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Implementing Design Thinking:
Understanding Organizational Conditions

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SUMMARY
The advent of design thinking as a tool for innovation has led to its adoption in a range of organizations. While proponents of design thinking continue to focus on the principles and practices of their method, little is known on the organizational conditions required for design thinking to attain a long-term impact. This article explores seven empirical case studies to identify the conditions required in organizations seeking to integrate design. It identifies four conditions—strategic vision, facilities, cultural capital, and directives—and examines their relationships.

KEYWORDS: design, design thinking, innovation, innovation-focused strategy, innovation management

Incorporating design in an organization's strategic approach is a means of driving innovation and competitiveness and responding to emerging challenges in practice.[1] Integrating design in this manner necessitates change across a number of dimensions within an organization, support from management, strong leadership, staff with the appropriate skills and the mentality to embrace a culture of innovation, and an organization capable of adapting and evolving.[2]

While the literature details the benefits of design thinking in business,[3] little is known about how an organization can integrate design as a strategic approach. This can be largely attributed to the focus on design thinking as an intervention[4]—that is, the process or action of designing an outcome within an organization. Design interventions typically take the form of "design sprints" or intensive workshops, resulting in fleeting engagements that offer limited long-term impact. Furthermore, the problems confronting the general organization-wide integration of design thinking have been largely overlooked.

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We argue that it is unlikely for an organization to achieve design integration without the prevalence of the right organizational conditions. We define these organizational conditions as manifestations of the tangible and intangible circumstances existing within an organization that can hinder or assist design integration.

Defining Design

Design has historically been defined as the process of planning, creating, and implementing ideas to improve the artificial environment,[5] with the central concern of design being "the conception and realization of new things."[6] However, the role of design has changed over the years, with terms like design thinking becoming increasingly popular. "Design thinking" is known as a set of cognitive processes for identifying and addressing stakeholder needs and for problem solving. Dunne and Martin distinguish design from design thinking, describing design thinking as cognitive processes that designers use, as opposed to the designed objects they produce.[7] Through this use, design is expanding beyond graphic, product, and interaction domain knowledge, into a method for solving complex problems in organizations and society.

In his discussion on "wicked problems," Buchanan argues that designers are required to adopt the reframing of ill-defined problems as a professional skill.[8] Problems in today's society are increasingly complex, involving a number of stakeholders with conflicting priorities and lacking immediate solutions. Design is being progressively viewed as a strategic business resource as it is able to manage such problems through analysis that combines empathy, creativity, and rationality to provide solutions. Indeed, the success of design-intensive organizations such as Apple, Proctor and Gamble, and General Electric has been attributed to their ability to act upon a profound understanding of their stakeholders to deliver distinct value propositions.[9]

More recently, design thinking has been linked to innovation, and discussion of its application has become widespread in the fields of design and management.[10] In addition, discussion on how business can use design thinking is trending in both executive and management research realms, as well as popular business press. This proliferation of design thinking has been supported by a number of institutions (e.g., IDEO and the Stanford D-School), where design thinking is conceptualized as a way for nondesigners to evaluate and use design methods. This shift in design through theory and practice has been from design as a science to design as a mindset.[11] Many different design thinking processes have been modeled in the literature, with Brown's process being cited as perhaps the most popular.[12] This process is made up of a number of methods (such as brainstorming, observations, and sketching) that are used to iteratively empathize, define, ideate, prototype, and test.[13] Another key aspect of the model is the designer's ability to consider the relationship between human needs, technical feasibility, and business viability—which links back to a designer's process of abductive thinking and reasoning (producing new solutions for future situations). When

using the term "design" throughout this article, we refer to its capacity as a process that guides strategy.

Design: From Intervention to Integration

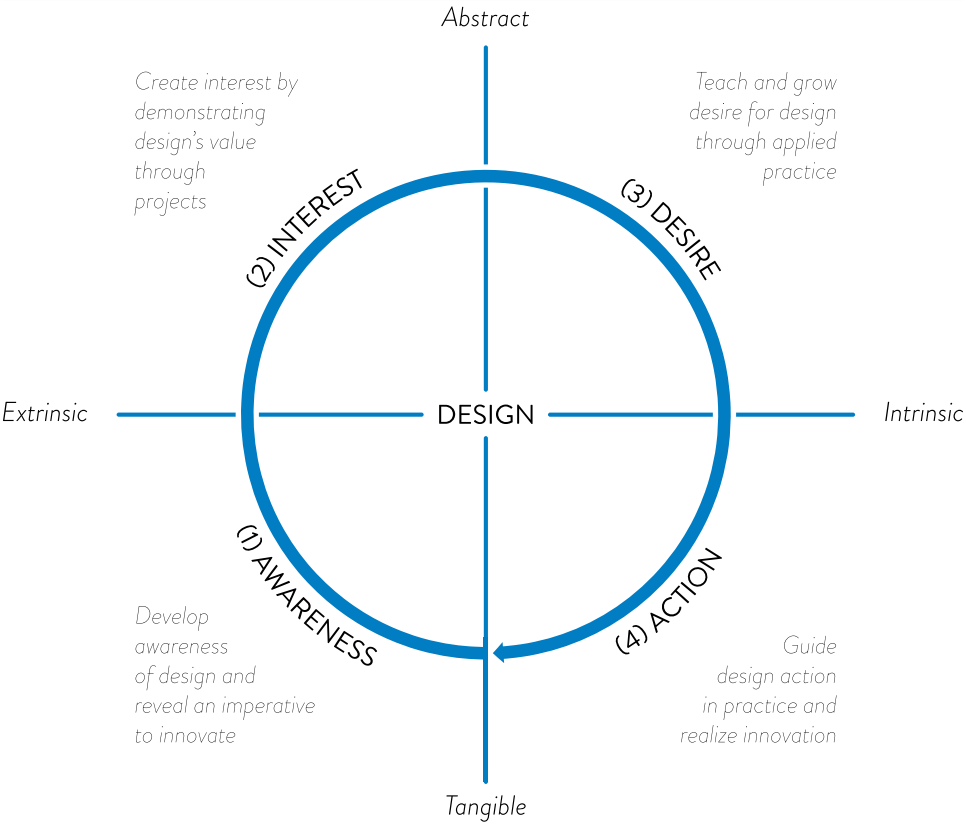
Design, when integrated within an organization, can be the foundation of a competitive advantage.[14] However, the journey to integrating design within an organization is rife with challenges. Design interventions can serve as a means of increasing an organization's design utilization. Approaches for facilitating a design intervention within organizations are plentiful, yet few design interventions succeed in implementation, let alone integration within an organization.[15] Nevertheless, design interventions can play critical role in the integration of design by demonstrating the value of design to an organization through smaller, more manageable projects.

Indeed, design interventions can develop an awareness of the value of design, generate interest in design, create a desire for design, and guide design action within an organization. This is depicted in Figure 1, which has theoretical foundations in Beckman and Barry's design thinking cycle,[16] depicting four elements, segmented across the tangible and abstract and the extrinsic and intrinsic. Vertically, the cycle shifts from the tangible dimension (in which design activities have an impact on the individual—that is, are in some sense applicable or informative for their role) to an abstract dimension (in which design is applied to theoretical challenges that demonstrate its value and build the individual's knowledge of design practices while mitigating risk). Horizontally, the cycle shifts from the initial extrinsic dimension (in which the individual is linked to the design journey only by proximity—that is, the individual is aware but not directly involved) to the intrinsic dimension (in which the individual is directly engaged in learning and applying design).

The process defined in Figure 1 is iterative, with a design intervention following this cycle serving to increase design implementation and subsequent cycles furthering this agenda. Design implementation is a spectrum, with some organizations able to be considered as having achieved a higher rate of implementation than others. An organization that widely implements design (through its staff) and recognizes design as a strategic asset can be considered to have achieved design integration. This requires more than an organizational understanding of design thinking and the short engagements often observed in practice. Indeed, this endeavor also requires the organization to have an appetite for design and the capacity to use it.

One less fleeting approach for integrating design within an organization is through a design catalyst.[17] The catalyst's role is to *translate and facilitate design observation, insight, meaning, and strategy for all facets of the organization*. A catalyst is a designer that leads design thinking interventions with the aim increasing the implementation of design and ultimately integrating design within an organization. Early and continued stakeholder engagement and buy-in are essential, as by

FIGURE 1. Designing awareness, interest, desire, and action framework.



Source: Erez Nusem, Judy Matthews, and Cara Wrigley, "Toward Design-Orientation and Integration: Driving Design from Awareness to Action," Design Issues, 35 (3): 35-49. © 2019 by the Massachusetts Institute of Technology.

nature the insights sought by the catalyst generate discussion, debate, and perhaps controversy in order to challenge *the way it's always been done*. A number of cases document this process, with the key principles and lessons found in their analysis having been rigorously documented.[18] These cases yield insight into how a design intervention can serve in achieving design integration.

Research Base

This article inductively builds theory from the study of multiple discrete case studies.[19] Theoretical sampling was used to select seven cases on the theoretical basis of replication,[20] with the cases considered as replications based on the following criteria:

- The cases were devised, designed, and managed by the first author;
- The aim for each of the cases was the same—that is, the integration of design;
- The same methodological approach (framework) was used in each case;

TABLE 1. Participant Organization Summary.

	Industry Sector	Design Focus	Intervention Description
A	Transport (aviation)	Digital strategy	Apply design thinking to three projects to help build design capacity in the organization
B	Healthcare (aged care)	Industry disruption	Seeking assistance to innovate for growth in a dynamic regulated environment
C	Infrastructure (energy distribution)	Industry disruption	Seeking assistance in assessing future technology threats into new market opportunities for products and service offerings
D	Manufacturing (lighting)	Business model innovation	Development of new product for the retail trade
E	Manufacturing (blinds)	New product development	Seeking assistance with new product line emerging from new customer needs
F	Manufacturing (electrical enclosures)	New product development	New product development to pilot a design thinking approach
G	Manufacturing (mining)	Industry disruption	Seeking assistance to innovate for growth in dynamic environment

- Each design catalyst had similar training and qualifications; and
- Each of the cases had the same scaffolding and external supervision.

The cases detail 12- to 24-month research engagements where design catalysts sought to embed design within their respective organizations, with catalysts producing (or contributing toward) both tangible innovations (i.e., products, services, and technologies) and intangible innovations (i.e., new procedures, processes, and systems). The diversity in outcomes and approaches can be partially attributed to differences in quantity of staff, industry sector, profit turnover, and motivation for design thinking in each participating organization. This article does not seek to compare the outcomes from the cases, but rather to identify the conditions required for design to be integrated within an organization. Background information pertaining to each of the cases is detailed in Table 1.

The following accounts of the case studies are structured using the framework detailed in Figure 1, describing the structure of the design interventions undertaken in each respective organization across the phases of Awareness, Interest, Desire, and Action. For simplicity of explanation, the case studies are presented through the frame of a single-design intervention (rather than the multiple interventions that transpired in most cases).

Case Study A (Aviation Support)

Case A used the development of a digital strategy for an airport as a means of disseminating design across its departments. Awareness was built through a

number of projects that stemmed from the organization's digital strategy, where the design catalyst's ability to capture a base of customer insights resulted in these projects, and their ability to visualize and test ideas with passengers (and other stakeholders) demonstrated the value of design to the organization. Interest was then generated through the development of business opportunities that aligned to the organization's vision for the future—that is, an ambitious vision for growth—with the organization seeking to use design processes (e.g., storytelling, sense making, and narrative tools) to realize this vision. One such opportunity stemmed from the revelation that foreign passengers were unable to complete the federally regulated departure cards. Subsequently, the organization was able to produce a digital departure card to satisfy the unmet needs of foreign passengers, thus creating Desire for design within the organization. Following this success, a second project was founded with a retail partner inside the airport.[21] Action was achieved through the inclusion of staff across the three projects. The inclusion of staff assisted in building design capability within the organization and resulted in the organization wishing to permanently implement a design approach to innovation.

Case Study B (Aged Care Provider)

Case B reports on findings of a design catalyst working in an aged care organization. In facing emerging challenges driven by an aging population and government reform initiatives, the organization realized the need to innovate its value proposition, and it mandated the design of a new economically and socially viable business model. The organization's design journey can be captured across four distinct phases: demonstrating the value of design, conceptualizing design outcomes, implementing design outcomes, and integrating design within the organization.[22] The organization's design journey was quite successful, with outputs from the design intervention being launched as an independent startup business. Awareness was developed through a customer segmentation study and competitor analysis, which revealed the need for organizational change.[23] The value of design in driving innovation was made apparent by conceptualizing and implementing a new business model opportunity, thus piquing staff members' Interest. Staff members learned methods for using and applying design in a series of workshops, thus seeing its capacity to address emerging challenges first-hand and stimulating a Desire to know more. Finally, Action was driven through a select group of individuals and the foundation of an organizational design hub. Regardless, as a result of a number of staffing issues, coupled with a segregated approach to innovation, the organization was left with a deficit of people readily available to action design. Consequently, the organization was unable to achieve design integration.

Case Study C (Energy Distributor)

Case C was set in the context of energy production and distribution, where the design catalyst's role was to investigate and demonstrate how a design thinking process could assist the organization to gain foresight into future disruptions in the market.[24] Awareness was generated through the

catalyst gathering insights with customers based in regional areas, where the distribution of electricity was an issue. To engage the wider organization, the Research and Development Manger was also involved in this process, allowing them to witness customers' responses and see how design could be applied on-site to discover their customers' unmet needs. A positive response to seeing design in practice resulted in the manager expressing Interest in building this capability within the organization. Unfortunately, a number of barriers within the organization acted as inhibitors for this ambition—chief amongst them was the organization's highly rigid structure and hierarchy. There was no immediate Desire from management (directive), nor were there any cultural, structural, or external drivers for change. While the face-to-face approach of gaining insights was valued, the organization felt that the current channel for communicating with customers (via phone and script) was more established. The Research and Development Manager was interested in the future of battery power and the risk of customers going off-grid, yet this had minimal impact on the organization and its daily operations. This was a key reason why the design intervention ended without achieving Desire.

Case Study D (Lighting Manufacturer)

In Case D, the catalyst undertook a design intervention with a lighting manufacturer. Here, the catalyst aimed to identify the organization's value proposition and to shift the organization's focus from low-margin customers to more profitable future customers. The design catalyst's role was to question the organization's perception of their competitive advantage, shifting from a product-centric perspective to a focus on understanding the value offered by the organization to its customers.[25] Awareness was demonstrated by challenging the owners to work on the organization, rather than working in the organization. This led the organization's owners to rethink their perspective on the role of design and begin to view it in a strategic capacity. The design catalyst developed Interest in design by reframing perspectives on the organization's future business model and direction. Due to a number of organizational conditions, the design catalyst was unable to progress design integration further. First, the organization was co-owned by two brothers with differing strategic visions for the organization. Second, the organizational environment was not conducive for design integration, as it was a manufacturing workshop with little space to allow for customer advocacy. Finally, the organization's small size, and most employees being family members, further complicated the design intervention with "business-as-usual" tasks taking priority. The two visions for the organization were debated throughout the intervention, and eventually the decision was made to split the organization into two; one organization focused on fewer products with a higher margin, with the other focusing on international sales with a larger quantity of products on a lower margin.

Case Study E (Blinds Manufacturer)

In Case E, Awareness was developed through the need to launch a new window blind to address the issues of earlier models that had been a

strangulation hazard for children. Developing this product required a human-centered approach and the delivery of a new model for customer engagement where customers were utilized to re-frame the organization's perceived problems and to co-design solutions for these problems.[26] Fundamentally, the organization sought to design safer blinds by understanding how blinds were used in homes. This ambition went above the safety standards set by governing bodies; the organization wanted the new blinds to be their point of difference and to do more for the safety of their customers. The project used a design thinking approach to provide a new perspective and to challenge the organization to design a corded blind system that is completely child safe. This was a leap from the organization's existing strategy of importing products and being the cheapest provider. The insights gathered through the engagement yielded a different approach on how to collect customer data, an approach based on the voice of the customer. Interest was gained through the changes in their understanding of design. This was demonstrated through a number of workshops that allowed the organization to uncover their customers' latent needs, to develop insight into their customers' behaviors and use of their products, and to forecast potential strategic implications from these insights. Desire to change internally was observed as the organization's perception of design grew beyond that of their products' styling aesthetics.

Despite the increased understandings of design, the organization struggled to view applications for design beyond product development. As design understandings and capability were developed from the factory floor (bottom-up), only the product manager was familiar with the design catalyst's work. The organization's directors had no real involvement or understanding of this value shift. Design tools and approaches were only applied if staff could see an immediate application, which was exacerbated by the upper management not being engaged in the project.

Case Study F (Electrical Enclosures)

Case F was based in a family-owned organization that provided steel fabrication services, along with the design and manufacture of steel products for the industrial and construction markets. The catalyst's focus was on re-branding the organization in an effort to re-align its core values, growth aspirations, and activities. Innovation within the organization had been predominantly centered on products and other tangible offerings, with the core activity of incrementally changing its existing products to meet clients' specifications. Through the design intervention, the catalyst saw an opportunity to improve the organization's allocation of resources by defining their customer and their problems.[27] This was accomplished by gathering and analyzing customer insights, which would then inform a more compelling value proposition and direct new product development. A key insight from this was the revelation that the latest product awaiting launch did not address the customer needs uncovered through the design intervention. Consequently, the organization postponed the launch of a product which was two years in the making in

order to re-assess the product and the value it offered to customers. Awareness was developed through a collaborative approach with key stakeholders, where the catalyst taught the organization's stakeholders the tools and approaches needed to understand customers and the challenges they face. Interest was generated by visually presenting the large quantity of customer information and insights available to the organization. This information was first pinned up at the entrance of the organization, with the organization's managing director sequestering it, as they did not want the organization's flaws to be apparent. Desire was created through the formation of a strategic vision, which was then leveraged by the organization's brand management team. A direct influence from the design catalyst was the requirement for all new brand and product roles to receive design training, with the aim of alleviating the organization's reliance on consulting firms. The main barrier to the organization realizing design Action was a contradiction between its vision and assets; the organization could not align the second-generation family-based organization's vision with its established physical assets.

Case Study G (Mining Equipment)

Case G describes a mining equipment manufacturer specialized in manufacturing and supplying a large and expensive suite of equipment. The organization operated in a volatile industry with great potential profits and high risk of losses, with a small but global customer base. Here, the design catalyst sought to understand and explore new business model opportunities surrounding customer support for its equipment. As the organization's customers were globally diverse, the organization had to be aware of many cultural nuances and had to tailor their services for each customer.[28] Awareness was hastily developed in the organization as the CEO had personally seen the value of design when he founded the business 20 years earlier, based off of one core customer insight he discovered while working as an engineer on a mine site. Interest was created by strengthening the organization's partnerships with site managers (i.e., its customers) and aligning these partnerships with the organization's focus. Desire was achieved through training conducted with each of the organization's employees, with employees being flown in from all around the world to participate. The training occurred over a two-day period, where staff utilized design approaches tools and customer insight methodologies.

Despite the organization-wide training, only two people drove the design intervention to lead future initiatives. This can be attributed to a lack of directives to action design. The distance to the organization's customers also made capturing further customer insights difficult, which meant the organization was basing its decisions off of a small set of qualitative data. This was deemed inappropriate for a global manufacturing organization worth billions. An eventual mining downturn resulted in many staff being laid off. Consequently, much of the newly trained design capability was lost. Overall, the organization saw a fundamental shift in its thinking. Innovation was discussed across all aspects of the business without the pressure of economic conditions as a driving factor.

Design Thinking Organizational Conditions

These cases document seven organizations seeking to achieve design integration through the use of interventions. Inductive cross-case synthesis was used to explore, validate, and test the concepts aggregated from the cases.[29] Tentative conclusions were drawn regarding the organizational conditions required for design thinking to be integrated within an organization, and the cases were analyzed to determine whether any such replicative relationships existed. Our conceptual argument is that design interventions can lead to design integration, with our cross-case synthesis exploring this phenomenon.[30] Four organizational conditions required for design integration were identified through the case studies (see Table 2), including the following:

- *Strategic Vision*—the organization's long-term strategic goals and intent.
- *Facilities*—the physical spaces and resources that are dedicated to design activities.
- *Cultural Capital*—the understanding, knowledge, and capability of the organization's workforce in relation to design.
- *Directives*—mandates that call for the use of design and hold the organization's staff accountable for using design.

Strategic Vision

The condition of strategic vision relates to the long-term strategic intent of an organization and can be captured in the organization's strategic direction and value proposition. An organization's strategic vision is influenced by its risk aversion, and by its appetite for change, growth, and innovation. This condition necessitates that the organization not spend all of its time focused on existing operations, but that the organization also focus on future business horizons. The presence of such a vision can be established through the following questions:

- Does the organization have a strategic vision for the future (an aim or mission)?
- Does the organization have appetite for growth, change, or innovation?
- If present, is the organization's strategic vision clearly understood by its people?

We illustrate the concept of vision through four examples extracted from the case studies. In Case B, the organization had come to accept the homogeneity of its offering. As a result, the board of directors set a mandate for the development of an innovative and customer-centric business model, with the knowledge that failing in this endeavor would likely see the organization unable to function in its existing state. Conversely, Case D lacked such a clear future vision as a result of a continued focus on the organization's operational deficiencies. This focus prevented the organization from being aware of significant flaws in its senior management, which led to the two directors being unable to reach a consensus

TABLE 2. Conditions Observed in Case Studies.

	Conditions			
	Strategic Vision	**Facilities**	**Cultural Capital**	**Directives**
A	To be world best (despite being owned by another aviation organization with the same vision). Risk conscious, not averse. Vision for the future well understood and disseminated as infrastructure projects require long-term planning.	Standard office cubical layout, no physical space provided for design. In-situ prototyping spaces allocated to improve customer experience.	Few staff familiar with design, but not all able to practice design. Staff regularly exchanged with international owner (another European aviation organization), growing and expanding knowledge of staff but resulting in high staff turnover. Other subsidiary retailers also trained to utilize design.	Staff mandated and supported to drive and implement innovation (e.g., digital departure card and strategy). Resources dedicated to areas seen as a priority.
B	To redefine the aging experience through a new customer-centric business model. Risk aversion resulting in high levels of reporting.	Visible physical space dedicated to design in early stages and external space acquired as scope of project grew (allowing staff to disengage from daily operations). Heavily regulated industry where homogeneity was perceived to result in redundancy.	Only a small number of key design capable staff (those involved in project). Some training and overview of project (through guided tours) offered to nonproject staff, but not inclusive of the whole organization. Project team eventually acquired by competitors, leaving the organization with few design capable staff.	Only project-team mandated to practice design. Despite (a small number of staff) participation in training, nonproject staff were not mandated to use design.
C	No shared vision, but a focus on reshaping the business from a delivery mechanism to a platform for participants to engage in an energy marketplace—requiring regulatory change and a renewed focus on the key drivers of the change (customers).	Inviting physical space set up to encourage and facilitate innovation, but only used by one department with a customer focus.	Insights collected by one team and not shared with broader organization (a difficult feat for such a large company). Large quantities of redundancies hindered the adoption of design capability and insights.	Design mandated to a small department with low-tier managers, and thus had limited connection to senior leadership.

(continued)

TABLE 2. (continued)

	Conditions			
	Strategic Vision	**Facilities**	**Cultural Capital**	**Directives**
D	Disjointed vision between the organization's two managing directors.	Limited office space partly coinciding with factory floor. Small product showroom but no physical space for future design or innovation work.	Extremely small organization with low rates of attrition and high tension between staff. Limited understanding of design as strategy.	Conflicting directives given by managing directors.
E	No shared vision, but fear of international competitors—resulting in a focus on safety products as a point of differentiation in the domestic market.	No physical space to design but renders of products from external consultants mounted in the product development department.	Misconception of design thinking as the project was unable to break the departmental confines of product manufacturing. Team's perception and understanding of design restricted to product design and manufacturing.	Design mandates limited to re-design of existing products within a small team.
F	To refocus on the customer experience and develop/consolidate product lines.	No physical space used to promote design and design sometimes marginalized when displayed in public.	In-house product designers (which were at odds with the design intervention), until the catalyst was titled as a brand strategist.	Only catalyst given the mandate to act autonomously (in relation to design activities).
G	To maintain global leadership in mining equipment industry and seek disruptive ideas which could take the business to new horizons.	On-site office space dedicated to design and innovation but separate from core building (not visible and or accessed by staff outside the team).	Core capability sat with two staff members who facilitated design training workshops with other staff (training did not cascade into capability or use of design).	Organization's CEO directed the organization to follow a customer-centric design transformation.

regarding the direction of the business and eventually resulted in their separation. Through the use of design thinking, the design catalyst was able to realize this issue and (by presenting two clear different visions for future sections of the business) led the directors to the resolution of separating. This took place after the organization had spent over ten years struggling to manage their operational components. The vision of the organization in Case A was to be "world best." However, the directives given were in misalignment to this and teetered on a conservative, risk-averse attitude where the organization would often wait to see how a competitor's strategy played out and then copy it (while not a bad strategy, it contradicted the organization's desire to be world best). Case C was committed to future forecasting, but at a departmental level focusing on the new product vision and future technology threat. This led to a large miscommunication of strategic vision and misalignment of where the business was headed and resulted in a number of departments operating according to their own independent vision(s).

An organization lacking a vision is likely to succumb to changes in the market, rather than define them. Such organizations can be considered to be at risk of redundancy, with significant implications on profitability and revenue. Establishing a strategic vision for the future can ensure that an organization pursues the right goals and is able to maintain its competitiveness.

Facilities

The condition of facilities refers to the physical spaces and resources dedicated to design initiatives by the organization. The notion of a physical environment required to support an emerging endeavor (e.g., an organizational design hub) being paramount for the success of such an initiative is documented in the literature.[31] However, the difficulty lies not only in adapting design into existing organizational structures but also in transforming practices within the organization to accommodate design. Variables relating to the organization's environment can be established through the following questions:

- Is design given an appropriate space within the organization?
- Are the resources required for design provided by the organization?

While a majority of the cases analyzed committed resources to design, only Cases B, C, and G dedicated a space to design (to varying degrees). Case B, in particular, launched a "design hub" to assist in promoting the organization's future strategy. The organization accomplished this by designating a central area to design and giving it a physical presence. This displayed the organization's commitment to design. The room had glass walls and was clearly visible to the organization's staff. In other cases, such as A, E, and F, the organization did not promote a physical space to represent design, which resulted in only a few key catalysts conducting work to support the initiative. The lack of such a space resulted in design activities being perceived as temporary, with the perception of limited support from the organization's leadership. One extreme case was Case F, in which the organization's general manager directed the catalyst to remove a journey map

(a visual representation of a customer's interaction with an organization) from a public space, claiming it had an "unprofessional look" and made the organization appear uncertain of how they interacted with their customers.

Without the proper facilities, an organization cannot hope to integrate design and is likely to promote a temporary engagement with a focus on short-term outcomes. Sustaining design practice requires that an appropriate space is provided and that adequate resources are available for staff.

Cultural Capital

Cultural capital relates to the organization's people—specifically, whether they understand the value of design and are capable in practicing design. Innovation is rarely an individual task. Leonard and Sensiper explain the notion of "knowledge walking out the door" as tacit knowledge leaving alongside the employees who harbor it.[32] Such knowledge is essential to the innovation process, yet maintenance of this knowledge is relatively unexplored. Indeed, an organization's success is contingent on its people. For an organization to be considered competent in any given skill, its people are required to be capable of actioning that skill and of understanding the value that the skill brings to the organization. Understanding is typically achieved through pilot studies, where a design catalyst demonstrates the value design offers through an isolated project, with capability commonly being realized through a series of intensive training workshops. Comprehension and capacity in an organization can be gauged through the following questions:

- Do the organization's people know how to practice design?
- Do the organization's people understand the value design offers?

Case E describes a lack of understanding and misconception of design thinking, as the project was unable to break the departmental confines of product manufacturing. The team's perception and understanding of design was restricted to a product design and manufacturing offering. As was also an issue with Case B, where the core group of designers left (either as a result of the research engagement period ending, by being poached by other organizations, or long service leave), resulting in a deficit of design understanding within the organization. As these pillars of knowledge and capacity left, the organization found that it was unable to continue practicing design. Tacit knowledge is protected from competitors unless the individual leaves. As such, this tacit knowledge cannot sit with only a few individuals within an organization. A similar phenomenon is observable in each of the other cases, where design thinking activities ceased as the design catalysts finished their research engagements and key staff members left their organizations.

An organization seeking to practice design requires more than this simple intent. Such an organization is required to ensure that its people understand *why* design is used and valued and *how* they might be able to use design.

Directives

Having directives denotes that the organization's people (not just a select few) are mandated to practice design—whether through Key Performance Indicators (KPIs) in private organizations or through legislation in government or nonprofit entities—and are held accountable in addressing this mandate. In a larger organization, the only way to change general practice is by changing the processes by which it is done.[33] The process of managing new ideas into new practices so that innovative solutions are implemented and institutionalized comes largely down to the directives set. The presence of directives can be determined through the following questions:

- Are the organization's people accountable to practice design?
- Are there KPIs that detail design practice?
- Are there role descriptors in the organization that reflect design practice?

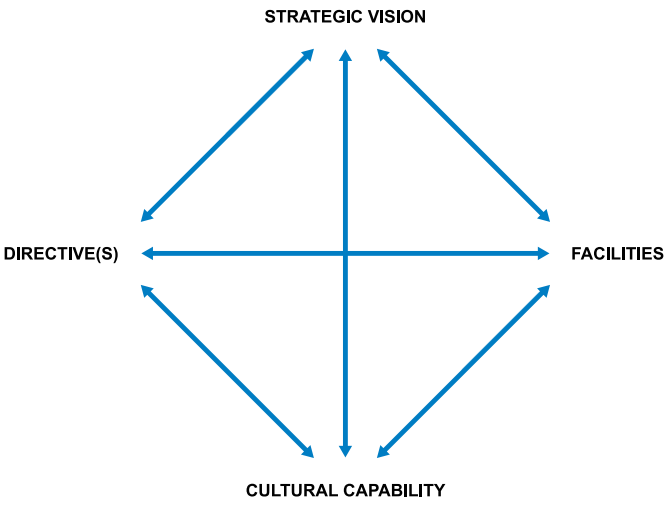
Case G illustrated the condition of directives, with the organization's CEO having directed the organization to follow a customer-centric design transformation. Despite this directive, staff struggled to realize such a transformation, which can be attributed to a lack of understanding surrounding how design thinking can be practiced; its people lacked design comprehension and capacity and were hence unable to follow this directive. Similarly, in Case B, the organization mandated the use of design to staff within its "design hub," but did not hold any others accountable for using design (despite other staff receiving a degree of training). As described previously, when the staff employed in the design hub departed from the organization, its people lacked the capacity to action design—despite being directed to do so.

Directives act as instructions or guidelines and ensure that the activities of staff within an organization's align with its vision and that staff are held accountable for conducting such activities. This is not to say that directives form a rigid bureaucracy, but rather that directives should act to inform an organization's people that design is part of their role.

Interrelationships of Conditions and Direction for Managers

The successful integration of design, even when the four organizational conditions are established, is dependent on the right ethos. The interrelationships that exist between the conditions (as depicted in Figure 2) are therefore pivotal in establishing the right ethos within an organization. In Table 3 we further detail these interrelationships, and contribute a set of activities to assist managers to align the conditions within a given organization. Some organizations, given their existing states, may need to focus most of their efforts on one particular condition (or set of conditions). Design catalysts are pivotal here, as they can help to identify any lacking organizational conditions and tailor design activities to address these deficits.

FIGURE 2. Organizational conditions framework.



Running a successful design intervention while also maintaining existing organizational conditions is where most ambitions of design integration falter. To realize design integration, a design catalyst needs to be fluent in multidisciplinary team facilitation and to traverse both strategic and operational activities within an organization. Our model therefore describes the organizational conditions required for implementing and integrating design, along with activities to assist managers in establishing the requisite conditions for design integration. Although the dimensions of the model are not difficult to understand, they can be challenging to master and sustain.

Conclusion

This article presented seven case studies that detail the processes of striving for design integration through design interventions. Each step of the design intervention process—that is, awareness, interest, desire, and action—plays a significant role in an organization's journey to design integration. However, following such a process does not guarantee the implementation of design or its integration.

Design thinking requires many people in order to transition from short-term practices into long-term impact. Individuals can often lose sight of the bigger picture because of the fleeting nature of most design thinking engagements. In practice, these engagements often create a "sugar-rush" type of effect inside an organization, which is then left to fade away. An organization seeking design integration needs more than one successful engagement or design intervention. It must also be conscious of its conditions and ensure that these conditions are oriented to support design. The organizational conditions presented here, when correctly structured prior to an intervention, will provide an organization the best opportunity to make the most of what design can offer. Our recommendations provide a means for managers to establish the organizational conditions required for design thinking to make a successful, long-term impact.

TABLE 3. Conditions, Relationships, and Activities.

Conditions	Relationship Description	Key Recommendations
Strategic Vision and Directives	Alignment of the organization's strategic vision and the directives given to its staff, detailing how the organization's vision will be achieved through its actions.	• Create and set directives that align to the organization's strategic vision • Focus on human relationships to encourage collaboration and shared goals
Strategic Vision and Facilities	Provision of infrastructure and resources which reflect the organization's strategic intent. Funding such assets assists in making staff feel supported in achieving, and empowered by, design thinking activities.	• Develop open spaces which promote innovation and creativity • Acquire and provide the requisite resources for exploratory and open-ended work (which does not inhibit the scope of design)
Cultural Capital and Facilities	The organization's overall capacity to achieve design action through the capability of its staff and the infrastructure and resources at their disposal.	• Create infrastructure and an atmosphere which promotes staff to engage in design-thinking activities • Dedicate appropriate spaces for design training and displaying outcomes emerging from design
Directives and Cultural Capital	Clearly communicated and supported mandates, along with staff that comprehend the value of the directives given and are capable of actioning them—creating a culture that is flexible, adaptable, and informal, operating collaboratively unlike a bureaucracy.	• Reflect and measure design directives through KPIs and communicate value of new KPIs to the organization's workforce • Develop the tacit knowledge required by staff to perform to new metrics • Do not rely solely on an external workforce (such as consultants) to quickly upskill and initiate design-thinking activities
Strategic Vision and Cultural Capital	Dedication to, and the foundation of, strategic intent needs to stem from both the organization's senior leadership and its operational staff.	• Leader adopts the role of a coach rather than an expert (director), where the strategic vision is formed collectively with staff rather than for them • Give staff a voice and provide channels for sharing insights to inform the strategic direction of the organization
Directives and Facilities	Appropriate infrastructure and resources to assist the organization's staff to meet the directives set by leadership team.	• Demonstrate commitment to mandates through the organization's infrastructure and resources

Note. KPI = Key Performance Indicators.

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