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Implementing design thinking in organizations: an exploratory study

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Abstract

Design thinking has been adopted by organizations in all sectors of the economy. In this qualitative study, I explore organizations' goals in adopting design thinking, the challenges such programs encounter, and the approaches they have taken to deal with these challenges. I find that unclear goals, the need to build legitimacy, cultural resistance, and leadership turnover can compromise the work of design programs. Possible antidotes include technological and collaborative platforms, and extending design thinking into the implementation process.

Keywords: Design thinking, Innovation, Organization design, Organizational culture

Introduction

Design thinking has received a great deal of attention in academic- and practitioner-focused management literature (e.g., Beckman and Barry 2007; Liedtka and Ogilvie 2011; Martin 2009). The benefits claimed for it include organizational transformation, innovation (Brown 2009), customer orientation (Kumar and Whitney 2007), better decision making (Liedtka 2015), organizational learning (Beckman and Barry 2007; Smulders 2004), and competitive advantage (Martin 2009). As a result, many organizations have established design programs.

Yet design thinking in management is not without its critics. The design community has accused the business community of oversimplification (e.g., Ling 2010). Management practitioners and scholars also have raised concerns and called for a “rethink” (Kupp et al. 2017).

Benner and Tushman (2002) argue that “process management” favors exploitation over exploration. The solution is “ambidextrous” organization (Benner and Tushman 2003), in which organizations simultaneously pursue exploitation and exploration by isolating process management from exploration. In this study, I show that such ambidextrousness is difficult to achieve in practice. Design thinking is holistic and iterative, with a distinct mindset and attitude (Boland and Collopy 2004). Many organizations, however, are built for efficiency, and such an approach can challenge established norms. Organizations dominated by reductionist thinking may have particular difficulty adapting to such an approach (Irwin and Baxter 2008).

The overall goal of this study is to clarify why organizations adopt design thinking, what challenges they have encountered, and how they have responded to these challenges. I begin by commenting on the reasons underlying the growth of design

thinking in organizations. To establish the context, I describe design thinking as both a *process* and a *mindset*, highlighting how it differs from traditional approaches to problem solving in organizations. I then discuss the methodology for the study and its key findings. The paper concludes with some comments on the meaning of these results, limitations, and implications for future research.

Why design thinking interests organizations

Design, and its underlying approach, design thinking, have generated great interest among managers, as indicated by the large number of articles about it in managerial journals.¹ While there are no comprehensive studies analyzing how many organizations have adopted it, Schmiedgen et al. (2015) find that it is practiced in organizations of all sizes across all industry sectors. In the public sector, its adoption is widespread, led by prominent examples such as Denmark's MindLab and Canada's MaRS; in July 2018, the UK Government hosted an "International Design in Government" conference and attracted participants from 96 different organizations in 26 countries.

Design thinking offers business and public sector organizations a way of developing original products and services that meet latent needs. It is considered a source of competitive advantage; a means of innovating and managing organizational change in the face of rapidly changing customers, supply chains, and hypercompetition; and of addressing "wicked" problems.

Several authors argue that design offers a competitive advantage through innovation. Olson, Cooper and Slater (1998) argue that design can be translated into competitive advantage through the creation of customer value. Martin (2009) argues that design thinking helps business become more innovative through knowledge development and is the "next competitive advantage". In the public sector, Carstensen and Bason (2012) use the example of the Danish Government's MindLab to show how public-sector innovation labs, based on design thinking, can bring about collaborative innovation.

Design is also seen as a vehicle for organizational change and development. Sato et al. (2010) describe how design thinking at Hewlett-Packard applies four models of organizational change: Leading Change (Kotter 1996), Theory U (Senge et al. 2005), Rapid Results (Schaffer and Ashkenas 2005), and Congruence (Nadler and Tushman 1997).

Design is considered a means of addressing particularly difficult challenges, termed "wicked problems" in society (Rittel and Webber 1973) and in business (Churchman 1967; Camillus 2008), by virtue of its iterative way of exploring problems (Conklin 2005).

The nature of design thinking

Design, and consequently design thinking, is notoriously difficult to define. Simon (1988) argued that "everyone designs who devises courses of action aimed at changing existing situations into preferred ones": design is ubiquitous, and design thinking is itself multifaceted.

Johansson-Sköldberg et al. (2013) argue that the quest for a clear-cut, agreed definition of design thinking is a fruitless and counterproductive task. They distinguish between "designerly" thinking, rooted in the profession of design, and "design" thinking, its translation into management practice: the latter is in need of a stronger scholarly foundation, and the field can benefit from stronger links between the two streams.

In this paper, my interest is in how design thinking is applied in organizations. In this context, design thinking can be seen as both a problem-solving *process* and a *way of thinking* about problems.² While characterizations of each vary, they have common elements, which I discuss below.

As a *process*, design thinking is a series of steps one takes to solve a problem. Brown (2009) describes it as optimization across three elements: user needs, technology, and business advantage. From this perspective, design thinking is a recipe book that any problem solver can use for almost any class of problem. Lockwood (2009) defines it as “a human-centered innovation process that emphasizes observation, collaboration, fast learning, visualization of ideas, rapid concept prototyping, and concurrent business analysis”. These elements of user observation, rapid prototyping, and iteration crop up repeatedly in discussions of the design process (Dunne 2018).

Kumar (2013) describes seven “modes” of design, undertaken iteratively: the starting point can vary, as can the steps taken and the order in which they are taken, according to the project. Other authors, such as Stickdorn and Schneider (2012), propose different versions of the design process, although their elements are similar.

Dorst and Cross (2001) explore the iterative nature of design thinking in more depth. Using a think-aloud protocol to observe how designers work to solve a problem of trash receptacles on Dutch trains, they find that the designers define the problem *even as they are solving it*. The process thus involves “co-evolution” of the problem and the solution. Similarly, Conklin (2005) contrasts the “waterfall” method of problem solving, common in engineering and software design, with a designerly approach. Under the waterfall method, the problem solver moves progressively through a series of stages from problem to solution; designers, on the other hand, jump back and forth from problem to solution, defining and refining as they proceed.

Design thinking often emphasizes the end user. User-centered, or human-centered, design came to prominence in the 1980s in the field of human-computer interaction, or HCI (Dunne 2011). Norman (1990) specified several principles designers should follow to make products easily understood and navigated. A strong affinity with users also influences how the problem is defined, or “framed.” Designers seek to empathize with users and understand how the experience of use appears from their perspective (Dunne 2011). In doing so, they hope to create innovations that appeal to unarticulated needs, and can become a source of competitive advantage (Kumar and Whitney 2007).

The exploratory approach includes physical representation of the problem and/or the solution. Through rapid prototyping, designers represent their ideas in low-fidelity form such as sketches, models, maps, role plays, etc. Anything that represents the user’s experience of the artifact could be a prototype (Houde and Hill 1997; Buchenau and Fulton Suri 2000). Prototyping gives the design team testable artifacts that can be presented to users for feedback, and thus play an important role in the iterative user-centered design process. However, their function goes beyond testability. Prototypes are a way of fostering communication: “boundary objects” that bridge the gap between different domains and stakeholders (e.g., Star and Griesemer 1989, Neyer et al. 2008, Brandt 2007, and Doll 2009), and creating shared mental models (Conklin and Weil 1997).

The design thinking *process*, then, is one of iteration between abstract concepts and concrete representations, in order to understand user experience, explore alternative

problem frames, and work toward solutions. It has been described as an experiential learning process (Beckman and Barry 2007; Smulders 2014).

Such a process demands a distinct *way of thinking*: a high degree of open-mindedness, a willingness to postpone judgment on the nature of the problem, and a preparedness to experiment on the fly (Hassi and Laakso 2011). Dunne and Martin (2006) describe designers’ way of thinking as “integrative thinking,” an unwillingness to accept unpleasant tradeoffs and instead seek creative resolution of paradox. The means of creative resolution is “abduction,” reasoning from observed data to creating some form of value, contrasted with “deduction,” which is concerned with deriving testable consequences from hypotheses, and “induction,” which is concerned with inference from observed phenomena (Dorst 2011).

Boland and Collopy (2004) contrast a “decision attitude,” concerned with selecting between existing alternatives—with a “design attitude” that emphasizes the creation of alternatives:

“A decision attitude ... assumes it is easy to come up with alternatives to consider, but difficult to choose among them ... the design attitude toward problem solving, in contrast, assumes that it is difficult to design a good alternative, but once you have developed a good one, the decision about which alternative to select becomes trivial”. [p. 4]

Liedtka (2015) suggests that design thinking can be complementary to managerial decision making: the methods of design thinking—ethnography, visualization, mapping, and prototyping—all play a role in mitigating bias.

Owen (2007) contrasts design thinking with “scientific thinking.” Where scientific thinking is concerned with sifting facts to discover patterns and insights, designers invent new patterns and concepts. Owen classifies different fields according to the way they work—Analytic versus Synthetic—and their domain of activity—Symbolic versus Real, as shown in Fig. 1.

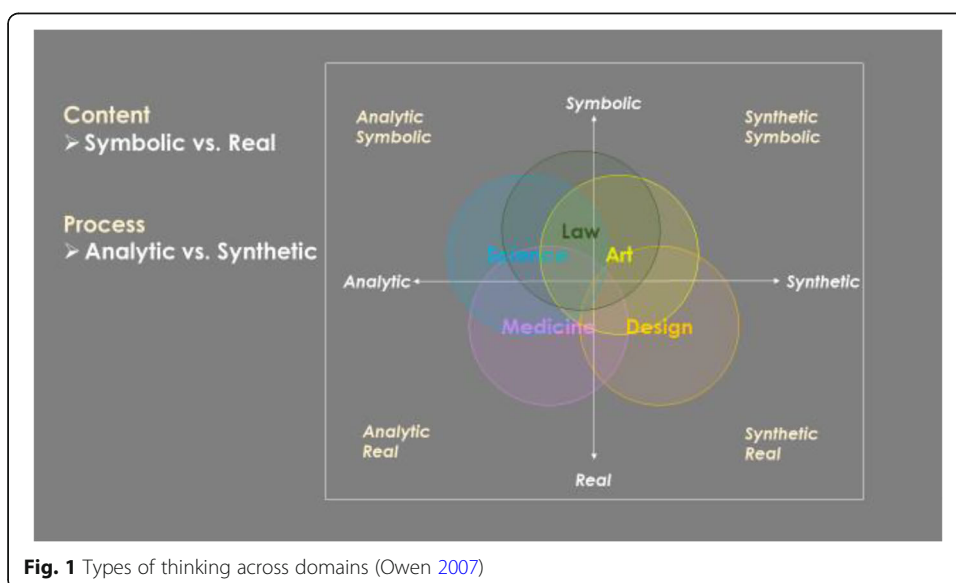


Fig. 1 Types of thinking across domains (Owen 2007)

A distinctive feature of design thinking is experimentation, through the integration of making and thinking. Designers interweave making and thinking in a cycle of learning: a “reflective conversation with the situation” (Schön 1983) where the success or failure of each solution attempt reveals more information and builds tacit understanding of the problem. Similarly, Kimbell (2011) rejects “dualism” between thinking and doing in design, challenging, like Wang (2013), the concept that mind and body are categorically separate from each other.

Design is thus a process of creation, while management is one of choice (Lafley and Martin 2013). Through iteration and reflection, design thinkers seek to create new, valuable alternatives, rather than choose between existing well-defined alternatives. These are two distinctly different stances, and a degree of discomfort in reconciling them can be expected. In the following sections, I explore how they are encountered and managed.

Methodology

The objectives of this study were to understand organizations’ goals in adopting design thinking, to explore different forms of implementation, what challenges they encountered, and how they dealt with them.

I conducted 29 semi-structured interviews, 20 in 10 organizations in the public, private, and non-profit sectors, between 2014 and 2017. The majority were with leaders of design programs within their organizations. All organizations were large in scale. Public-sector organizations were government departments concerned with commerce, energy, and taxation, and two departments in public universities. Among the private-sector companies, the smallest had 34,000 employees and the largest 95,000; all but one operated globally. The non-profit sector was represented by one large hospital with 63,000 employees.

In addition, I interviewed nine experts in design firms, innovation consultancies, and innovation hubs who had experience across a range of organizations. Most interviews were conducted in person; others via videoconference. Table 1 provides a summary of the interviews.

Interviews were recorded and transcribed, and themes extracted by manual coding. Where available, interview data were supplemented with published case studies (e.g., Body 2008; Carstensen and Bason 2012) and information from the websites of the programs.

Saturation was achieved around several themes. Validity of these themes was checked both through member checking with original respondents and by seeking confirmation from later respondents.

Table 1 Summary of interviews conducted

Sector	Number of interviews	Categories	Roles
Public	5	Commerce, Education, Energy, Taxation	16 Directors of design labs
Private	12	Consumer Goods, Health, Insurance, Media, Pharmaceuticals, Retail, Telecom	4 Staff members
Nonprofit	3	Health	
Expert	9	Design, Innovation Hub, Service Design	Partner, CEO, Consultant, Director

Key findings

Origins of design thinking programs

When asked about how the design thinking program began, almost all respondents told a story of a visionary senior executive who initiated it, promoted it within the organization, and supported it. Several cases were like the following, where the program grew from a recognition that the status quo was not working:

There was a senior leader that was a very strong advocate and sponsor, because he felt like he kept telling his organization to be more innovative, but they were not coming up with new ideas. He was getting very frustrated, and he wasn't sure why that was the case.

A common motivation was to get closer to end users. Several programs grew out of earlier initiatives, most often digital experience design, growing to encompass user/customer experience in general. One public sector agency had been working with strategy-mapping methods for some years, but was unable to translate these into improved user experiences:

... we were thinking, "Well, the strategy's really interesting and we've had a few breakthroughs, but is it changing anything for people on the ground?" So there was that human element that ... pure strategy-type thinking wasn't giving us.

Objectives

Organizations pursued diverse goals through design thinking, including innovation, customer orientation, and cultural change.

As expected from the managerial literature, innovation featured prominently as a central objective. However, there was considerable variation in the nature of innovation organizations were seeking. Private-sector respondents referred to "disruptive" innovation, either from a defensive point of view—protecting their existing business by pre-empting more nimble competitors—or by capturing elements of customer experience that could offer a competitive advantage, rather than introduce new technology for its own sake. Like the private sector, public-sector organizations tended to innovate around user experience; however, innovation for public-sector organizations was considerably more complex. Public-sector innovations could affect a much more diverse group of stakeholders, and thus a broader set of user needs had to be taken into account.

Beyond innovation, several respondents spoke of the desire to bring the organization closer to customers. For one public-sector agency (a tax authority), the complexity of its web presence alienated its users:

The [tax] system sort of functioned, but it was extremely hard to use. So it wasn't easy: it was expensive for people to comply, and it was very much a one-size-fits-all approach. It wasn't a very personalized approach.

A further goal, related to customer orientation, was internal cultural change: organizations needed to become more nimble, more responsive to customers and to rapid

change, and more innovative. The role of the design program, in these cases, was to change minds and behavior throughout the organization.

As noted earlier, design thinking has been highlighted as a valuable way of addressing “wicked” problems (Buchanan 1992). Many respondents spoke of the complexity of their environment. Public-sector organizations, in particular, emphasized the intractability of the sector itself and the systems within which they operated:

You have the complexity and the wickedness of the problems out in society, and you have the complexity and ... the wickedness of the systems we have designed. ...

Those systems have legacies that go back to the eighteenth century, and they have sediments and layer upon layer upon layer of regulation, of procedure, of ways of doing things, combined with digital and social media and modern ideas of governance ... combined with the professions, such as nursing, teaching, social work. So that’s a huge complexity in itself.

Other goals included a desire to forge alliances with smaller, innovative organizations and to recruit, motivate, and retain creative talent.

Organizational forms

Some organizations chose a *centralized* model, in which an identifiable, discrete design lab developed early-stage ideas for implementation in operating departments. In most cases, these labs provided internal training programs. An alternative was a *distributed* model, in which the design program was spread across the operating divisions. There were also *hybrid* models, where a relatively small centralized team acted as a focal unit for design and supported design programs across the organization. A fourth approach was a *collaborative* model, in which organizations shared facilities, ideas, and technology with other, noncompeting organizations.

Centralized units had dedicated staff, and a physical office, usually in a separate location. Typically, staff were a mix of designers and non-designers, though in only a few cases were the units led by a designer: for the most part, design leaders were long-term managers with a deep understanding of the organization.

Physical “offices” were modeled on design studios: open-plan, bright spaces where teams could spontaneously huddle on a topic and use whiteboards to elaborate ideas. Intentionally distinct in tone from their corporate sponsor, these spaces were also used for training or for brainstorming sessions. Figure 2 shows images of facilities at a government department, a consumer-products company and a hospital.

Cultural considerations influenced the choice of model. For one respondent in a large non-profit, a centralized model was chosen out of necessity in a hostile cultural environment:

We had this hope that we could start to have a more distributed model where we put service designers in different departments ... We had to pull them out ... because they are just too vulnerable ... I think we still have to have a centralized model.

The function of centralization was thus to protect innovators from day-to-day operating issues and encourage broader thinking. To accomplish this, design labs took a variety of

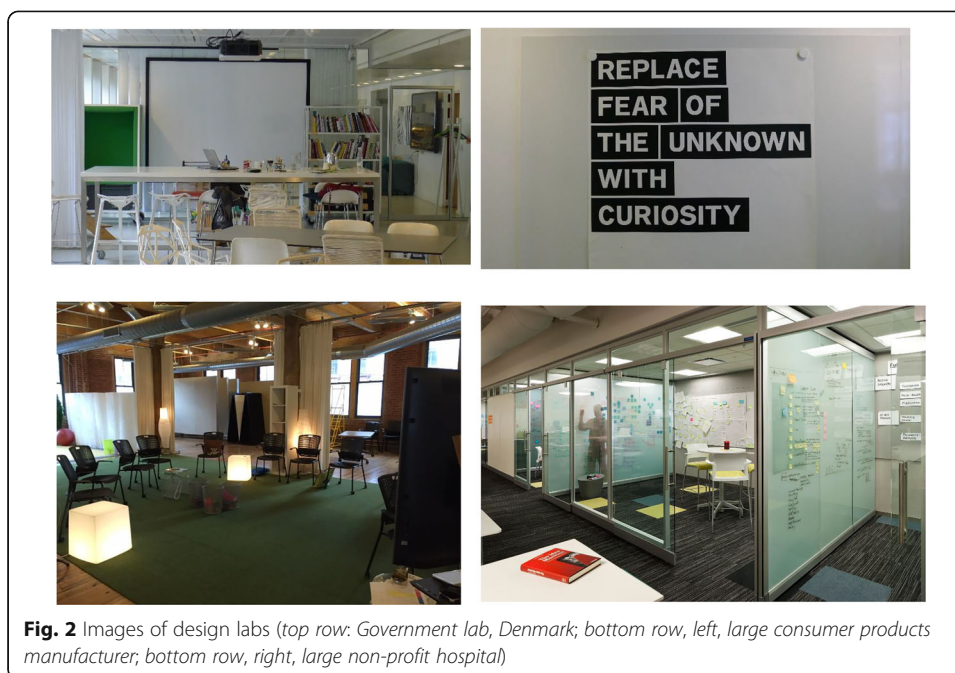


Fig. 2 Images of design labs (top row: Government lab, Denmark; bottom row, left, large consumer products manufacturer; bottom row, right, large non-profit hospital)

measures to create a feeling of safety, insulating teams from the vagaries of organizational politics, such as the carpet at one large consumer-products manufacturer:

People come here and they do better work, and I think the environment is one piece of it. We call the green carpet “The Green Carpet of Candor.” That helps quite a bit.

The *distributed* model involved recruiting and supporting design thinkers across the organization. As a defensive measure against budget cuts, one public-sector agency developed a model that dispersed design thinking widely:

We built all these islands of capability through the organization which were stitched together by the brand of design, but they were not centrally funded ...That made design not a big target and very hard to unpick, because it was now a decision of 15 or 20 people to unpick design, not one person.

For the most part, however, design programs existed along a continuum between a purely centralized approach, acting as an internal consultancy and providing operating departments with ready-made solutions; and a purely distributed approach, in which the primary function was to facilitate innovation in operating departments and provide training in design thinking. Thus most of the organizations interviewed for this study fell into the *hybrid* category, offering both ideation and facilitation/training.

Several respondents spoke of the importance of developing *collaborative* alliances. In one pharmaceutical company, for example, an alliance with a competitor around clinical trials allowed it to recruit test subjects more easily. In other cases, noncompeting organizations collaborated across industries. In one case, a large design firm acted as a hub for this collaborative effort; in another, a university in Canada founded a central

organization to improve the innovation “ecosystem”; to this end, it supported small technology-based startups and connected them with large organizations.

Leadership

In all the organizations in the study, the role of a senior-level sponsor—either the CEO or an influential member of the executive team—was critical to establishing the program and protecting it. In one celebrated case, the CEO of a consumer-products company brought his entire leadership team to the offices of global design firm IDEO to learn design thinking before implementing it within the company (Martin 2009).

In another case, the Permanent Secretary in a government ministry was provoked into rethinking the ministry’s approach to innovation:

The Permanent Secretary ... was engaged with various [business] professors who were challenging him on “If you’re preaching innovation to private businesses as the Ministry of Business, how do you innovate? How are you investing in innovation for the ministry? And where does innovation live in the ministry?” And it did not live anywhere.

These leaders also provided sustained support through public speeches and role modeling. Directors of design programs eagerly used these instances to promote their work within the company.

Expert interviews affirmed the critical role of a senior leader in providing what one respondent termed “air cover” for fledgling programs. In spite of this, not all senior executives were well-informed about design thinking or fully understood its implications, as discussed below.

Challenges in implementing design thinking

Misunderstanding

Although leaders supported the concept of design thinking, they did not always fully appreciate what they were supporting: iteration and loosely defining problems in early-stage innovation. This misunderstanding could lead to frustration in the design team:

There is not the comfort with spending time with an unfinished product. (Senior management) really quickly jump to “We want this finished, we want to move on”, as opposed to actually taking the time to prototype, reframe, go through the iterations.

The major downside of depending on support from the top was leadership turnover. In several instances, the departure of their sponsor had damaged design programs. In some cases, these programs had sufficient momentum to survive, but others were severely wounded or even terminated. One respondent returned from maternity leave to find that the program had all but collapsed, but continued to work on it subversively:

The leader that took over, ... his intention, which I have in writing, was to kill design thinking ... so there was nobody there to champion any of it. I came back early 2014 and I was like, “What happened with design thinking?” My manager at the time, she’s like, “Things have fallen apart. I know you love this. Keep doing it. I won’t tell anybody.”

This particular program later revived due to a reaffirmation of commitment to it by the CEO. Others described how design initiatives waxed and waned over the years as leadership changed.

Relationship with the rest of the organization

Design thinking needs to be “legitimized” within organizations (Rauth et al. 2014) and sometimes this meant finding a niche that was not already occupied by existing programs:

I was conferring with [team member] to say, “What do we call this?” If we say “customer experience management,” there was another team that sees themselves as owning customer service. They were going to get their nose out of joint ... If we said, “We’re the user experience team,” now the digital team is going to say, “That’s ours...”

The design team’s innovation work itself could alienate operating departments. In a large hospital, where effectiveness and efficiency were critical, the team’s intervention could be a nuisance:

When you turn up at a clinic on a Monday morning to do an experiment, the desk staff—they are just not going to want you near them, they do not know why you are there, they are not going to really trust you, it’s just really disruptive to them, there’s not a lot of value to them, there’s no incentive [to cooperate].

As a result, design thinking teams were not universally welcomed. In some environments, their appearance and dress contrasted with organizational norms, creating a degree of suspicion.

Isolation and assimilation

Most design programs consisted of identifiable labs, with studios located at some distance from corporate offices. While the intent behind this approach was to facilitate independent thinking, they could have the effect of isolating the unit from the rest of the organization. One director spoke of a “100-km moat” between the lab and head office. While this provided a high degree of autonomy, it meant that it was difficult to persuade operating units to commit time to training or brainstorming at the lab. In addition, it contributed to an image of the design team as “crazy cowboys” in the corporate culture.

While isolation entailed risks, there was a countervailing risk of assimilation: becoming too close to the organizational culture for new ideas to develop. Design labs that were too closely embedded could become myopic and fail to see what lay outside the prevailing culture:

What we often do is accommodate the culture ‘cause we know it so well; we are describing innovation in the context of the culture, rather than saying “I don’t really care about the culture”.

In the view of one expert, however, too much autonomy was not a good thing: there had to be a balance between the independence needed to develop ideas and the constraints of operating in a large organization:

You have to spend some time within that organization and get to know the players in the politics and the drivers of what they are doing. They cannot ... just do whatever the hell they want.

The role of the lab director, from this perspective, was not only to energize and develop ideas but also to act as liaison with the rest of the organization. There was a need for labs to take, simultaneously, a user perspective (“outside-in,” in design vernacular) and an organizational (“inside-out”) perspective.

Tendency toward incrementalism

For private-sector organizations, design thinking offered the potential for fresh perspectives that could lead to “disruptive” innovation. In some categories, particularly where entry costs were low, the threat of encroachment by non-traditional competitors could spark this interest.

However, the need to demonstrate legitimacy within the organization could entice design teams to take on incremental innovation projects to generate success stories. In the early stage of a lab’s development, this bought the team credibility. However, success with this incremental work brought with it a risk of being overwhelmed by incremental projects:

I think we are schizophrenic in that we are trying to do both incremental innovation and disruptive innovation at the same time, and the gravitational pull here is more towards incremental.

In part, the challenge was related to metrics. Ultimately, any design team would be evaluated on the value it brought to the organization. However, too much emphasis on short-term quantitative measures tended to push the team toward incremental innovations. One pharmaceutical company, recognizing this, moved away from such measures:

We actually have backed off of the financial [measures] because we did not want to build the view of innovation having immediate financial implications in a positive way ... everybody is looking on a short timeline when it comes to financials, and that would just paint us into a very incremental space.

Implementation

Within organizations that focused on efficiency, some design programs struggled to have their ideas implemented. This can result from the teams’ isolation from the implementation arm of the organization (Smulders and Dunne 2017), and thus centralized labs may be expected to encounter greater challenges. In one organization, the team’s value was acknowledged, but operating constraints impeded further development:

You have all these great insights and all these great ideas, but it does not mean anything if no one’s going to operationalize it at the end. So the stakeholders are bought in: “Oh, these are fantastic pain points. I want to fix them. But I don’t have

any money, I don't have any time. My targets and my objectives for the year are locked in".

In this case, the team was under pressure to demonstrate its value to the organization, and the operating department's inability to implement ideas reflected poorly on the design team.

Some labs found that merely generating ideas was not enough, and involved themselves in the implementation process by applying design methods to implementation itself:

Between idea generation on the one hand and actual full-scale implementation, there's of course a whole space where we can prototype, where we can test conclusions and ideas. We can test ideas with the civil service, test ideas with businesses, test ideas with citizens.

Systems

While private-sector design teams were mostly concerned with insights about end users, the picture was markedly different in the public sector.

[It's] one thing to design a user experience, but if you want to make the user experience happen for 500,000 school kids or for 150,000 unemployed persons, then you have to redesign the system. Otherwise it's not going to happen.

Not only was there a delivery system within government that made the experience possible, but there was also a social system, or multiple social systems, that had an impact on delivery of the service. This, in turn, meant engaging a diverse group of stakeholders, internal and external, whose interests might be affected. For this reason, public-sector respondents tended to argue for a broad view that embraced the system as a whole. Private-sector organizations were more concerned with user experience and competitive advantage than with system design.

Discussion

Businesses, governments and nonprofits, in search of competitive advantage, a means of keeping up with rapid technological and social changes, and a way of dealing with increasingly complex problems, have eagerly embraced design thinking.

I have argued that design thinking is both a process and a mindset; however, as a process, it differs from business processes such as total quality management, Six Sigma and ISO 9000, which reduce variance and improve efficiency (Benner and Tushman 2002); it is in essence an exploratory process rather than an exploitative one. Hence Benner and Tushman's conclusion that process management techniques tend to crowd out exploration do not apply to design thinking. This study nevertheless shows that such an exploratory process can struggle to survive in organizations that are primarily focused on efficiency.

Discussing entrepreneurial innovation units within "ambidextrous" organizations, Tushman and O'Reilly (1997) argue that management "must not only protect and

legitimize the entrepreneurial units, but also keep them physically, culturally and structurally separate from the rest of the organization". However, for design thinking, separation of this kind is not easy and involves tradeoffs. With its distinct method and mindset, design thinking has often encountered significant systemic and cultural challenges in organizations.

Lack of clarity around goals contributes to the challenges. Organizations often hope to accomplish a number of goals simultaneously through design thinking: innovation, cultural change, improved customer focus, attracting and retaining talent, etc. However, the optimal form for design thinking in an organization depends on its purpose: for disruptive innovation, a program would benefit from working outside the day-to-day business of the organization, and hence a central lab at an offsite location would be most appropriate. On the other hand, a design program undertaken for cultural change should not be too far from the cultural center: a distributed model in which design is spread across departments would be more effective here.

Most of the programs in this study were compromises, exhibiting elements of both centralized and distributed models without optimizing either model. To preserve their autonomy, they had dedicated space and staff. To connect with the organization, they were led by managers rather than professional designers; they were located onsite rather than offsite; and they had extensive outreach programs to engage other departments and build alliances.

Design programs faced significant cultural barriers. The freewheeling nature of design, with its emphasis on qualitative research, storytelling, and iteration, can be a difficult fit in cultures that prioritize certainty, quantification, and efficiency. While the desire to change culture through design is often real, it is usually (by necessity in hierarchical organizations) driven from the top and may not initially have adequate buy-in at the grassroots; furthermore, cultural change can involve dismantling systems and processes that have built up over many decades, a daunting task for a design program.

A senior-level champion can mitigate these cultural challenges. Such support, however, is highly vulnerable to leadership changes. Several design programs have been severely compromised, and even shut down, as their sponsors moved on to other opportunities (Guay 2018). Design programs thus need to build legitimacy quickly (Rauth et al. 2014) while they still have the ear of senior management.

To accomplish this, many labs take on "low-hanging fruit"—projects that can quickly be shown to benefit from the design thinking process and mentality—such as digital experience or service redesign. However, the risk is that such projects will come to dominate the lab's work, leaving little time for more revolutionary innovation.

As antidotes to these challenges, some labs used incremental projects to develop technological platforms for future projects; such an approach is effective where there is the prospect of many projects using shared technology; less so where applications are more idiosyncratic, such as service innovation. Others formed alliances with like-minded, non-competing organizations in a collaborative innovation community. Two such communities were encountered in this study. These had the advantage of shared knowledge and technology, and the serendipity that arises from comparing common problems across different contexts.

Project implementation presents a further challenge. The designers may be successful at developing ideas with strong potential, but a host of internal obstacles can militate

against them. Some programs dealt with this by inviting those tasked with implementation into the design process; however, differences in mindset and approach between the two groups can make this difficult. Others sent design team members to facilitate design processes in “client” departments; this model can work for incremental innovation, but is less likely to be effective for disruptive innovation.

The challenge of implementation was not confined to the internal workings of the organization. In many industries, multiple stakeholders influence the implementation of new ideas. This is especially true in the public sector, where innovations must be acceptable across a broad range of interests; but also in the private sector, where intermediaries control access to end users, and where third parties, such as physicians in the pharmaceutical industry, can have a decisive influence. The design team needs to be cognizant of the broader system and engage stakeholders as appropriate. The need for an intimate understanding of the system tends to favor internal, distributed design programs.

Conclusions, limitations, and directions for future research

The adoption of design thinking in large organizations has outpaced research into its degree of fit within such environments. This rapid adoption is testament to the need for fresh thinking in the face of wicked problems, yet the difficulty these programs encounter in organizations can threaten their existence.

The findings of this study indicate several opportunities to clarify design programs’ role and function: for example, when should an organization contract design thinking out to consultants or design firms rather than internalize it? What is the optimal organizational form of a design program, given its goals, context, and culture?

Several respondents mentioned the difficulty in measuring results in ways that are meaningful to the organization. Further research can help establish robust measures according to different program goals. Implementation is a critical issue for many design programs; while design labs have tended to focus on idea generation, there is an opportunity to explore how design approaches can help in the implementation process.

This is an exploratory study based on a small sample, and as such is suggestive rather than definitive. Further studies are needed to validate its conclusions. In addition, the study sample consisted only of existing design labs, and excluded those that had been terminated.³

Organizations in all sectors of the economy are seeing value in design thinking. Yet it has often been adopted without a full understanding of its capabilities, limitations, and the demands it places on the organization. This has resulted in failures, and has led some to dismiss it entirely. Design thinking has value, but may not be right for all organizations in all circumstances; a more nuanced understanding is called for.

Endnotes

¹A search of the phrase “Design thinking” in *Harvard Business Review* in the 24 months leading up to October 2018 yielded 89 publications (including 11 magazine articles, 27 digital articles and 44 case studies). *California Management Review* published 15 articles over the same period, and published a special issue on Design thinking in Fall 2018.

²Hassi and Laakso (2011) separate design thinking into three elements: Practices, Thinking Styles and Mentality. For present purposes, Thinking Styles and Mentality can be considered a single entity.

³However, at least two of the labs visited were terminated later.

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Availability of data and materials

Journal abstract data is publicly available. Additional background is available by communication with the corresponding author. Raw data is not available given the confidentiality agreements made with the source.

Declarations

The data analyzed in this paper formed the basis of a management book, *Design Thinking at Work: How Innovative Organizations Are Embracing Design*, University of Toronto Press, November 2018. In all other respects, this paper is an original work.

Authors' contributions

This is a sole authored article. All data were collected and analyzed by the author. The author read and approved the final manuscript.

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