

Shifting to a Technology-Driven Work Mode: Workplace Learning and Dynamic Capability in the Case of a Public-Sector Service Organisation

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Abstract. Learning to operate in technology-driven working modes is topical in many organisations today due to the COVID-19 pandemic crisis. The pandemic has forced especially knowledge-work organisations to quickly shift to remote or hybrid working modes, where all or some of the staff are operating and collaborating via digital tools. The aim of this qualitative case study is to explore and explicate a learning story of an organisation within the public sector transitioning quickly to a technology-driven hybrid working mode during the crisis. As findings, the paper presents the identified immediate and evolving facilitators that point to the organisation's learning to develop capabilities for operating effectively in the enforced and volatile conditions. Additionally, the potential long-term organisational development effects stemming from the situation are considered. In the findings, social aspects of work, such as open communication, collaboration, and awareness gained emphasis, while digital technology is one of the ground enablers. We apply a frame of dynamic capabilities together with workplace learning and aim to provide new insights into their development processes with a cross-organisational approach. In terms of practical implications, we suggest new understandings for the management on how organisations may learn and fare under uncertainty, volatility, and transitioning to digital collaboration.

Keywords: Dynamic Capabilities, Workplace Learning, Remote Working, Hybrid, Facilitators, Qualitative, Case Study.

1 Introduction

The COVID-19 pandemic has had significant effects around the globe since the turn of the year 2019-2020. From an organisational perspective, it has forced many organisations to suddenly move to a vast remote working mode, and, consequently, to “technology-driven” [1, p. 1] collaboration enabled by digital technologies. [1-3] To successfully manage in the new working conditions, organisations need to learn, and they need to learn fast. Topical research on the effects on workplaces and organisations has already been conducted (e.g. [2, 4-5]). However, more understanding of organisational learning mechanisms is required, both as the current crisis unfolds and as digitally enabled operating modes keep transforming work in different ways [3, 6-7].

In addressing this need, we identify a confluence of two research streams. First, dynamic capabilities research relates to organisational agility and the capability to quickly adapt to changing conditions in operational environments. The conditions may include changing markets, competition, disruptive technologies, and other factors that make organisations' environments turbulent. [7-9] Second, the workplace learning perspective and particularly learning organisations appear relevant in the contexts of increasing technology use in working life and the changing contents of work [10, p. 131]. This motivation appears yet more topical in the current conditions and future anticipated digitalisation of work [6].

Against this background, we apply dynamic capability [9, 11] and workplace learning [6, 10] as lenses for studying organisational learning and capability development in suddenly changing conditions, where digital technologies play a key role in effective operation [1]. We ask, *what facilitates organisational learning for developing the capability to operate effectively in an enforced technology-driven work mode during a volatile situation?* In addressing the question, the paper covers a qualitative case study [12] exploring organisational learning and capability development in the case company, which operates within the public sector in the Nordic region. The data were collected by twelve semi-structured interviews [12] conducted during the pandemic restrictions with professionals from the case company. The interview material was analysed by a combination of abductive [13] and inductive approaches [14].

As findings, we present a set of organisational phenomena, which we suggest facilitate learning and capability development in the case organisation. The facilitators encompass *organisational response and managerial action; staff readiness and commitment; multi-functional, continuous collaboration; increased awareness; learning new practices; and anticipated long-term organisational development*. The facilitators appear to progress temporally [3] from immediate and evolving to longer-term development, as the pandemic situation and the new working mode become familiar. The findings point towards interrelated cycles of dynamic capabilities of sensing, learning, integrating, and coordinating [9] manifesting across the organisation [11] as the facilitators evolve. Finally, social aspects of work [6], such as open communication, collaboration, and awareness (cf. [10]), gained emphasis in the findings, while digital technology is one of the ground enablers.

This paper aims to contribute to the understanding of organisational learning and capability development in an interdisciplinary manner [10] in the context of a suddenly enforced technology-driven work mode [1-2]. We primarily build on information systems (IS) and management literature while reaching to the related field of workplace learning. Next, the background and theoretical underpinnings are discussed in section 2, followed by the case description and methodology in section 3. The qualitative findings are presented with examples in section 4. The theoretical and practical discussion is carried out in section 5, and the limitations, suggestions for further research, and concluding remarks are found in section 6.

2 Background and Theoretical Underpinnings

The COVID-19 pandemic started to shake the world at the end of 2019 and reached Northern Europe in early 2020. In the wake of the pandemic, virtually all organisations capable of conducting their tasks in a remote working mode were suddenly forced to do so, which transformed collaboration from an on-site, face-to-face mode to a largely virtual one [1-2]. Recent research has uncovered many effects of the situation on working and organisations, such as technology issues in different industries [5], changes in the means and affordances of knowledge-work teams' collaborations [2], the impact of the situation on IS management [4], and assessments of adopting new practices in organisations [1].

Two notable aspects emerge from the literature. First, managing in the situation seems not only to be about the technology itself (cf. [6]). Remote working practices appear to play an important role in organisations' success in these circumstances [1-2, 5]. As the means and affordances of collaboration shift from an office environment to a home environment, both positive and negative effects on collaboration have been seen. Technologies enable continued collaboration to meet business goals, but they also introduce challenges to traditional ways of collaboration. [2] Second, time seems to be a central variable [3]. It becomes a scarce resource and organisations are under time pressure when moving to the new technology-driven ways of working [1]. The faster an organisation managed to operate as business-as-usual, the sooner it was found to recover to normal operations [4], which highlights the importance of organisational agility [7, 15].

While organisations aim to sustain their business as usual under the new circumstances (cf. [2, 4]), quick adaptation and learning on many levels are required. On the one hand, many organisations had no existing strategies, practices, or infrastructures in place to accommodate such a sudden, large-scale shift. On the other hand, not all individuals and teams were used to operating in a virtual mode. [1-2] The situation underscores the necessity of quick, "continuous learning" in the workplace [10, p. 131]. In developing "digital workplaces," technologies and systems, and their use, have gained importance, while an understanding of work practices, creating a common goal, and a view of the whole have been found necessary from a learning perspective [6, p. 11-12]. Learning as an organisation revolves around the organisation's and its members' capacity for change and increased effectiveness. Open communication, empowerment, and collaborative culture are identified as requirements. In the context of this study, we identify learning in the workplace as an informal, emerging, and participative process of creating and learning new modes of operation, practices, and knowledge at the organisational level. [10]

Next, dynamic capabilities [9, 11] are identified as fitting lenses to explore learning and capability development in a turbulent, digital technology-intensive environment [7] where organisations operate under time pressure [1]. Dynamic capabilities have been defined in several ways [16]. A high-level core definition names three main organisational capacities, sensing opportunities and threats in the environment, seizing the identified opportunities, and continually renewing, or transforming, the organisation [8]. In this paper, we utilise a somewhat more detailed model including *sensing*, as "the ability

to spot, interpret, and pursue opportunities in the environment,” *learning* “to revamp existing operational capabilities with new knowledge,” *integrating* “to embed new knowledge into the new operational capabilities by creating a shared understanding and collective sense-making,” and *coordinating* capability “to orchestrate and deploy tasks, resources, and activities in the new operational capabilities” [9, p. 247]. Following [11], and in line with learning as a participative process [10], we explore dynamic capabilities as multi-level constructs, where experts in different roles, also beyond the management, are connected by productive and interpersonal dialogue for adapting to a changing environment [11].

3 Case Description and Methodology

This study is an independent part of a longitudinal, interpretive case study [12, 17] initiated in the fall of 2018 to explore organisational capability development in the context of digital transformation [18]. The case company from the Nordic region operates within the public sector and provides professional procurement and logistics services to its customers. The company employs close to 300 people in three locations. This paper reports findings from the third and final round of the overall study. The data were collected by twelve individual qualitative semi-structured interviews [12] between November 2020 and January 2021.

At the time of the interviews, the company had operated from eight to eleven months in a working mode where most of the office staff worked remotely, while the operative staff worked on-site with special protective measures. This mode we call *hybrid*, where part of the staff collaborates in a face-to-face mode and part via digital technologies. Therefore, the overall collaboration among teams is often at least partly enabled by digital tools. Prior to the pandemic, the organisation had digitalised most of its operations, and it largely functions with the support of advanced IS and technology-driven [1] tools. The transition to vast remote working by a large part of the staff required learning in terms of the new hybrid working mode practices and the active utilisation of remote collaboration tools, such as Microsoft Teams. During the pandemic, the organisation’s functioning became crucial in procuring and delivering supplies to its customers, including protective gear for health care.

3.1 Data Collection

The interviews were conducted over Microsoft Teams with interviewees from both managerial and non-managerial positions. Their tasks involved knowledge-intensive work with a mix of operative-oriented and planning and coordination-oriented responsibilities. The overall goal of the interviews was to gain an understanding of how the organisation had developed during the past year.

The interview themes included topics, such as change and developing operations, IS and their utilisation, and key competencies and capabilities. In addition to answering questions according to the interview themes, the participants were encouraged to share their views also outside the themes. Due to the COVID-19 pandemic, a new theme

examining the impact of the situation was introduced. This paper reports the findings related to that theme and the new hybrid mode of working. During the interviews, it became apparent that the pandemic situation was intertwined with the organisation's activities, including the hybrid working mode and the changing emphasis of core operations, so that it reflected in many of the responses in different interview themes.

The interviews were recorded by audio and researcher notes, as permitted by the participants. The recording length varied from approximately 37 minutes to 57 minutes, with an average duration of approximately 48 minutes. Introducing the research, addressing questions from the participants, discussing the findings from the previous interview rounds at the end of the session, and closing the session were excluded from the recordings.

3.2 Data Analysis

For the analysis, which was conducted in March 2021, the audio recordings were listened to and freely transcribed into text. The transcription was conducted as detailed notes from the recordings aiming to capture the essential responses for prompt reporting (cf. [3]). This process amounted to approximately 65 pages and 22,000 words of transcribed interview material.

The transcribed material was coded and categorised with the support of Atlas.ti qualitative data analysis software depicting items and phenomena related to the COVID-19 situation and the resulting hybrid working mode. Challenges, strategies, facilitators, and outcomes of managing the critical, prolonged situation were identified and coded as inductively as possible. [14, 19] Next, the codes were categorised in two ways. First, following Carroll and Conboy [1], normalisation process theory (NPT, May & Finch, 2009 in [1]) was utilised, as it provided a lens to understand how the new practices may have been perceived, internalised, implemented, and evaluated in the organisation. The value of NPT was in guiding us through the nuances of the data in a structured, abductive way [13]. After this way gaining an understanding of the data by their parts and the whole [17], we commenced the second round of categorisation, extracting emerging themes from the data.

The findings presented in the next section were derived from this second categorisation. They reflect the practical life and learning of the organisation in the face of 1) a critical situation affecting the society and the organisation's operations, and 2) a hybrid working mode involving new heavily technology-driven [1] collaboration and other operational practices. Finally, during writing this paper, the findings were discussed with the organisation's representatives for validation. The findings were perceived as identifiable and relevant, while some remarks were made for deepening them.

4 Findings

In this section, we present facilitators of learning to develop capabilities for functioning effectively in the technology-driven, hybrid working mode and volatile situation. The

facilitators appear to manifest as immediate and evolving phenomena, and they are further divided into five different categories. In the final section of the findings, we will anticipate some long-term effects based on the interview material.

4.1 Immediate Facilitators

The *immediate facilitators* we identify as phenomena and action that were initiated soon after the COVID-19 situation escalated and the new hybrid working mode was enforced. We further describe this as *an organisational response to the situation*, including three categories of facilitators.

First, as grounding facilitators, we suggest *prompt organisational response and continued managerial action*, which refer to organisational actors anticipating and preparing for the situation, and management providing quick input and guidance to their teams. Further, management working close to the teams also in operative questions and rewarding staff under pressure were perceived as supportive measures. Importantly, open information sharing by the management enabled team members to take adequate and timely action in tackling emerging challenges in daily operations, or to provide accurate status information.

The second grounding facilitator appears to be the *readiness and commitment of staff* in the face of a critical situation. Examples of such are commitment to handle the increased, fast-paced workload and completing tasks with a high sense of responsibility. Willingness to transfer between tasks to cover resource shortages in the organisation was perceived of as helpful, while operating according to one’s best knowledge as essential.

Finally, and according to the interview material crucially, *seamless, multifunctional, and continuous collaboration* appears to enable successful operations in an atypical situation. Close collaboration and information sharing with teams and customers was emphasised. Communicating, interacting, and working toward a common goal as one team as well as helping one another across organisational borders were found as keys to managing well in the situation. Table 1 summarises these findings with examples.

Table 1. Summary of the immediate facilitators with examples.

Immediate facilitators (an organisational response to the situation)		
<i>Facilitators</i>	<i>Examples</i>	<i>Interview excerpts</i>
Prompt organisational response and continued managerial action	Anticipating and preparing; providing quick input and guidance; working with the team; rewarding staff under pressure; engaging and sharing information openly	<p>“[W]e pulled such a team together really quickly -- .”</p> <p>“[M]anagers have been -- very close to practice --.”</p>

Immediate facilitators (an organisational response to the situation)		
<i>Facilitators</i>	<i>Examples</i>	<i>Interview excerpts</i>
Readiness and commitment of staff	Commitment of personnel in the face of a challenging situation; readiness to bear responsibility; readiness to operate according to one's best knowledge	“[P]eople have -- an excellent sense of responsibility --.”
Seamless, multi-functional, and continuous collaboration	Close collaboration and continuous information sharing within the organisation and with stakeholders; communication, interaction and working for a common goal as a team; mutual assistance across borders	“[T]hat close collaboration was probably key --.” “[Collaboration] has, indeed, enabled it --.”

4.2 Evolving Facilitators

Next, by *evolving facilitators* we mean phenomena and actions that are forming as the new situation matures. These could be seen as manifestations of *organisational learning*, as the immediate factors of prompt organisational response, continued managerial action, the readiness and commitment of staff, and close, continuous collaboration are enacted.

First, the interview material indicates *increased situational and organisational awareness* resulting from the situation and focus on collaboration. It appears as a two-way street of listening to and sharing information. On the one hand, the customers are listened to carefully to identify potential sources of disruption in the supply chain. On the other hand, colleagues are internally kept updated with special care that the message is understood. Additionally, it was perceived that the awareness of the effectiveness and expertise within and of the organisation was also heightened due to the measures taken to address the unusual situation.

Second, and closely tied to the technology-driven working practices, is *learning to operate in a new hybrid working mode and volatile situation*. It appears that forming a new remote working culture and practices takes place over time, and, in this case, mostly as an organic process. Remote working is becoming part of the normal mode in the organisation in contrast to the conditions prior to the situation. Multimodal information sharing practices are implemented, also pro-actively by teams themselves, and trust in remote working practices and tools is increasing. Finally, it appears that reliable remote working tools and connections are prerequisites. Table 2 summarises these findings with examples.

Table 2. Summary of the evolving facilitators with examples.

Evolving facilitators (organisational learning as the situation matures)		
<i>Facilitators</i>	<i>Examples</i>	<i>Interview excerpts</i>
Increased situational and organisational awareness	Listening to the customers carefully; keeping colleagues updated; increased understanding of the big picture and effectiveness of work; increased awareness of expertise within the organisation	<p>“[W]e keep each other on the ball all the time of surrounding events --.”</p> <p>“[I]t is good that you have learned -- what my knowledge [base] is, or someone else’s knowledge [base].”</p>
Learning to operate in a new hybrid working mode and a volatile situation	Forming of new remote working practices; multi-modal information sharing; trust on remote working practices and tools; remote working mode perceived to become part of the normal	<p>“[We] are already used to [a hybrid work mode], and practices have become routinised, and it works better.”</p> <p>“Somehow, [remote working] has even increased collaboration.”</p>

4.3 Anticipating Long-Term Organisational Development

As the last and the temporally most far-reaching component of the findings, we briefly anticipate the long-term opportunities that the immediate and evolving facilitators may create. As the situation still unfolds while we are writing this paper, the materialised evidence of such development remains for subsequent research.

However, already at this point, we can discuss the potential *long-term organisational development* and the expected *organisational evolution stemming from the experience gained* grounded on the interview material. For instance, it would be beneficial to consider the fruitful multifunctional collaboration and utilisation of the understanding gained from the distributed collaborative practices in the future, when the enforced hybrid working mode has ceased. Table 3 summarises these findings with examples.

Table 3. Summary of the anticipated long-term development with examples.

Long-term development (organisational evolution from the experiences gained)		
<i>Facilitators</i>	<i>Examples</i>	<i>Interview excerpts</i>
Organisational development of collaborative culture, practices, and new working modes?	Utilising the understanding gained for the best information sharing channels; adopting new, more flexible working modes; an increased understanding of distributed collaboration	<p>“I believe -- that the [multifunctional collaboration] will continue from here on too --.”</p>

5 Discussion

In this paper, we set out to better understand *what facilitates organisational learning for developing the capability to operate effectively in an enforced technology-driven work mode during a volatile situation*. As a response, we propose a set of immediate and evolving facilitators, as well as the anticipated long-term effects that appeared in the organisation as it navigated through the sudden move to a hybrid working mode amid the COVID-19 pandemic. It appears that in this case and in the context of events, such capability forms as a result of 1) contextual base factors, such as the advanced digitalisation of operations, digital collaboration tools, and the existing expertise in the operational domain; and 2) the facilitators described in the preceding sections. The facilitators are summarised in Figure 1.

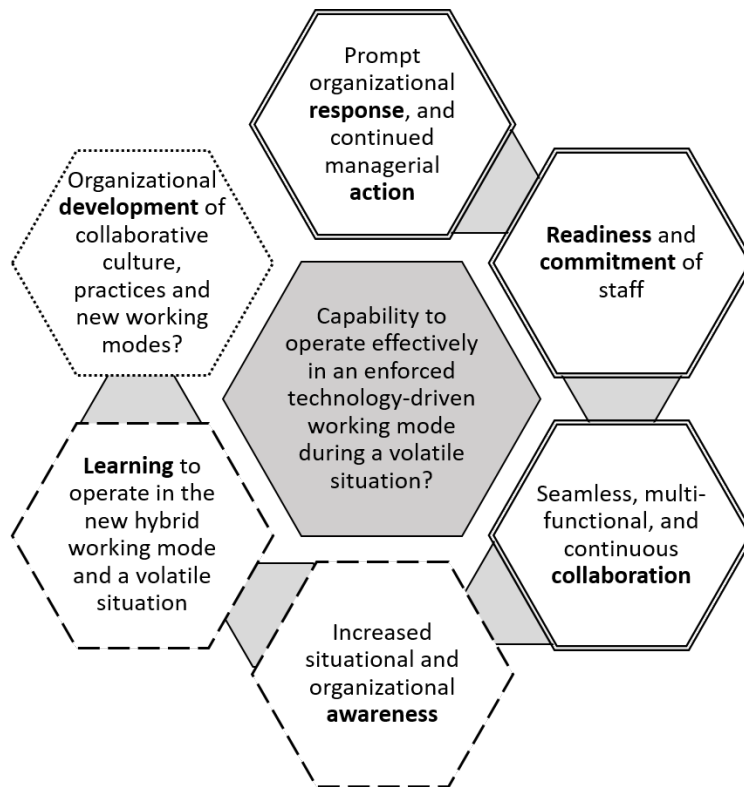


Fig. 1. Summary of the findings, including the proposed immediate and evolving facilitators and the anticipated long-term development. The first three hexagons from the top (with double lines) denote the immediate facilitators, the fourth and fifth hexagons (with dashed lines) represent the evolving facilitators, and the final hexagon (with dotted lines) marks the anticipated long-term development, as learning is accrued from the situation.

We propose that the learning and capability development were initiated as the interaction of prompt organisational and managerial action and continued support, and the commitment and readiness of staff to operate effectively in the situation. For example, open information sharing by the management and the readiness to act with high commitment by the employees seem to have contributed to effective operations, and moreover, to seamless, multifunctional, and continuous collaboration. It also appears that this combination may enable an increased situational and organisational awareness, which aligns with the learning outcomes categorised in previous research (Eraut, 2004b in [10]).

Further, it seems that as the new mode of working had been in place for some time, organisational members had learned to operate by utilising digital tools for collaboration and addressing the requirements stemming from the situation. Finally, as the long-term facilitating effect, it is anticipated that the learning gained from operating in such conditions will contribute to organisational development in terms of adopting new practices and promoting a collaborative culture. It could be asked whether, as the immediate facilitators unfold toward the evolving ones and long-term development, organisational learning could also transform from the informal toward the more structured and formal [10]. As a whole, the facilitators seem to place more emphasis on social rather than technological aspects of learning in the workplace [6].

From the dynamic capability perspective, applying the model by Pavlou and El Sawy [9], we suggest that the organisational response and managerial action stem from the capability to *sense* changes in the operating environment and act accordingly. The response and action are then translated by committed and ready staff into *integrated* and *coordinated* activity, multifunctional collaboration. As the situation was volatile with sudden changes both in the mode of collaboration and task priorities, we suggest that *learning* happens iteratively around the immediate facilitators. In terms of the evolving facilitators, as awareness of the situation and organisational expertise increases, it appears that the *sensing* capability is strengthened. We further suggest that in time, new hybrid working mode practices are *learnt*, which both feeds back into daily operations and the immediate facilitators, enabling the *integration* and *coordination* of refined practices as longer-term organisational development.

Finally, we may see these processes as two connected cycles of dynamic sensing, learning, integrating, and coordinating capabilities [9]. In the immediate facilitators, the capabilities are exploited for quick action, and in the evolving facilitators and long-term effects, they are strengthened to enable the further refined practices. This could lead to a “virtuous circle” [11, p. 1745], where through the productive and interpersonal dialogue of employees in different roles, the input of individuals accumulates into an organisational dynamic capability [11], enabling effective response to environmental change (cf. [7]).

6 Conclusions

The paper presented the findings of a qualitative case study, the immediate and evolving facilitators of organisational learning to develop capabilities for operating effectively

in an enforced, technology-driven working mode and a volatile situation imposed by the COVID-19 pandemic. The paper explicated the findings theoretically from multi-level dynamic capability [9, 11] and workplace learning [6, 10] perspectives.

As limitations of the study, we wish to highlight two main aspects. First, even though we discuss how learning and capability development may have happened in this case, events have likely taken place in an interlinked, emerging [10-11] manner. Thus, we refrain from claiming causal relationships. Second, the handling of risks and challenges was excluded from the paper due to space constraints. The risks and challenges, and their potential impact, should be addressed in subsequent work. For example, the endurance of staff, ability to drive new development activities, and induction of new team members may pose challenges if the enforced situation is prolonged.

While we can see the linkages of organisational learning and capability development, further research would be required for a more solid understanding of the antecedents of such agility and the role of digital technologies in it [15]. For example, do the antecedents lie in the previous experiences of the organisation or the existing knowledge the organisation has harnessed in a new situation? Next, what about collaboration as a facilitator; is it immediate or evolving? Here it was categorised as immediate, as it was perceived of as key, and it initiated quickly. Further, longitudinal research is required to uncover how the anticipated long-term effects grow in the aftermath of the situation. Additionally, a more elaborate analysis with learning typologies, such as discussed by Tynjälä [10], should be incorporated. Finally, while the NPT frame [1] was utilised in the early stage of the qualitative analysis, it turned out that an inductive approach provided a more practice-oriented insight into our interview material. However, NPT appears as a viable model and its utilisation should be further explored. It seems likely that it would yield more understanding on the mechanisms of adopting new practices in organisations.

By connecting the research streams of workplace learning [6, 10] and dynamic capabilities [9, 11], we explored the effects of a sudden and enforced transition to a technology-driven work mode [1-2] in an organisation. With this, we wish to contribute to research on organisational learning and capability development processes in technology-intensive and volatile operating conditions, which require the capacity of organisations to learn and adjust rapidly [7]. As implications for practice, we propose a new understanding for management in navigating through such situations. While further work is still required, we believe this case will inspire discussion in the scientific community regarding organisational learning.

Acknowledgements. We thank the case organisation for making the research possible. We also thank Tampere University, The University of Tampere Foundation, The Foundation for Economic Education, and Jenny and Antti Wihuri Foundation for support.

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