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Fostering resilience: The potential of design to support strategic agility

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Abstract: 'Strategic agility'– i.e., how organizations can strategically plan and cope with uncertainty through a continuous tuning, monitoring, and re-balancing of their operations – has been characterized as a critical component to foster organizational resilience. This paper aims at investigating whether and how design can support organizations to acquire greater strategic agility. Our analysis is grounded in a case of a globally operating software company that has recently established a design team and introduced design methods in its development processes. The paper shows how design favoured processes that are generally linked to strategic agility (distancing, anticipating, reframing, experimenting, decoupling, and dialoguing). Taken together, these processes were key in building the strategic agility needed in transitioning from a product-centric orientation towards a user- and service-centred approach.

Keywords: Strategic agility; service design; service-centred

1. Introduction

Within management and business studies, the acronym 'VUCA' – volatility, uncertainty, complexity and ambiguity (Bennett & Lemoine, 2014) – is increasingly used to characterize the current environments in which organizations have to operate: interconnected production and distribution pipelines across transnational linkages (Castells, 1996), which have to continuously readapt to ever-changing markets, socio-technical conditions and disruptive events (e.g., extreme weather, pandemics, shortages of raw materials, etc.). These conditions underpin and impact the functioning of businesses, who respond to potentially disruptive patterns by applying new models, methods or frameworks, such as design thinking (Cousins, 2018). Resilience – i.e. "the ability to prepare for and adapt to changing conditions to withstand and recover rapidly from disruptions" (Dragoicea et al., 2020: p. 185527) – is becoming a critical organizational feature (Elali, 2021). Although the concept of resilience has been studied across different fields of knowledge (Ham, 2020; Jabareen, 2013; Liu et al., 2021;

Manzini & Thorpe, 2018), scholars still wonder whether the concept needs to be more clearly defined and operationalized to not become yet another buzzword (Davoudi et al., 2012).

One way to look at how to operationalize and support resilience is by adopting the concept of 'strategic agility'. Strategic agility refers to the ability of organizations to strategically plan, remain adaptive, react fast and shift their business models radically in spite of having to cope with, and manage uncertainty, unpredictable changes, and competing demands (Ismail et al., 2011, Lewis et al., 2014, Mont, 2000; Seetharaman, 2020, Weber & Tarba, 2014). Strategic agility is nurtured through a continuous tuning, monitoring and re-balancing of an organization's operations (Ismail et al., 2011). As a key component to foster organisational resilience (Ismail et al., 2011), the concept of strategic agility has received considerable focus from scholars within both the field of management (e.g. Weber & Tarba, 2014) and design (e.g. Tkaczyk, 2015).

Within design research, a large amount of studies have investigated how to integrate strategy in design (Simeone, 2020), however, little focus has been given to whether the integration of design in organizations can help strengthen their strategic agility. Therefore, we are curious about whether design – seen here as a structured co-creative process based on methods such as user research and user testing, rapid and frequent prototyping, visualization and other modelling techniques (Buchanan, 2004) – may support and strengthen some key components of strategic agility in an organization undergoing profound changes in relation to its business model. We ask this question in the context of a large Danish software company that is shifting its business model from product-centricity towards services and that, until lately, had not employed a design approach in its development processes. Drawing on data from a series of design workshops and reflections emerging from the establishment of a new design team within that company, we *ask whether and how these design processes supported strategic agility*. Our findings are grounded into analytical descriptions of the design process and foreground moments that are deemed relevant to the ability of strategic agility to sustain an organization along a healthy long-term trajectory (Jackson, 2009).

The paper is structured as follows. In section 2, we look more deeply into the concepts of strategic agility and resilience, and we explore how design research has so far referred to these concepts. In section 3, we briefly describe the research setting and methods. Section 4 presents an analytical description of our findings, which will be discussed in section 5, followed by a conclusion in section 6.

2. Related work

2.1 Strategic agility and organizational resilience

Strategic agility is a management concept that describes the ability to "rapidly reposition the organization to exploit new opportunities springing up in the course of non-linear changes in

the environment in which the organization operates" (Elali, 2021: p. 3). Elali (2021) distinguishes between strategic and operational agility. According to Elali (2021), a prerequisite for sustainable operational agility (e.g., imagine a university improving its existing curricula), and long-term competitive advantage, is strategic agility, i.e. a combination of leadership, flexibility, proactivity, and competitiveness (which, e.g., could completely reposition a university by shifting their entire education online). In 2010, Doz & Kosonen presented a leadership agenda framework that conceptualizes strategic agility as the "thoughtful and purposive interplay" of senior managers through three fundamental capabilities: strategic sensitivity, leadership unity, and resource fluidity. Building on this conceptualization, Elali (2021) proposes the following summary of three key components of strategic agility:

1. Strategic sensitivity: "[T]he organization's ability to understand and perceive its external environment and the changes that are occurring to them through openness, sensing, insight, and seizing opportunities faster than competitors" (Elali, 2021: p. 5)
2. Partnership in responsibility and commitment to teamwork (leadership/team unity): "[M]aking decisions in cooperation with agile and highly intelligent work teams and granting them broad powers to solve problems and make decisions" (Elali, 2021: p. 5)
3. Resource fluidity: "[E]ncapsulating the ability of the institution to attract and move flexibly to the resources, skills, and expertise necessary for its survival and the sustainability of its growth and competitive advantage" (Elali, 2021: p. 5).

Strategic agility comes with competing demands and inherent contradictions (Lewis et al., 2014), such as the need for stability versus the need for flexibility, commitment versus change, and established routines versus novel approaches. Strategic agility is linked to the ability of thinking strategically and being proactive and responsive (and thus achieving resilience) (Ismail et al., 2011). Figure 1 shows an integrative summary of key components of strategic agility (strategic sensitivity, leadership/team unity, and resource fluidity) and some activities associated with the three components.

Figure 1. The components and subcomponents of strategic agility. Based on Doz & Kosonen, 2010 and Elali, 2021

The ability of an organization to be strategically agile can be linked to its ability of being resilient (Ismail et al., 2011). Resilience bears many connotations but has its origins in ecology as the persistence of a system (Walker et al., 2004). The idea of 'being resilient' has since made waves through design research as a deliberate and required feature of a system-shifting design practice (Rodrigues, 2020) and is deemed as a "collective capacity for intentional action in responding to ongoing change, coordinated across scales in order to create value" (Rodrigues, 2020: p. 17). Resilience has been described as an outcome of strategic agility and as a capacity in itself that can act as a prerequisite for companies to thrive in dynamic environments (Lengnick-Hall & Beck, 2009; McCann et al., 2009).

2.2 How design research has looked at resilience and strategic agility

For an organization to become resilient, established routines and habits might need to be destabilized in order for new ways of thinking and operating to be established at multiple levels: micro-individual, meso-organisational and macro-system levels (Rodrigues, 2020). Within design research, several studies provide insights into how resilience can be supported through design. According to Wetter-Edman et al. (2017), design processes can help to productively destabilise organizational routines and habits. Harre et al., 2021 indicates the potential of design to facilitate systems thinking, and it has been emphasised that design can enable network relationships to emerge (Rodrigues, 2020; Steen et al., 2011) and support a shift in mental models (Vink et al., 2019). Design capabilities, such as the ability to frame complex problems and envision logical architectures for broad interventions, can be particularly critical for resilience (Morelli et al., 2021).

Some other studies, more broadly, looked at the need to integrate strategy and strategic thinking with design (Cooper et al., 2013; Simeone, 2019). Design provides organizations with the means (i.e. frameworks, methods, and principles) to support an adaptive and emergent strategy, which is "a pragmatic blend of thinking ahead and end-route adaptation" (McCullagh, 2008: p. 67). Design as a practice and as a mindset can support businesses in

becoming more resilient in their ability to steer their processes in a flexible and adaptive fashion (Kempenaar & van den Brink, 2018) and to quickly change and readapt business designs (Van Der Pijl et al., 2016). However, scholars also found that it can be challenging to weave design processes into a company's daily practices and operations (Elsbach & Stigliani, 2018; Seidelin, et al., 2020) as continuous training is needed (Madsen & Lund, 2021).

While design research has closely examined the interplay of design and strategy, not many studies have particularly focused on the concept of strategic agility. Therefore, this is precisely the area of investigation for our paper, which explores the following research question: *How can design support strategic agility?*

To answer that research question, we analyse whether and how design supported a large Danish software company in its ongoing shift from a product-centred focus towards a service-centred offering. The empirical material emerging from the case was analysed according to the three core components of strategic agility – strategic sensitivity, team unity, and resource fluidity. We make use of the subcomponents in Figure 1 to inform a more granular description of how processes associated with the subcomponents were supported by design.

3. Research setting and methods

3.1 Our case

Our case is a global business-to-business software organization headquartered in Denmark successfully delivering an enterprise platform that has been built for many years. In 2015, the organization initiated a transition towards more agile and innovative practices for software development, shifting towards a service-centred (rather than product-centred) approach. To support this transition, two designers were temporarily employed by the company, who joined a pre-existing team of product managers and software engineers. In 2019, the company made a further significant step towards integrating design by establishing a design team which, nowadays, counts 5 designers and 1 PhD design researcher (the first author of this paper). While describing our case, we will refer to three groups of participants: designers, senior management, and product owners. 'Product owner' refers to a role who oversees the development and marketing of a software application. Our analysis will focus on the period in which the company decided to push further on design and established the design team. It is worth noting that, at that time, design was not part of the typical development processes of the company and, as such, most of the employees were not familiar with design methods.

In this paper and within that company, 'design' is used to refer to processes and activities that favour a user-centred and iterative approach to software development and that make intensive use of visualization and early prototyping and user research and testing (Buchanan, 2004). These processes support a distinctive 'designerly' way of thinking and doing (Buchanan, 2015) and aim at producing fitting solutions through a process that alternates moments of convergent and divergent thinking (Cross, 2008; Elsbach & Stigliani, 2018).

3.2 Our research methods

The study is part of an ongoing industrial 3-year action research study (Coghlan, 2019). Action research was chosen as an approach given its attention to problem-solving, multistakeholder collaboration and anchoring of change initiatives through the development of localized solutions; this makes it a promising fit for industry-related collaborations (Coghlan, 2019; Hayes, 2014). The first author is a full member as a researcher in the above-mentioned design team since January 2019. Full membership has allowed her to participate in and observe the design processes through an ethnographic approach (Bryman, 2003). Her role as a researcher has been overt throughout the research project. The foundations of her findings include notes and interviews with designers and product owners in the context of five software development projects carried out within the company. The projects were not studied in situ as they took place in parallel, but our data capture experiences of designers and product owners in retrospect.

This study includes observational notes from the projects and 9 semi-structured interviews (Brinkmann & Kvale, 2018) with designers and product owners. The interviews were conducted by the first author between July and October 2020 and lasted between 60 and 75 minutes. All interviews were audio-recorded and transcribed verbatim. Each interviewee was asked about a specific project in which they had been involved. Questions focused on the participants recalling an activity and the interviewer asking them to describe the activity, the related design artefacts, and their experience at that point in time. In our analysis, we included observation notes from the first author's fieldwork to ensure triangulation (Yin, 2018).

4. Findings

In the following, we describe some key moments in which a designer engaged with product owners and senior managers. The designers introduced a perspective that emphasized a user-centred approach and included activities that favoured the creation of artefacts, such as sketches and refined prototypes, which were used for user research and testing. This approach supported processes, such as distancing and anticipating, reframing and experimentation and decoupling and dialoguing, that, as we will more clearly show in the discussion, can be connected to strategic agility.

4.1 Distancing and anticipating

We start by describing a first encounter with a product owner's customary way of modelling future software features, which was destabilised through operations of visual translation carried out by a designer. A common way for the product owner to represent a potential solution was through a diagram that depicted a software development process from a technical perspective and with low indication of how this process would have implications for its future end-users. In fact, routinely, the perspective of the end-users was not systematically

considered during such development processes. When the designer joined the software development team, she started translating these technical documents and diagrams into paper sketches that visualized an interface and a workflow from the perspective of a potential end-user. On the one hand, the act of conveying and translating the technical diagram into a user interface provided a user-centred perspective, which offered insights that integrated the technical considerations of the product owners. On the other, the visualization helped to represent software features through a visual language that could be more easily understood across teams and individuals with different technical backgrounds. This was also noticed in a project where a storyboard was imagined from the perspective of an end-user. This visual outcome helped the product owner to acquire distance from his routinary techno-centric perspective. In addition, the product owner expressed enthusiasm about the relational characteristic of the visualizations created by the designer, which brought together and combined multiple components into a coherent whole and workflow; particularly, he explained that: *"What was really helpful is that I had a structure to put data in"*. As such, these visualizations provided the product owner with a broader perspective on the software solution. A series of subsequent interviews with end-users (facilitated by a designer) gathered valuable insights about the problems end-users could have in their daily workflow and, thus, helped the product owner to further appreciate the value of design. He also expressed surprise towards the ability of the designer to lead interviews on technical software features without being herself a technical developer. Both the process of user-centred visualizing and the interviews made the product owner reflect on and distance from his own biases and brought awareness to how multiple perspectives (rather than staying focused on his own pre-existing perspective) are valuable in product development processes. This distancing has been qualified as a vital part of gaining strategic sensitivity (Doz & Kosonen, 2010).

Sharpening strategic sensitivity can also be fostered through anticipation, e.g. through activities that favour long-term thinking. Design supported this process supporting imagination on how potential concepts (e.g., software features) could evolve in the future and along different trajectories. To adopt a more future-centred outlook, the designer created storyboards to explore varied scenarios of use. In addition, some storyboards were transformed into an interactive prototype, which was subsequently showcased to potential end-users. Introducing this approach helped tune the product owner's understanding of his role and bias and furthered his reflections on his routinized ways of working, which were more geared towards an incremental development of technical functionalities rather than towards anticipating possible and unforeseen uses. The designer was able to facilitate a space of experimentation in which the end-users interacted with the prototype and its workflow without guidance. These designerly moments of experimentation helped the product owner to acquire an anticipatory and multifaceted view on key software features in the pipeline and validated that the depiction of a potential future concept would be valuable to develop.

4.2 Reframing and experimenting

The insights gained through visualizations and user research made reframing – seeing the need for business model renewing (Doz & Kosonen, 2010) – of one of the project's business cases inevitable. Design mostly supported processes of reframing by encouraging and pushing for the inclusion of external perspectives and insights, again through user research. In one project, the insights gained from further interviews with end-users were deemed as "game-changing". The product owner became convinced that the software development strategy had to change as it became clear that the team got a new "ability to articulate the problem we were trying to solve" (Product Owner). The insights from the interviews with end-users made it clear that the software features describing the scope of the software development project did not reflect the end-users' perspective and challenges. To integrate the insights from user research and deliver a more "holistic" solution, existing and new features had to be reframed to reflect the development of "a more complete workflow offering as opposed to [...] a small tool." (Product Owner). We see this transformation of the product owner's planning activities as a signal of reframing, i.e., shifting the focus towards a more user-centred value-based perspective, urged by the outcome of a more open-ended, exploratory approach.

While establishing situations that allow for experimentation is common for a design process, this was not the standard way of operating for the projects in the company we studied. The product owner told us that while customer involvement was not uncommon, the typical approach was that research would occur in ways where his own assumptions were confirmed as opposed to being challenged. The product owner exemplified this by saying: "It's like, I have this idea, look at this screen, do you like it? Yes. Which is not the right way to do it because you are just getting [the users] to agree with your predetermined solution to a problem" (Product Owner). However, the product owners became aware of the value of a design approach by observing how user testing sessions could be an occasion to invite end-users to be an active part in the design process (e.g., by proposing tweaks and new ideas). The interviews and user testing sessions were an occasion to try working in ways that would foster continuous and iterative experimentation and brought in activities of prototyping earlier in their software development processes. By placing the end-user at the centre, this more experimental way of working invited for a granular look into value-creation processes and helped to imagine a company offering that was less oriented towards building predefined software products and more oriented towards providing a service to the end-users. The use of research to test the product owners' assumptions can be connected and extended to research that propose design as a way to reduce cognitive biases (Liedtka, 2015). The shift from product- to service-orientation pushed by design was particularly critical and allowed the company to realize and imagine how value could be created in specific situations of use. Experimenting with user-centred design processes enabled the company to explore future

scenarios of service interactions as a vital component to ensure how to deliver a meaningful user experience.

4.3 Decoupling and dialoguing

When the designers joined the projects, the organization was anchored to existing product-centred processes and the organizational resources in R&D were geared towards supporting these processes. These existing processes and resources needed to be decoupled from their existing configurations and reconfigured to support a more service-centred approach. Disrupting existing organizational structures and processes (e.g., re-assigning development budgets or re-shuffling human resources) generally stirs tensions and frictions. In these moments, it is vital to foster communication and dialogue across the organization. Design supported these processes of decoupling and dialoguing mostly thanks to its translational property, i.e. the ability of design to model and visualize ideas and solutions at early stages. Visualizations (e.g., sketches, diagrams, storyboards) and prototypes at various degrees of refinement enhanced communication among various stakeholders. Such design artifacts were understood and appreciated by employees from various departments and by teams with a different technical background. These design artifacts made clear to non-professional software engineers (e.g., senior managers or end-users) what it meant for the company to integrate a user-centred focus. In addition, the designers' models and prototypes helped the product owners and their teams to envision multiple different possible directions for software development (and, therefore, multiple ways to re-configure the related organizational processes). These directions were shared with senior managers, who were able to ignite and sustain a dialogue around pros and cons of each possible direction. This helped to make an informed decision about how to proceed with the decoupling of existing resources and the establishment of new organizational processes. We see this as an indication of how design impacted on and was valued at the strategic level in the organization. As a result, flexibility was gained and switching the orientation towards a more service-centred perspective was supported.

5. Discussion: How design supports strategic agility

The findings that emerged from our analysis show how design can support processes of distancing, anticipating, reframing, experimenting, decoupling, and dialoguing. These processes have been linked to three key components of strategic agility: strategic sensitivity, leadership/team unity and resource fluidity (Doz & Kosonen, 2010). Our findings show how design can support strategic sensitivity described through the following four processes: A) *Distancing*, understood here as realizing the limitations of routinary ways of thinking and operating. In this context, starting to appreciate that the adoption of new, multifaceted perspectives can be beneficial. B) *Anticipating*, which focuses on ways to incorporate future-oriented ways of thinking. C) *Reframing*, which refers to the ability to rearticulate challenges and opportunities and, consequently, the offerings of an organization. D) *Experimenting*, which

points to an iterative way of proceeding through quick cycles of design, development, and testing. These four processes can have a profound impact on the way in which organizations function and are structured (Doz & Kosonen, 2010). Generally, these processes require resource fluidity, i.e., the capacity of an organization to *decouple* existing configurations and quickly reconfigure the distribution of its resources (e.g., budget, human resources, or other important assets). Building resource fluidity can help in responding more quickly when an organization needs to readapt its scope, offering, and functioning. Such adaptation processes – and the related organizational reconfigurations (e.g., in terms of distribution of resources) – can, of course, raise tensions and frictions. Therefore, igniting and maintaining an honest, open, and rich *dialogue* with all the actors involved is of critical importance to support leadership/team unity (Doz & Kosonen, 2010). Our case showed how design played a role in supporting these processes, as summarised in Table 1.

Table 1. How design supports processes linked to strategic agility.

Processes linked to strategic agility	**How design supported these processes**
Distancing and anticipating	Capturing and visualizing concepts and ideas in a user-centred way, thereby encouraging the deliberate inclusion of multiple perspectives and introspective reflection – and thus fostering distancing from existing routinary ways of thinking and biases
	Representing and exploring multiple scenarios of use across temporalities to anticipate various ways in which the future can play out
Reframing and experimenting	Fostering a more open-ended, exploratory approach, which builds on multifaceted views to reframe challenges and opportunities and to go beyond routinary ways to look at problems and business models
	Encouraging continuous and iterative experimentation through activities that favour early prototyping oriented towards progressively shaping value-offering opportunities
Decoupling and dialoguing	Offering a visual language that supports translational processes through which design artefacts ignite and sustain dialogue among stakeholders with different backgrounds. These dialogues are particularly relevant in moments in which organizational resources and processes need to be decoupled and reconfigured

Our work contributes to various streams of literature. First, we extend current studies on strategic agility (Doz & Kosonen, 2010; Elali, 2021; Weber & Tarba, 2014), which rarely examine this construct from the perspective of design. Our study integrates the current conceptualizations of strategic agility by proposing a fine-grained view on how designerly approaches can support strategic sensitivity, leadership/team unity and resource fluidity. As such, we extend the work of Elali (2021) by showing how design can (a) push an organization to move fluidly resources and skills towards a service-centred perspective, (b) make it easier for team and leadership to unite and align based on dialogues grounded in visual artefacts.

Second, our take is that – even though there are numerous studies that examine the interplay of strategy and design (Simeone, 2020) – the specific construct of strategic agility has not yet been thoroughly employed within design research. Yet, as suggested by Ismail and colleagues (2011), strategic agility is key in fostering resilience, and resilience is, indeed, a recurrent theme in design research (e.g. Dragoicea et al., 2020; Manzini & Thorpe, 2018; Manzini & Till, 2015). We hope that our study can further add to the construct of strategic agility and its discourse by showing design researchers that strategic agility could be effectively used to address questions of how resilience can be operationalized within organizations. In this perspective, our paper contributes to a few existing studies that examine resilience in design research. Wetter-Edman et al. (2017) suggest that design methods can be a catalyst of change, through visualization and tangible artefacts, leading to destabilization of habits, which we also saw in our case. Rodrigues (2020) found that designers have the potential to intervene at an organizational level and can inspire a shift in systems through destabilisation and become more resilient. We extend the argument of these authors by showing how the integration of design can destabilise organizational routines by decoupling existing processes and reshuffling them towards new configurations, which, in turn, can make participants aware of how existing processes have to change. Lastly, we believe that the future discourse on strategic agility could be enriched further by exploring the interplay between its specific components and design, seeing the latter not only as a supportive mechanism, but potentially also as a means to engage the construct's underlying paradoxes (Lewis et al., 2014).

6. Conclusion

Within our case, design played an important role in supporting strategic agility, which, in turn, provided the potential to inspire resilient responses. As such, our take is that in the current turbulent environments and during uncertain times, organizations can greatly benefit by leveraging design to support their strategic agility. However, rather than offering definitive and consolidated solutions on how to employ design in relation to strategic agility, we believe that our paper offers initial and exploratory reflections. As this paper is grounded in one case study, we acknowledge its limitations in scope and propose that future investigation could explore the linkage between design and strategic agility and how it could possibly

unfold in different ways within other organizations or other geographic, social, and cultural contexts.

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