralized and direct communication with the relevant external experts are the building blocks of Pharma's identification capability.

***4.2.1.1. Decentralized Communication Routines.*** In the distributed model, communication is decentralized and performed by the corporate crowdworking team, Pharma employees, and crowdworkers. The foundation

**Figure 3.** The Distributed Model of Developing Crowdworking-Related AC




*Note.* P, proposition.



for the decentralized communication is a general contract between Pharma and Upwork. As with Proteams, the contract includes general terms and conditions as well as data protection agreements. For instance, Upwork automatically sends Pharma's rules and policies, such as the NDA and GDPR, to the crowdworkers who want to work with Pharma's employees as the first step of their collaboration: "Every time new [crowd]-workers come on, there is a guideline sheet and regulations and non-disclosure agreements. So, they sign quite a few agreements to make them aware of how [Pharma] likes things done. These are the laws that they have to abide by." Hence, employees feel confident in approaching Upwork, as it has the status of an officially acknowledged partner of Pharma.

Specific contracts are then signed for each project. In the distributed model, the contract is made directly between the Pharma employee and crowdworker(s) on Upwork. Pharma employees select the crowdworkers themselves and sign the contract with them directly. These project-specific contracts enable Pharma employees to flexibly negotiate the budget, delivery time, and type of contract with the workers directly. Although increasing the burden of negotiating different terms and conditions as well as budget and time constraints, this decentralization increases the flexibility for Pharma's employees when seeking the best external experts for particular projects, as explained by one Pharma employee: "I wanted someone who is in the [United States] just because it makes it easier if we had to meet, be on the same time schedule and also to have no challenges with work permits if we were to do several projects together."

#### *4.2.1.2. Direct Communication Routines.*

In comparison with the orchestrated model, Pharma's employees themselves assess and identify the worker(s) whose skills are best suited for the project. After posting the job on Upwork, they can look for the best worker(s) among the applicants by assessing their profiles and reputation as well as the comments of former job providers. Often, Pharma employees avoid publicly posting jobs and instead, seek the best workers by (a) assessing their profile information and contacting them directly; (b) selecting workers from an existing list of "best workers" provided by Upwork (this list is stored on the Pharma portal, and the workers are categorized according to the types of projects Pharma commonly post on Upwork, such as translations, animations, or voice recordings); or (c) selecting workers based on colleagues' recommendations.

Direct communication with the workers increases Pharma's ability to assess the value of external experts by distributing the assessment of the crowdworkers to all involved Pharma employees (and drawing on their collective wisdom to select the best workers). As in the orchestrated model, the assessment is relational and people focused, relying on the workers' reputation and word of mouth from colleagues.

In sum, we find that in the distributed model, Pharma develops its crowdworking-related identification capability through decentralized and direct communication routines that increase the flexibility (but also the cost and risks) of approaching new external experts. The assessment of the value of these experts is enhanced through direct communication routines, which draw on the collective wisdom of Pharma employees. Thus, we propose Proposition 1b in the crowdworking domain.

**Proposition 1b.** *Organizations develop an ability to identify new external experts through decentralized and direct communication routines.*

### 4.2.2. Developing Crowdworking-Related Assimilation Capability: Distributed Model.

Although assimilation is built on facilitated project management routines (via Proteams project managers) in the orchestrated model, in the distributed model, routines of employee self-service are

the building blocks of Pharma's crowdworking-related assimilation capability.

***4.2.2.1. Employee Self-Service Routines.*** Most of the projects performed through Upwork neither involve a high level of confidentiality nor require access to the internal systems of Pharma. Therefore, the projects done via Upwork do not include extensive task management or negotiation with crowdworkers, and they usually require only one worker. As such, minimal project management is needed, and Pharma employees directly carry out the necessary management activities. We elaborate on these employee self-service routines next.

***4.2.2.2. Making a Contract.*** In the distributed model of crowdworking, Pharma employees give their requirements to the selected crowdworkers through the Upwork infrastructure, explain the project to them, and negotiate the budget and delivery time. They usually use the communication tools provided by Upwork to discuss the upcoming project and develop a shared understanding of the desired outcome. The process leading to signing a contract with a specific crowdworker is described well by Pharma employees. One said that "[the crowdworker] presented lots of ways of solving problems that I hadn't considered before, because I'm not a wizard in Excel. When talking to [crowdworker] you can pretty much say: well, I want the project to look this way or I liked how you did the project for this company, can you use a similar style?" Another said that "[w]e primarily communicated via the chat in Upwork, and also we discussed and modified the contract together."

Activities involved in making a contract serve a similar purpose to the game plan in the orchestrated model; they empower Pharma to involve external experts in scoping the projects and subsequently, coordinate the cocreation process directly between the crowdworkers and Pharma employees. Compared with the orchestrated model, the overhead costs associated with involving external experts are higher because each Pharma employee must dedicate time to coordination and task management.

***4.2.2.3. Primary Feedback.*** In the distributed model, Pharma employees set up one or more meetings with the crowdworker(s) to check on project progress and the quality of work through primary feedback sessions that are conducted directly between the Pharma employees and the crowdworkers: "Every time [the Upwork crowdworker] produces an illustration, he will place it on frame.io, and I will see all the illustrations and comment on them. So, before he actually gets the first byte of the animation, I have already seen all the illustrations. Then we would have a meeting for some design ideas along the process where we say, 'OK, now we look at what we have so far and see if we should change something.'"

Feedback activities in both the orchestrated and distributed models increase Pharma's ability to integrate expert crowdworkers into the projects. The distributed model aids this integration through direct communication and idea sharing between employees and crowdworkers. Overall, in the distributed model, Pharma develops its crowdworking-related assimilation capability through employee self-service project management routines. Thus, we propose Proposition 2b in the crowdworking domain.

**Proposition 2b.** *Organizations develop an ability to assimilate new external experts through self-service project management routines.*

**4.2.3. Developing Crowdworking-Related Exploitation Capability: Distributed Model.** Exploitation consists of routines that enable organizations to implement and use new knowledge (Cohen and Levinthal 1990, Zahra and George 2002, Todorova and Durisin 2007). In the distributed model, routines of immediate application are the building blocks of Pharma's crowdworking-related exploitation capability, as described next.

***4.2.3.1. Immediate Application Routines.*** Most projects accomplished through Upwork are implemented in Pharma's business operations immediately after delivery. These projects do not require piloting because they do not include confidential data and predominantly constitute incremental revisions or additions to existing processes or products. For example, one Pharma employee explained: "The [worker] delivered what we needed in three weeks with high quality. We got the voice on the e-learning project, and we delivered that immediately without need for a huge setup." Another Pharma employee described: "I just finalized one [project] yesterday. It is one of the innovation projects which has some LED projectors that provide some safety signs on the floor of the production areas. For doing that, we needed someone to develop the design that we wanted, the signs and so on. So we just posted that on Upwork and in two days the guy was able to design what we needed." Such immediate application increases Pharma's ability to quickly implement new knowledge provided by expert crowdworkers into incremental improvements of existing business products or processes. Usually, these kinds of projects do not require further development in the future: "I sent them [Upwork external experts] this full PowerPoint deck and then we started to have back and forth communication about it. They sent me a draft [of the project], I gave some feedback, and so on until in the end [of the week] that I received the final project to present" (Pharma employee).

Overall, in the distributed model, Pharma develops its crowdworking-related exploitation capability through

immediate application routines. Thus, we propose Proposition 3b in the crowdworking domain.

**Proposition 3b.** *Organizations develop an ability to exploit external experts' knowledge through immediate application routines.*

### 4.3. Facilitating Technologies of the Orchestrated and Distributed Routines

As crowdworking is a digitally mediated sociotechnical phenomenon, the development of crowdworking-related AC through orchestrated and distributed routines is inherently enabled by the digital technologies that facilitate it. Overall, we observed the following three types of facilitating technologies: crowdworking platforms, organizational systems, and third-party applications. Crowdworking platforms (e.g., Upwork, Proteams) provide the infrastructure to connect crowdworkers with Pharma employees and offer numerous specific functions (e.g., chat, directories, and payment). Although Pharma employees use the Upwork platform functions directly, they do not engage with the Proteams platform directly because only the project managers can access it. Organizational systems are the platforms and applications used to support the core business processes of Pharma (e.g., SharePoint, email, the internally developed crowdworking portal). Third-party applications include other software and services (sometimes organizationally unsanctioned) used by individuals to support work-related tasks (e.g., Zoom, Slack).

As summarized in Table 4, all three types of facilitating technologies are heavily used in the orchestrated model. The crowdworking platform is used by in-house Proteams project managers to identify and assimilate new external experts and to exploit their knowledge through iterative improvements. The Proteams platform is reserved exclusively for the coordination between the crowdworkers and Proteams project managers. Because all the routines are facilitated through Proteams project managers, Pharma employees do not use the Proteams platform. Thus, the communication between Pharma employees and Proteams project managers is managed through the organizational systems (e.g., Pharma's portal, SharePoint, and email) and third-party applications (e.g., Zoom). These systems are used to facilitate the identification and assimilation of the specific crowdworkers selected by the Proteams project managers to work with Pharma and the continuous exploitation of their knowledge as it becomes codified into Pharma's internal systems.

In contrast, only one type of facilitating technology—the crowdworking platform—is heavily used in the distributed model. Here, Upwork's communication, file, and contract management tools play a pivotal role in the execution of the routines, which Pharma employees utilize directly to identify and assimilate external experts and exploit their knowledge. The organizational systems play only a minor role in the routines involving identification and exploitation. Pharma utilizes its in-house crowdworking portal to support the identification of new external experts. This portal is used to assess the requested project's complexity and confidentiality levels, which are used to qualify projects for Upwork. If the project meets the qualification criteria, the portal redirects Pharma employees to a personalized Upwork–Pharma log-in page that displays a list of the top Upwork workers in different categories. Moreover, Pharma's internal systems support the exploitation capability by facilitating the transfer of project deliverables from the Upwork platform to Pharma for direct application. No organizational systems or third-party applications are used for the assimilation routines, which are mainly performed through the Upwork chat function.

In sum, we find that Pharma develops crowdworking-related AC through two configurations of routines—orchestrated and distributed. Each configuration of routines is also facilitated by different sets of technologies. The orchestrated routines draw on the (Proteams) crowdworking platform, internal organizational systems, and third-party applications to facilitate the orchestrated (by Proteams' project managers) identification, assimilation, and "exploitation" of external experts and their knowledge into Pharma. However, the distributed routines draw mainly on the (Upwork) crowdworking platform and to a lesser extent, the internal organizational systems to facilitate the distributed (to Pharma employees) identification, assimilation, and "exploitation" of external experts and their knowledge into Pharma.

**Table 4.** Facilitating Technologies of the Orchestrated and Distributed Models

| | Orchestrated model | | | Distributed model | | |
|---|---|---|---|---|---|---|
| Facilitating technology | Identification | Assimilation | Exploitation | Identification | Assimilation | Exploitation |
| Crowdworking platforms (e.g., Upwork, Proteams) | X | X | X | X | X | X |
| Organizational systems (e.g., Pharma's portal, Microsoft 365, SharePoint) | X | X | X | X | — | X |
| Third-party applications (e.g., Zoom, Slack) | X | X | X | — | — | — |

## 5. Discussion

This paper explores how organizations develop domain-specific absorptive capacity to generate value from their growing range of diverse engagements with external actors. In this case, we focused on organizational engagement with knowledge-intensive crowdworking and the corresponding development of crowdworking-related AC. We investigated the case of a large European organization that accomplished about 270 crowdworking projects over two years by successfully establishing collaborations with two crowdworking platforms: Upwork and Proteams.[6]

We discovered that Pharma developed crowdworking-related AC through two idiosyncratic configurations of routines, which we labeled the "orchestrated model" and the "distributed model." Both models together constitute Pharma's unique crowdworking-related AC that enables the organization to identify, assimilate, and "exploit" external experts *and* their knowledge. These abilities are thus built on *both orchestrated and distributed routines* of approaching, assessing, and integrating external experts into organizational projects and the workforce as well as of implementing the external experts' knowledge for Pharma's benefit. The orchestrated model is well suited for projects with high confidentiality that require access to the organization's internal systems. In contrast, the distributed model is well suited for projects with low confidentiality. The combination of the two sets of routines allows Pharma to develop domain-specific AC that enables a tighter integration of a limited pool of external experts into their workforce (i.e., the in-house Proteams project managers and selected Proteams crowdworkers with access to internal systems), a looser integration of a larger pool of external experts into their projects (i.e., hiring "best" Upwork crowdworkers again and again), and the absorption of the codified knowledge of the entire pool of external experts at their disposal, as discussed.

By describing and explaining how organizations develop crowdworking-related AC, the study offers three key contributions. First, it informs the debates on what absorptive capacity looks like in organizations and how it is developed as the external engagements of the organization grow in number and complexity (Altman et al. 2021, 2022). Second, it provides evidence of the legitimation and institutionalization of crowdworking as an established form of work in organizations in addition to one-off staffing solutions. Thereby, crowdworking can provide organizations with an extended range of commercial value—from discrete, project-specific value to more continuous, potentially crossproject value. Third, it highlights crowdworking's potential supplementary role as a new source of innovation in organizations. We consider each of these contributions next.

### 5.1. Expert Centricity in Absorptive Capacity: Beyond Knowledge

This study contributes to the absorptive capacity domain through an empirical investigation of how absorptive capacity is developed, taking multiple conceptual advancements into account (Lewin et al. 2011, Roberts et al. 2012). Thus, we not only theorize but also empirically study absorptive capacity as a domain-specific, dynamic capability built on routines. Taking a phenomenon-driven approach (Monteiro et al. 2022), we empirically examined a specific kind of domain—crowdworking—that is being tested in large organizations as a new way to bring in expertise. Theorizing based on this phenomenon (Gregory and Henfridsson 2021) allowed us to identify pivotal firm-specific routines of communication, project management, and implementation, which nurture organizational absorptive capacity to generate value from external engagements. Furthermore, studying absorptive capacity as domain specific revealed the *expert centricity* of absorptive capacity in the crowdworking domain. This finding informs the debates on how absorptive capacity is developed as organizational engagements with external experts grow in number and complexity (Altman et al. 2021, 2022).

As organizations' interest in engaging with external experts and building workforce ecosystems increases (Altman et al. 2021, 2022), exemplified by the increased utilization of knowledge-intensive crowdworking, organizations must also develop their relevant capabilities to generate value from these engagements. These include governance and IT capabilities (Roberts et al. 2012, Altman et al. 2022) and of course, absorptive capacity—referring to an organization's ability to identify, assimilate, and exploit new external knowledge (Cohen and Levinthal 1990, Vanhaverbeke et al. 2008). The domain specificity of absorptive capacity (Lewin et al. 2011, Roberts et al. 2012) suggests that the nature of this ability depends on the domain of the external knowledge; for example, the ability to absorb knowledge in the R&D domain looks different from the ability to absorb knowledge in the crowdworking domain.

What characterizes the knowledge-intensive crowdworking domain, similarly to the freelancing domain, is the focus on experts—the people (whether internal or external to the organization) who can best accomplish a particular kind of work. Therefore, we find that organizations engaging with crowdworking develop absorptive capacity not only by nurturing their ability to leverage knowledge as a resource but also by cultivating their ability to engage external talent. Based on our analysis in the context of knowledge-intensive crowdworking, we argue that successfully identifying and assimilating external *experts* is a prerequisite for the exploitation of those experts' *knowledge* in an organization. The organizational capability to exploit knowledge thus depends on the organizational ability to continuously engage external experts.

Although extant research on freelancing-related absorptive capacity (Kozica et al. 2014) also draws attention to the need to integrate freelancers into the organization, it

focuses on discussing the role of freelancers as sources of external knowledge and as integrators and implementers of knowledge. These studies offer valuable discussion and insight into the roles freelancers can play in an organization—not only as sources of specific transferable knowledge but as experts who can, with deeper engagement, help to assimilate and implement that knowledge in the organization. However, how and when to execute this deeper engagement remain an enigmatic puzzle for organizations. According to our study, a combination of technologies that go beyond the scope of the crowdwork platform and include internal organizational systems can facilitate orchestrated routines that lead to deeper engagement. The orchestrated routines are especially beneficial when organizations aim to harness complex external knowledge to extend confidential internal knowledge and in order to do so, require the tight integration of external experts into the organization. In contrast, for the successful exploitation of less complex external knowledge that is also more independent of internal knowledge, such tight integration of external experts is not necessary, and distributed routines facilitated mainly by the crowdwork platform itself are sufficient. It should be noted that, regardless of whether the goal is to achieve tighter or looser integration of external experts, both the orchestrated and distributed routines are predominantly people centric.

In sum, we assert that in the domain of crowdworking, absorptive capacity becomes *expert centric*. Thus, the routines that foster absorptive capacity prioritize nurturing people; that is, they focus more on people-centric routines and less on knowledge- or organization-centric routines. The characteristics of the crowdworking platforms (e.g., size of the crowdworker pool, breadth of expertise) undoubtedly matter, similarly to what has been indicated by prior research on the selection of R&D partners (Bouncken et al. 2023) and open innovation communities (Shaikh and Levina 2019); however, we show that when it comes to external engagements with experts, it is the microlevel, people-centric routines (e.g., communication, management) that develop successful identification and assimilation capacities, which in turn, lay the foundation for more knowledge-centric routines (e.g., iterative improvement and immediate application of specific deliverables) that constitute successful exploitation.

Beyond this study, we can speculate on other domains of external engagement where this conclusion may hold. For example, knowledge-intensive workforce ecosystems, such as project-based work, temporary assignments, and outsourcing (Altman et al. 2021), rely on bringing together internal and external experts. It is likely that in these domains, absorptive capacity is also expert centric. However, it is necessary to remember that routines developing absorptive capacity are domain and firm specific. Thus, expert-centric AC may be developed in very different ways through firm-specific routines. We summarize our insights on expert centricity in absorptive capacity in Table 5.

As shown in Table 5, expert-centric AC refers to the organizational ability to first identify and assimilate new external experts and then exploit those experts' knowledge within the organization. As absorptive capacity comprises idiosyncratic (firm-specific) routines (Lewin et al. 2011), the building blocks of expert-centric AC are likely to differ across organizations and the specific nature of the domain (e.g., crowdworking versus project-based work). Nonetheless, the case study of Pharma illustrates the kinds of routines that may be involved and more importantly, the *configurations* of routines that are helpful when dealing with experts (i.e., people) and not just external knowledge sources.

Overall, we can see that the expert-centric, crowdworking-related identification capability is built on both orchestrated and distributed routines of communication, which create openness and flexibility, respectively. An orchestrated approach to and assessment of external experts reduces the costs and risks associated with engaging external experts, as orchestration and mediation by an

**Table 5.** Expert Centricity in Absorptive Capacity in Organizations

| Expert centricity in absorptive capacity | Aim | Underlying routines (building blocks of absorptive capacity) | Explanation (how routines build absorptive capacity) |
|---|---|---|---|
| Ability to identify new external experts | Approach and assess external experts in the environment | Orchestrated (centralized and mediated) and distributed (decentralized and direct) communication routines | Orchestrated routines build openness; distributed routines build flexibility |
| Ability to assimilate new external experts | Involve and integrate external experts into (a) organizational workforce and/or (b) work projects | Orchestrated (facilitated) and distributed (self-service) project management routines | Orchestrated routines build good relations (workforce); distributed routines build trust (projects) |
| Ability to exploit external experts' knowledge | Use and implement external experts' knowledge to generate commercial value | Orchestrated (piloting and iterative improvement) and distributed (immediate application) project delivery routines | Orchestrated routines build continuous value; distributed routines build discrete value |

accepted partner (platform project manager) make it easier for the organization to be open to external experts in complex and confidential projects. Meanwhile, a distributed approach to and assessment of external experts increases the opportunities to engage more diverse external experts (selected directly by the employees) as well as more diverse internal experts (because any employee can engage crowdworkers in this model). Distribution and decentralization at the individual employee level make it easier for the organization to be flexible in identifying the best-fitting external experts for relatively simple and nonconfidential projects.

Expert-centric, crowdworking-related assimilation capability is built on both orchestrated and distributed routines of project management, which create good relations and trust, respectively. Orchestrated tight integration of external experts is effort intensive and limited to a small number of experts involved in longer-term, complex, and confidential projects. Because success in these projects relies on good relations, many facilitated project management efforts focus on integrating the external experts into the workforce (i.e., they become temporarily part of Pharma's workforce). Meanwhile, distributed looser integration of external experts relies on trust that the experts can contribute to the project for which they are hired. Thus, self-service project management efforts by the employees focus on establishing trust that extends to, but not beyond, project work and deliverables.

Expert-centric, crowdworking-related exploitation capability is built on both orchestrated and distributed routines of project delivery, which create continuous and discrete commercial value, respectively. Orchestrated implementation of external experts' knowledge is also effort intensive, as complex and confidential project deliverables require both piloting and iterative improvement, usually in cooperation with the external experts. However, the knowledge generated from piloting and incremental benefits from iterative improvements provide the organization with continuous commercial value. Meanwhile, distributed implementation of external experts' knowledge relies on the immediate application of deliverables and the generation of one-time (discrete) commercial value. The combination of the two sets of routines, therefore, allows Pharma to develop expert-centric AC that enables the tight integration of a limited pool of external experts into their workforce for continuous value generation on complex confidential tasks, a looser integration of a larger pool of external experts into their projects on relatively simple nonconfidential tasks, and the absorption of the codified knowledge of the entire pool of external experts for discrete value generation.

This study reaffirms the importance of the insight that people create organizational knowledge continuously through dynamic interactions between tacit and explicit knowledge (Nonaka 1994). We found that the routines that help integrate expert crowdworkers into the workflow and workforce reinforced the "synergy of knowledge" in the organization by contributing not only explicit knowledge as per their assigned tasks but also tacit knowledge through interactions among employees and crowdworkers (Nonaka 1994).

### 5.2. Crowdworking: Beyond Gigs

This study also contributes to the crowdworking domain. The orchestrated routines developed around crowdworking at Pharma provide evidence of the legitimation and institutionalization of crowdworking as an established form of work in addition to a one-off staffing solution. As highlighted by the findings, we identified two distinct configurations of routines with different implications for the workforce: an orchestrated model (relying on having some crowdworkers and project managers internally in house) and a distributed model (relying on employee-driven, decentralized initiatives).

The orchestrated routines, with some internal, in-house crowdworkers, foster a close personal relationship between the organization's employees and the crowdworkers, creating loyalty and replicating traditional collegial dynamics that arise from sharing the same physical space (Capdevila 2015). Here, talented external experts are brought physically into the organization and get hired for particular projects by virtue of already being in the organization. Conversely, the distributed model, with all crowdworkers located externally on platforms, fosters a more formal relationship between the organization's employees and the crowdworkers, relying on network dynamics that arise from reputation and recommendations. Here, external experts get hired for projects by virtue of their competence profile on the platform and/or being featured on the "best workers" list.

Treating crowdworking as both a potential continuous extension of the workforce and a one-off staffing solution aligns well with workforce ecosystem thinking (Altman et al. 2021). A workforce ecosystem is "a structure focused on value creation for an organization that … encompasses actors, from within the organization and beyond, working to pursue both individual and collective goals" (Altman et al. 2021, p. 5). Although many organizations progressively expand their workforce with external workers, organizations' management systems, workforce planning, and talent acquisition are typically designed to accommodate only the internal employees. There is a need for an integrated approach to the entire workforce ecosystem that includes diverse categories of interdependent internal and external workers who work together in alignment with organizational strategy and values (Altman et al. 2021). The orchestrated configuration of routines identified in our study sheds light on one approach to extending an organization's standard management, workforce planning, and talent acquisition systems through specific routines focused on continuously

identifying external experts, temporarily assimilating them within the organization, and subsequently exploiting the knowledge they provide within the organization. These routines extend the range of commercial value that crowdworking can provide in organizations—from discrete, project-specific value to more continuous, potentially crossproject value, as discussed.

From a critical perspective, however, increasing reliance on crowdworking by organizations can also lead to exploitation of both the internal and external experts involved in the workforce ecosystem. First, the lack of traditional employment contracts and accompanying protections means that crowdworkers may be subject to exploitation by the organization in the form of pressure to work unpaid overtime under the threat of poor reviews on the platform (Tan et al. 2021). Moreover, crowdworkers external to the organization typically have little recourse in case of a dispute. The orchestrated routines that foster traditional collegial dynamics between internal and external experts may help alleviate these issues. Still, formal HR policies addressing the rights of crowdworkers within the workforce ecosystem are needed to provide an equitable workplace for all. Second, increasing reliance on crowdworkers may also erode over time the benefits and status currently afforded to full-time employees. Instead of improving the working conditions and benefits provided to crowdworkers, the workforce ecosystem approach may become a race to the bottom, where organizations offload more and more risks onto workers, turning the future of work into a looming precarity (Kalleberg and Vallas 2017). Moreover, the erosion of employee loyalty to any particular organization would likely accompany the erosion of benefits and status. In that sense, one may regard crowdworking as part of broader trends in society, such as the "great resignation" and "quiet quitting" (Lee et al. 2023), where workers not only seek more flexibility (potentially in the form of nonstandard employment) but also refuse to idolatrize work and instead, strongly negotiate for better work-life balance.

### 5.3. Orchestrated and Distributed Routines Potentially Supportive of Innovation

The findings highlight the potential supplementary role of crowdworking as a new source of innovation in organizations. In showing how organizations develop crowdworking-related absorptive capacity, we have treated absorptive capacity as "the ability of a firm to recognize the value of new, external information, assimilate it, and apply it to commercial ends" (Cohen and Levinthal 1990, p. 128). At Pharma, crowdworking is mainly utilized to deliver direct commercial value by solving business problems (e.g., replacing manual message handling with a bot solution, creating animations for e-learning videos) and creating new business products or services (e.g., a new solution for evaluating project requirements). In the literature, however, absorptive capacity is often also seen as the ability to apply new external knowledge to boost innovation (Ahn et al. 2016). Pharma is only beginning to explore the potential of crowdworking for innovation. Based on our findings, we tentatively suggest that the combination of orchestrated and distributed routines may build crowdworking-related exploitation capability not only in terms of commercial value but also in terms of the divergent and convergent thinking needed in innovation (Secundo et al. 2019).

Specifically, the two configurations of routines together are likely to foster divergent and convergent thinking in the organization, allowing workers to discover various potential directions via divergent thinking and refocus on a specific path to follow via convergent thinking. Divergent processes can be supported by the distributed model through decentralized communication and primary feedback (innovation opportunities emerging at the grassroots level of the organization) and by the orchestrated model through piloting (creating space for trial and error and new discoveries). In contrast, convergent processes can be supported by the orchestrated model through centralized communication and consolidated feedback (directing the organization to follow up on specific innovation opportunities) and by the distributed model through immediate application (ensuring that specific innovations also become widely implemented in the business). This crossfunctional relationship, although speculative at this point, underscores how the orchestrated and distributed configurations of routines complement one another not just in the exploitation of knowledge for commercial value but also in the potential exploration of knowledge for innovation value, thereby supporting ambidexterity of organizations (Gregory et al. 2015).

### 5.4. Practical Implications

From a perspective of practice, the study can help organizations develop a crowdworking-related (and more generally, expert-centric) absorptive capacity to generate value from external engagements with experts. The study emphasizes that organizations should establish both domain- and firm-specific routines that nurture absorptive capacity in order to derive commercial value from their various external engagements. The routines described in this study are particularly suitable for generating value from knowledge-intensive workforce ecosystems, such as crowdworking.

The study also provides insight into managing crowdworking projects and when to opt for orchestrated facilitation or distributed self-service. Specifically, the findings indicate that the orchestrated model is more appropriate for projects with high levels of confidentiality and complexity, whereas the distributed

model is more suitable for projects with low levels of both. It should be noted that the levels of confidentiality and complexity of a project vary on a continuum, making the option of mixing two models desirable. At Pharma, projects with medium complexity are sorted by the CCW team based on their level of confidentiality so that projects with more (less) sensitive data are managed via the orchestrated (distributed) model. In other words, in Pharma, the level of confidentiality determines whether a project is managed by the orchestrated or distributed model. Another option, showcasing a mixing of models, would be to allocate additional CCW team support to medium-complexity Upwork projects, thereby retaining the flexibility of direct employee-crowdworker interactions while reducing the risk of project failure by aiding project coordination with CCW resources.

The study highlights how various technological configurations, including crowdworking platforms, organizational systems, and third-party applications, enable organizations to develop crowdworking-related absorptive capacity. It provides insights into optimizing technology utilization based on the orchestration or distribution of routines for effective identification and assimilation of external experts and exploitation of their knowledge within organizations.

The findings offer valuable guidance to organizations on effectively carrying out the orchestration routines for highly complex and confidential projects that require access to internal systems while minimizing the risk of data breach and ensuring that employees feel safe. It also helps organizations successfully execute the distributed model for less complex and nonconfidential projects that do not require access to organizations' internal systems. In both models, suitable crowdworking platforms can be used as a crucial tool at the organization's disposal to help identify and integrate new external experts and to leverage their expertise.

As already discussed, the integration of crowdworking in organizations paves the way for turning crowdworking into far more than a work arrangement for simple one-off projects performed by on-demand labor and organized through an intermediary platform (Kittur et al. 2013, Gol et al. 2019b). Orchestrated and distributed routines assimilating expert crowdworkers and absorbing their knowledge add an organizational-level, value-adding layer that helps to manage long-term projects aimed at drawing on-demand talent into the organization. The routines not only develop crowdworking-related AC but also advance crowdworking from the status of platform-mediated gig work (Kittur et al. 2013, Gol et al. 2019b) to a flexible organizational work arrangement for continuous engagement with external talent and knowledge.

This study may inspire organizations to reconsider how they rely on ancillary work to supplement their internal capabilities. In particular, the study provides compelling evidence and food for thought about the benefits of crowdworking to organizations that rely on outsourcing to draw on external knowledge and resources. In addition to the economic benefits, organizations' use of crowdworking increases the transparency of the work process and provides further flexibility in handling project requirement changes in vivo (Gol et al. 2019a). Moreover, integrating crowdworking provides organizations with an opportunity to contribute to sustainable development and equity distribution (Cui et al. 2019) across the world by offering job opportunities to less fortunate people who live farther away from job centers.

### 5.5. Limitations, Challenges, and Future Research

Crowdworking is still an emerging phenomenon, and organizations that use crowdworking continuously as a routine part of their work are rare. Hence, in this study, we concentrated on a single case of an organization that utilizes knowledge-intensive crowdworking on a large scale. We generated six propositions to explain how the organization develops absorptive capacity in the domain of knowledge-intensive crowdworking. Naturally, further research is needed to test these propositions across different cases.

The single embedded case study design enabled us to investigate the integration of two different crowdworking platforms in one organization. However, both platforms rely on the matchmaking business model (Ardolino et al. 2020) and centralized governance (Gol et al. 2019b). Thus, the results cannot be easily generalized to the integration of different kinds of knowledge-intensive crowdwork platforms with other business models and various degrees of governance centralization. Further research is needed to understand how more decentralized knowledge-intensive crowdwork platforms with different business models can be integrated into organizational work and whether different routines are needed to develop related absorptive capacity and generate value from such engagements. It also remains unclear how organizations can cope with more than two crowdworking platforms and the corresponding complexities in workforce management, including equitable and fair protections as well as decent work and benefits to all workers (Griggs et al. 2013).

We found that organizations develop expert-centric, crowdworking-related AC through idiosyncratic routines that integrate external experts into, and utilize their knowledge in, the host organization. However, future research should explore how the interplay and potential interaction between crowdworking and crowdsourcing may affect domain-specific absorptive capacity. Moreover, further research can explore how domain-specific AC is developed in other similar domains of managed ecosystems, such as offshoring and outsourcing, which are also expert centric.

In addition, we found that in the orchestrated model, one actor centralizes, mediates, and facilitates the activities of other actors, whereas in the distributed model, these activities are distributed among all actors. Future research is needed to investigate how power shifts happen across the two models and impact their effectiveness. Furthermore, it remains unclear how the knowledge integration mechanisms described by Ruiz et al. (2020) in the context of crowdsourcing may relate to the crowdworking-related routines described in our study.

Although we postulated the potential of knowledge-intensive crowdworking in large organizations to support higher innovation levels (Anya 2015, Thuan et al. 2015), our case organization used crowdworking mainly for delivering direct commercial value and is only beginning to explore its innovation potential. Future research is needed to better understand the suggested crossfunctional relationship between the orchestrated and distributed models and whether both are desirable to nurture the anticipated positive effect of crowdworking on the ambidexterity of organizations (Gregory et al. 2015).

## 6. Conclusion

In this paper, we explored how organizations develop domain-specific absorptive capacity to generate value from their engagements with external experts. Specifically, we focused on the domain of knowledge-intensive crowdworking and the development of crowdworking-related absorptive capacity. We showed how crowdworking could become more than a gig economy novelty by being integrated into organizations to provide an additional layer of reliable on-demand talents that can be called to action as needed. Finally, we observed that integrating knowledge-intensive crowdworking into their workforce ecosystem could allow organizations to offer decent work across the globe by providing job opportunities to talented people outside their traditional work arrangements and recruitment spheres.

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## Appendix. Coding Examples

| Interview text | Data-driven (underlined) and grouped codes (italics) | Emerging themes |
|---|---|---|
| Proteams project manager: "We and four to six of the freelancers sit here in the company … When we have all information about the project, we submit that into the platform [Proteams] with only head information [name of the project plus short description], without any confidential information of course, and then the crowdworkers from our end can then bid on the project … After we find workers who meet the requirements, we get the agreements [such as NDA and GDPR] for them to sign." | Proteams' project managers' intermediary role, identifying the best-available worker(s) by Proteams' project managers, different agreements. Availability, in-house workers.<br>*Facilitating mediated communication with workers (through PM)*<br>*Assessing workers' qualifications*<br>*Contract management* | Comparing this passage with other passages with similar comments about mediated communication with and centralized access to the pool of external experts, the theme of centralized and mediated communication routines emerged. These routines constitute the ability to (1) approach relevant workers and (2) assess workers' qualifications (identification dimension of absorptive capacity). |
| Pharma employee: "The communication with them [Proteams' project managers] is quite smooth because they can be called; they are sitting in a building that is 5 minutes from us, so we can have a meeting very shortly—it doesn't take a lot of time to organize." | Availability of in-house PM.<br>*Facilitating easy communication with PM* | |
| Pharma employee: "They [the Proteams project managers] take care of contracts with the selected freelancers and tell them our rules and standards, so we don't need to do it." | Proteams' project managers' intermediary role, identifying the best-available worker(s) by Proteams' project managers, rules and standards.<br>*Facilitating centralized access to workers*<br>*Approaching the relevant workers* | |

**Appendix.** (Continued)

| Interview text | Data-driven (underlined) and grouped codes (italics) | Emerging themes |
|---|---|---|
| Pharma employee: "For the first application we did via Proteams—the Operetta—we were seeing development of the application every week. So, it is easy to receive an app, and we click on the button to see whether that's what we want and if we asked for any changes to see if [the worker] has done them or not. Concerning the second project with Tableau via Proteams, it was also easy to see what they [crowdworkers] have done in the meetings [with Proteams project managers]. So, it's very thorough work, to check all the time if it works and if it doesn't work." | Regular work progress meetings, work presentation, employee feedback gathering, quality assessment.<br>*Facilitating project management through Proteams PM*<br>*Integrating workers in the project (via PM)* | Contrasting this passage with other passages with similar but different comments about project management through Proteams PM, the theme of facilitated project management routines emerged. These routines contribute to the ability to (1) involve workers in project specifications and (2) integrate workers in project work (assimilation dimension of absorptive capacity). |
| Pharma employee: "I had a project where I needed to do a dashboard … So, I called the [Proteams project manager] for a meeting, sat down for half an hour and went through it; I said I want it like this and this. It was drawings more or less to show how it looks, and I said please drag this data and use these filters and so on, and the person was very knowledgeable, so he took it and we analyzed it together and examined if it works. We also talked about which internal systems the workers should have access to … After that we had maybe two or three touch bases, but he was like, 'OK, this is the quality—do you want me to do this,' and he showed me. I said modify this or that and it was done in maybe two weeks." | Project specification, requirement balancing, discussing the project feasibility.<br>*Involving workers in project spec (via PM)*<br>Regular work progress meetings, work presentation, employee feedback gathering, quality assessment.<br>*Integrating workers in the project (via PM)* | |

*Note*. PM, project manager.

## Endnotes

[1] A "managed ecosystem" governance structure "occurs when a central organization engages and shapes external communities for key value creating and capturing activities, and the locus of activity resides outside organizational boundaries while the locus of control remains within the organization" (Altman et al. 2022, p. 80).

[2] Although it is beyond the scope of this paper to summarize all the debates, we point the interested reader to the excellent review paper by Lane et al. (2006) for an overview. We present the key takeaways from the debates that are important to our conceptualization of absorptive capacity in the context of organizations increasingly engaging with external experts and in our case, crowdworking specifically.

[3] Not all of these studies examine routines explicitly, and we also incorporated studies that presented adequate information to enable us to comprehend their findings from a process perspective. The domains are not always clearly distinguishable, but they are useful in seeing the differences between the routines in broad strokes (e.g., in *R&D*, the focus is on managing specific and known R&D partners, whereas in *open innovation*, the focus is more on integrating larger and unknown communities). We were not able to consistently distinguish between routines constituting identification, assimilation, and exploitation because only a few of these studies treat absorptive capacity as a multidimensional construct (see, e.g., Omidvar et al. 2017 for an exception).

[4] It should be noted that not all the papers take a routine-based approach to absorptive capacity and that the resulting synthesis represents our interpretation of how the findings in the extant literature can inform our study.

[5] Outsourcing refers to contracting with a service provider for the management and delivery of a predetermined work task (Oshri et al. 2009).

[6] The organization had about 270 crowdworking projects by the end of 2019. The number of completed projects had grown to about 2,000 by the end of 2022.

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