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# Fostering a sustained design capability in non-design-intensive organizations: a knowledge transfer perspective

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## Abstract

Service designers have been increasingly involved in the transmission of design knowledge to enable non-professional designers to apply design skills and approaches in their work. However, the understanding of the factors that favor the effective transmission of design knowledge is limited, making the goal to achieve a sustainable capability in organizations a challenge. In this paper, the authors adopt a knowledge transfer lens to identify the key determinants in the transference of knowledge in organizations and conduct a preliminary review of how they have been addressed in design research literature. This review revealed an unbalanced interpretation with limited consideration of the knowledge senders' characteristics and contextual factors affecting the dissemination of design knowledge. The paper, therefore, concludes with the proposal of an initial model where the four groups of determinants identified in the knowledge transfer literature (knowledge, receivers, senders, and context) could constitute the core elements for studying this phenomenon.

**KEYWORDS:** service design, design capabilities, design knowledge, knowledge transfer

## Introduction

Service Design is a human-centered, creative and iterative approach to service innovation (Blomkvist, Holmlid, & Segelstrom, 2010; Meroni & Sangiorgi, 2011). The field emerged in the academia during the '90s as design researchers started to discuss services as an object of design (Morello, 1991; Manzini, 1993); some years later the first service design consultancies started to appear in the UK, bringing design professionals at the fore of design research in service innovation.

Lately, the practice of Service Design is not exclusively associated with “design-intensive organizations”, meaning design agencies or organizations with more than 30% of their staff being professional designers. A recent trend sees private (Kurtmollaiev, Fjuk, Pedersen, Clatworthy & Kvale, 2018), public (Bailey & Lloyd, 2016; Malmberg & Wetter-Edman, 2016)

and not-for-profit (Nusem, Wrigley & Matthews, 2017) “non-design-intensive organizations” aiming to bring service design in-house as a competence, instead of outsourcing it from consultancies<sup>1</sup>.

In this scenarios, service designers are described as playing multiple roles, including that of “in-house consultants” (Blomkvist, 2015) or “facilitators” (Wetter-Edman & Malmberg, 2016) supporting other people in the organization in doing design work by themselves. This exemplifies a shift in the understanding of design from being dependent on professional designers, to a more inclusive understanding of design as an activity that might be performed by different professionals. Fundamental in this transformation is the focus on transmitting service design knowledge (Wetter-Edman & Malmberg, 2016) to non-professional designers in organizations. The transmission of design knowledge throughout organizations is expected to support non-professional designers to increase their design competences (ability to design), making design an organizational-wide approach

The aim to build design capability in organizations still presents some challenges as designers need to learn how to effectively facilitate the transmission of design knowledge in a sustainable manner (Sangiorgi & Prendiville, 2017).

This article aims to question how design capabilities are developed in organizations, by focusing on the transference of design knowledge from professional designers to non-professional designers in organizations. In particular, the authors adopt Knowledge Transfer studies given their long-term investigations on the determinants of knowledge transference in organizations. In that sense, it is believed that the knowledge transfer lens could be used to inform designers who are taking this new responsibility in organizations. By focusing on this topic, this research also aims at contributing for one of the fundamental service design research priorities proposed by Ostrom, Parasuraman, Bowen, Patricio & Voss (2015) related with encouraging service design (thinking) throughout the organization.

The paper is structured as follows. The first section will clarify the concept of design capabilities reviewing three perspectives with which it has been debated in design research. The article will then introduce the knowledge transfer lens, with a focus on the determinants that can affect the transference process, and compare them with previous research on the development of design capabilities. The last session includes some initial considerations about the contributions of adopting this lens in design research.

## Design capabilities

The concept of design capabilities has been an object of recent studies by some design scholars (Aklin, 2011; 2013; Mortati, Villari & Maffei 2014; Malmberg & Wetter Edman, 2016). In their work they observed how the concept of design capabilities has been used interchangeably with other terms such as design capacity and resources (Aklin, 2011; 2013), or defined in opposite ways (Malmberg, 2017), suggesting the need for an agreed definition (Mortati et al., 2014).

In particular, from the literature, three modes of interpreting design capabilities have been identified: interpretations related to the scope of the design practice, interpretations related to the organizational capacity to integrate and deploy design, and interpretations related to the availability of trained human resources<sup>2</sup>.

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<sup>1</sup> The terms design intensive or non-design intensive have been applied before in relation to industries/sectors (Design Council, 2015).

<sup>2</sup> for a broader analysis on the understandings of design capabilities read Malmberg, 2017

The first perspective considers the scope of the design practices, meaning how and why design has been used within and for organizations, with the elaboration of the theoretical “design ladder” model. Over the years, different versions of these models have been proposed illustrating different levels and modes of using design in private (i.e. the design ladder; Ramlau & Melander, 2004), public (i.e. public sector design ladder; Design Council, 2013) or non-profit organizations (non-profit design ladder; Nusem, Wrigley & Matthews, 2017). The common idea behind these models is that as companies progress in the ladder, the scope of the design practice expands. In this way, the development of design capabilities is related to the scope of design practices in organizations.

The second discussion of design capabilities focuses instead on the organizational capacity to integrate and deploy design. Authors discussing some of these organizational conditions might frame their discussion in terms of design capability (Cantamessa, 1999), but also in other terms such as organizational design capability (Mutanen, 2008). There are also cases in which the capacity to integrate and to deploy design are discussed under different categories. For example, some studies debate organizational capacity to deploy design (actual management of design activities and resources) in terms of design management capabilities (Aklin, 2013; Mortati et al., 2014), and the capacity to integrate design (integration of design activities and resources within the organization) in terms of design leadership capabilities (Aklin, 2013; Mortati et al., 2014). A fundamental idea resulting from these investigations is that the conditions created by organizations affect the results design(ers) can achieve. Thus, the development of design capabilities becomes associated with the establishment of adequate organizational conditions to support design

Finally, another understanding of design capabilities evidences the trained human resources who engage in design activities. In this regards, the introduction of professional designers (Mutanen, 2008), but also the training of non-professional designers in design (Wetter-Edman & Malmberg, 2016) have been associated with the development of design capabilities in organizations (Malmberg & Wetter Edman, 2016). Thus these approaches convey the idea that by increasing the number of human resources with design ability (competence) in organizations leads to the development of design capabilities. The training of non-professional designers, in particular, is aligned with the idea that design is a human ability, and therefore not exclusive to professional designers. This understanding that different individuals have some sort of design ability and engage in designing is not new in the design discourse and can be traced back to Herbert A. Simon’s statement that “everyone designs who devises courses of action aimed at changing existing situations into preferred ones” (Simon, 1996: 111). Still, it has been argued by scholars that the design ability might be more developed in some individuals than in others (Cross, 1990). Based on that categories have been proposed to distinguish between experts and novices (Cross, 2004), and authors also distinguish designing performed by experts and designing performed by non-experts (“designerly like” or “design-like”, see Robert & Macdonald, 2017). Moreover, the focus on training non-professional designers in design (Bailey, 2012; Design council, 2013) also translates a dynamic understanding of design abilities, meaning that it is expected that the stock of these abilities “carried” by humans is not static and may increase over time with training and experience. For that development to take place designers are facilitating initiatives aiming at transmitting design knowledge (Wetter-Edman & Malmberg, 2016) to non-professional designers, expecting that they will be able to successfully absorb and apply it in their work. However, service designers are still concerned with the question on how to effectively support the transmission of design knowledge in organizations in a sustainable manner (Sangiorgi & Prendiville, 2017).

The previous descriptions demonstrate a multidimensional understanding of design capabilities, including the scope of design practices, the number of design resources and their ability to design, and the organizational conditions to leverage design in the organizations. This research considers these descriptions as complementary and fundamental for the development of a model able to inform the development of design capabilities in organizations. It suggests though how at the core of the model there is a fundamental gap that needs to be addressed, before integrating these perspectives, which is based on a

broader understanding of the factors that might affect the transmission of design knowledge in organizations.

The next section will briefly review knowledge transfer literature to relate it to the current studies on the development of design capabilities in organizations to identify the gaps and inform the proposal for a knowledge transfer design capability model.

## A knowledge transfer view on building design capabilities

Knowledge transfer is believed to be a source of competitive advantage for organizations since by sharing and combining the firm-specific knowledge across units, it will become difficult to copy it (Zander & Kogut, 1995). Knowledge transfer includes both the transmission and the absorption of knowledge across organizations (Sandjong, 2015), as there are actors actively engaged in absorbing or learning knowledge, but also actors involved in transmitting or teaching knowledge in organizations. In knowledge transfer literature these actors have been often labeled as knowledge recipients/receivers when referring to the demand side (actors absorbing knowledge), and as knowledge sources when referring to the supply side (actors transmitting knowledge) of the knowledge transfer process (Szulanski, 1996; Minbaeva & Michailova, 2004). Moreover, it has been argued that the transference of knowledge requires a collaborative effort of receivers and sources, in particular when the transference crosses distinct knowledge areas (Minbaeva & Michailova, 2004). Although these abstractions might have some limitations, scholars state that it might help to provide a better understanding of the phenomena of knowledge transfer, and that they are being increasingly used by researchers in other fields (Minbaeva, Pedersen, Björkman & Fey, 2014).

In order to provide an understanding of the determinants of knowledge transfer, this investigation will follow the work of several researchers (Szulanski, 1996; Minbaeva & Michailova, 2004; Minbaeva, 2007; Malm, Fredriksson & Johansen, 2016) which emphasize: the nature of knowledge, the senders and receivers, and the context/relationships as key factors. Moreover, the authors will briefly explore how those determinants have been addressed in the design literature on design capabilities to draw some implications for design research.

## Transferred knowledge

Researchers on knowledge transfer argue that the nature of knowledge affects how it might be transferred (Szulanski, 1996; Michailova & Mustaffa, 2012; Minbaeva, 2004; Minbaeva, 2007). One of the categorizations often explored in this field distinguishes between tacit and explicit knowledge (Polanyi, 1966). While the first might be mostly embedded in actors' minds and therefore manifested in their understandings and behaviors, the second is structured and documented in some form (Nonaka & Takeuchi, 1995). Scholars proposed constructs like "codifiability" and "articulability" to depict whether knowledge mostly is documented and easily available in some forms or predominantly available in individuals (Minbaeva, 2007; Michailova & Mustaffa, 2012). Based on the understanding that not always explicit knowledge is made accessible to knowledge seekers, for example, due to political reasons, Minbaeva (2004) decided to treat the "availability of knowledge" as an independent dimension. Another characteristic which is discussed by scholars in this field is the complexity/simplicity of knowledge and one of the interpretations of this characteristic is that it captures the number of interdependent elements (routines, resources, individuals, etc.) connected to a specific knowledge (Simonin, 1999). In this regards tacit (non codifiable), non available and complex knowledge are usually understood as characteristics that might negatively affect knowledge transfer. Other characteristics which are said to influence

knowledge transfer include causal ambiguity (Szulanski, 1996), knowledge distance (Michailova & Mustafa, 2012), and “unprovenness” (Szulanski, 1996)

## Transferred knowledge in design research

Researchers in general have made some observations that can be related, sometimes indirectly, to the characteristics of design knowledge that are aligned with the dimensions identified previously. In particular, researchers emphasize the tacit and explicit nature of design knowledge. For example, based on an empirical study of French organizations it has been observed that design knowledge was perceived by those companies as being mostly tacit and attached to individuals (Abecassis-Moedas & Mahmoud-Jouini, 2008). Still, the authors observed that in some cases companies worked with designers to make design knowledge more explicit, for example through the use of computer-aided design tools, by inserting their expertise in databases, among others (Abecassis-Moedas & Mahmoud-Jouini, 2008). This idea that design knowledge might be embedded in individuals, but also partially integrated into some forms is also supported implicitly by other studies. For example, Aklin (2013) understood design knowledge as “design processes, approaches such as human-centeredness, visualisation, experimentation, prototyping, etc., and tools as well as an attitude towards creation of innovative solutions” (pag. 157). While attitudes might be comprehended as something more connected to individuals, design methods and tools have been made explicit over the years and are available in several formats. In service design research in particular, scholars note a current focus on design methods and tools, and question whether it would be interesting to center the attention in design knowledge in terms of framing, aesthetic knowledge and reflection-in-action (Wetter-Edman & Malmberg 2016), which might not be fully codified in a template.

Also, some studies seem to refer to a knowledge distance between knowledge senders (expert designers) and receivers (non-professional designers) and provide some insights related with that. For example, it has been pointed out that in an introductory phase it is important to relate design knowledge to the pre-existent knowledge of organizations (Aklin, 2011; 2013), probably pointing toward the concept of “knowledge distance”. Furthermore, but in this case at an individual level of analysis, it has been observed that the connection between design knowledge and prior knowledge of non-professional designers is relevant, but that there is also a risk that the similarities are too many because in those cases the value of design might not be recognized by non-professional designers (Malmberg & Wetter Edman, 2016). Finally, it has also been observed that when there is an effective combination of related but diverse knowledge (design knowledge and manufacturing/market knowledge) positive impacts might be observed in terms of New Product Development performance (Abecassis-Moedas & Mahmoud-Jouini, 2008).

## Knowledge receivers and their capacity to absorb knowledge

Previous research on knowledge transfer posits that one of the key factors influencing knowledge acquisition relates with to characteristics of knowledge receivers. These characteristics affecting knowledge transfer from the demand side have been often described in terms of absorptive capacity. The term absorptive capacity has been conceived by Cohen and Levinthal (1990) as “the ability of a firm to recognize the value of new, external information, assimilate it, and apply it to commercial ends” (p. 128). Some years later, Zahra and George (2002) connected the absorptive capacity concept with the conceptualization of dynamic capability and suggested that absorptive capacity comprehends four key organizational capabilities: knowledge acquisition, assimilation, transformation, and exploitation. Furthermore, they provided a distinction between the potential capacity (the

ability to acquire and assimilate knowledge) and the realized capacity (the ability to transform and exploit the knowledge). This distinction stressed the idea that although organizations might acquire new knowledge, they might find it difficult to use it for commercial or other ends. Although the term absorptive capacity has been initially formulated as an organizational level concept, Cohen and Levinthal (1990) recognized that the organizational absorptive capacity is dependent on the individual member's absorptive capacities. Accordingly, this lens has been applied at several levels of analysis, including the level of the organization, but also the level of individuals.

Some authors emphasize two aspects of absorptive capacity of knowledge receivers affecting knowledge transfer, namely, actors' abilities (prior knowledge) and motivation (intensity of effort) to learn (Minbaeva, Pedersen, Björkman & Fey, 2014; Gupta & Govindarajan, 2000; Minbaeva, 2007; Szulanski, 1996; Minbaeva, Pedersen, Björkman, Fey, & Park, 2003; Riusala & Smale, 2007). Previous knowledge of receivers is then associated with several elements including a relevant prior experience, a common language with knowledge senders, basic skills to find, absorb and apply the knowledge, among others (Minbaeva, 2007). On the other hand, when referring to the intensity of effort, authors refer to the levels of motivation displayed by knowledge receivers affecting the application of the absorbed knowledge (Minbaeva, 2013; 2007).

## Knowledge receivers in design research

Design researchers also adopted the absorptive capacity lens as a way to better understand how organizations can adopt design capabilities and which factors might support it (Bailey 2012; Akin 2011, 2013; Wetter-Edman & Malmberg, 2016; Malmberg 2017). For example, Akin (2011, 2013) associated the adoption of new design knowledge to the concepts of potential and realized absorptive capacity. In those studies, the author proposes that design (management and leadership) capabilities have the potential to create competitive advantage, suggesting also the link between the socialization of design knowledge across the organization and an increase in organizational flexibility. Bailey (2012) also drew a connection with the absorptive capacity lens to introduce the term "design readiness", intended as a possible measure of organizational awareness and its potential to embed design. The author noted though how design readiness is not enough to guarantee a sustainable adoption of design, calling for the importance of performing design practices to effectively embed design. In general, these studies convey the idea that there might be different phases in the absorption of design knowledge, and that sometimes knowledge recipients might already possess some design knowledge, although they are not putting it into use.

When looking into the conditions for the implementation of design capabilities in organizations design authors refer to some dimensions previously attributed to knowledge receivers, and in particular, they highlight the ones related with actor's abilities (prior knowledge). For instance, Bailey (2012) identifies the lack of a common vocabulary (shared language) between knowledge sources and recipients as a barrier to the transmission of design tools and methods. Similarly, the studies referring to the knowledge distance between senders and receivers, support the idea that the prior knowledge of receivers is relevant and should be taken into consideration (Akin 2011, 2013; Malmberg & Wetter Edman, 2016).

Finally, it has been argued that organizational motivation to observe design knowledge is important for the learning to take place (Abecassis-Moedas & Mahmoud-Jouini, 2008).

## Knowledge senders and their capacity to teach

Previous research on knowledge transfer also refers to factors influencing knowledge transfer associated with the characteristics of knowledge senders (actors' facilitating the access to new knowledge). These characteristics affecting knowledge transfer from the supply side have been often described in terms of disseminative capacity. The concept of disseminative capacity has been defined by Minbaeva & Michailova (2004) as "the ability and willingness of knowledge senders to transfer their knowledge" (p.667). In this case, although the term disseminative capacity has been conceptualized by Minbaeva & Michailova (2004) as an individual level concept, still there are studies applying it at an organizational level.

Regarding knowledge source abilities (prior knowledge), authors discuss that actors should, for example, be able to articulate and communicate knowledge (Minbaeva & Michailova, 2004; Minbaeva, 2007) effectively so that receivers can understand and put the learning into practice (Mu, Tang & MacLachlan, 2010). Additionally, researchers also discuss the importance of senders' abilities to identify the needs of receivers and to identify new uses for their knowledge (Minbaeva, 2013).

Concerning willingness, scholars have noticed that not always knowledge sources are interested in sharing their knowledge. For example, it has been observed that knowledge sources might be conditioned by a perceived loss of individual competitive advantage in relation to others when sharing their knowledge, by the time consumed in those activities, to avoid that the quality of their knowledge is evaluated by others, by the fear to share the knowledge with others who are not investing in their own development, among other reasons (Husted & Michailova, 2002). Also, it has been observed that researchers have drawn upon motivational psychology theories to better understand this determinant of knowledge transfer, (Minbaeva, 2013). Works in that field distinguish, for example, between autonomous motivation and controlled motivation (Deci & Ryan, 2000) and suggest that these different types of motivation might affect individual behaviors, including the ones centered on knowledge transmission. In particular, it has been observed that some studies point out the idea that autonomous motivation might lead to higher levels of effort and persistence, while controlled motivation might lead the individual to invest less effort to accomplish a task, and a focus on immediate results (Minbaeva, 2013).

## Knowledge senders in design research

Contrary to the case of absorptive capacity, the disseminative capacity of knowledge senders has been largely ignored in the design literature. Nevertheless, it has been mentioned previously how in-house service designers are now often occupied with transmitting design knowledge to non-professional designers. Those activities have been associated with the role of professional designers as "in-house consultants" (Blomkvist, 2015) or facilitators (Wetter-Edman & Malmberg, 2016). Based on this, professional designers could be portrayed as important knowledge sources facilitating the access to new (design) knowledge in organizations.

In this context, although some articles on design literature suggest that professional designers might have an important role in supporting the dissemination of design knowledge in organizations (Bailey, 2012; Wetter-Edman & Malmberg, 2016), there seems to be a lack of focus to weather and how their characteristics (abilities and motivation) are affecting the effectiveness of those processes in organizations.

## Context and relationships established to transfer knowledge

Studies on knowledge transfer also discuss how the context in which knowledge senders (actors' supplying new knowledge) and knowledge receivers (actors' demanding new knowledge) interact, moderates knowledge processes.

One approach to capture the heterogeneity of context, and its impact on knowledge transfer comprehends the distinction amongst organizational, relational and social contexts (Riusalav & Smale, 2007; Michailova & Mustaffa, 2012). When referring to the organizational context, a distinction has been made between fertile and infertile contexts (Szulanski, 1996). While the first is associated with contexts that facilitate the transfer and development of knowledge, the second is associated with environments that hinder those processes. Factors that have been discussed by scholars and which are believed to affect knowledge transfer include organizational structures and sources of coordination and expertise (Szulanski, 1996), existence of systems to capture and share learning (Minhaeba, 2007), the strength of the orientation/conditions towards learning (Riusalav & Smale, 2007; Minhaeba, 2007). The relational context, on the other hand, highlights the relationships established between actors. In this regards, authors convey the idea that the level of interaction between actors will affect knowledge processes in organizations. In particular, it is suggested that weak ties between actors might hinder knowledge transfer (Minbaeva, 2013; Riusala & Smale, 2007). Finally, concerning the social context, authors convey the idea that the "cultural" distance between knowledge sources and recipients might affect the transference of knowledge (Riusalav & Smale, 2007).

Researchers also highlight the relevance of studies on the diversity of transmission channels and how their properties might affect knowledge transfer (Minbaeva, 2007; Michailova & Mustaffa, 2012; Gupta & Govindarajan, 2000). In this regards, it has been suggested that this diversity can be captured in terms of density, openness and informality of communication (Gupta & Govindarajan, 2000). Moreover, authors have observed a shift in focus from examining "hard" (knowledge management systems) to the "soft" (socialization) mechanisms of transference (Michailova & Mustaffa, 2012).

## Context and relationships established to transfer knowledge

The diverse contextual factors affecting the transference of design knowledge did not seem to have received the same amount of attention from scholars. For example, it is possible to observe that several authors frequently mention factors that are associated with the organizational context. There have been several articles reporting the importance of having managerial support (Bailey, 2012; Aklin 2011; 2013) for the transference of design knowledge in organizations. There are also cases demonstrating possible problems related with building a sustained design capability when organizations do not provide support/conditions for the absorption and transmission of design knowledge (Malmberg & Wetter Edman, 2016), since in that case the knowledge might be placed in individuals, and not spread in organizations. In this situation, one might question what happens if those individuals leave the organizations at some moment. Moreover, it has been observed that sometimes the interventions to transfer design knowledge are not continued over time (one-off kinds of interventions) and that might not provide room for reflections of participants (Wetter-Edman & Malmberg, 2016).

On the other hand, when considering the social context, there are also some critical reflections in the design literature. For instance, when looking into the perspective of an organization adopting design, the authors present some considerations regarding the conflicts that might emerge related with what is considered knowledge, the aesthetics of the institution (more dependent on texts and words), the particularities of the political context,



and others that illustrate potential differences between knowledge senders and recipients (Bailey & Lloyd 2016) that might be engaged in knowledge transfer. Similarly, it has been argued that a strong culture of healthcare might also work as a potential barrier for design (Malmberg & Wetter Edman, 2016).

Finally, while some articles (Bailey, 2012; Bailey & Lloyd 2016; Wetter-Edman & Malmberg, 2016) provided detailed descriptions about the diversity of mechanisms that are being used to facilitate the transference of design knowledge (e.g. projects, workshops, conversations, phone contact, e-mails, communications, communal spaces, exhibitions, guidelines and templates, tools, support materials, etc.), they do not reflect over their choice and whether or not they impact the successful transfer of knowledge in different ways.

## Reflections

Four significant determinants which are said to influence knowledge transfer in organizations have been described, including the nature of knowledge, the characteristics of knowledge receivers, the characteristics of knowledge senders and the context in which receivers and senders establish relationships. Knowledge transfer literature supports the idea that the diversity of all those elements influence how knowledge is transferred in organizations. A preliminary review of design studies does not seem to consider how the heterogeneity of all these elements can impact the work done in organizations to spread design knowledge and build organizational-wide design competences. In particular, it seems that the impact of the characteristics (ability and motivation) of knowledge sources (professional designers) in the successful transfer of (design) knowledge is currently under-researched. Moreover, the role played by the nature of relationships established between knowledge sources (professional designers) and knowledge receivers (non-professional designers), as well as the role of their motivation appear to have received little attention in the design literature.

## The proposal of a view on the development of design capabilities through the dynamic transference of design knowledge

Former studies suggest that the determinants affecting knowledge transfer in organizations might be categorized in different groups, and their impact assessed whether individually, or in an aggregate form. This initial study supports the idea that by distinguishing and analyzing the heterogeneity of design knowledge, knowledge sources, knowledge receivers and context it will be possible to have a broader understanding of how design knowledge is being spread in organizations, and design capabilities built in a sustainable way. The proposed model, integrating and summarizing these four dimensions (fig. 1), is a starting point for future reflections and reviews, also considering the possibility for integration of other determinants which might be identified as particularly relevant to the transference of design knowledge<sup>3</sup>. Furthermore, the authors understand the transference of design knowledge as a dynamic process, meaning that while at some point actors might be playing the role of knowledge receivers, at another moment they might be assuming the role of knowledge senders. In this context, disseminative and absorptive capacity might be relevant for both actors engaged in the transference of design knowledge and they both need consideration.

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<sup>3</sup> Examples might be the credibility/reliability of knowledge sources or the retention of knowledge of receivers, regarded as critical factors in knowledge transfer studies.

**Organisational, social and relational context**  
 Organizational structures; sources of coordination and expertise; systems to capture and share learning;  
 conditions towards learning;  
 Cultural distance between actors  
 Relationships between actors

**Transference mechanisms for design knowledge:**  
 Communication: density, openness and informality  
 Mechanics: hard (knowledge management systems) and/or soft (socialisation)

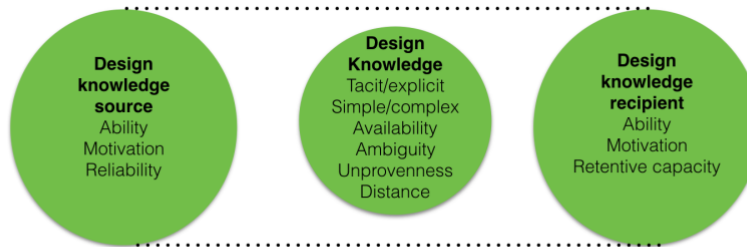


Figure 1 – Expanding the understanding on determinants affecting the transference of design knowledge

## Conclusions

Service designers are no longer being hired by non-design intensive organizations solely to design new services. Currently, they are being asked to help in the development of sustained design capabilities, in particular by transmitting their knowledge to non-professional designers. Still, the expansion of their role in organizations carries some challenges as to understand what might affect their new work. This research used a knowledge transfer lens to identify determinants in the transference of knowledge in organizations and briefly explored how those determinants have been treated (even if in an indirect way) on a limited selection of the design research literature.

While knowledge transfer studies identify and study, both individually and also in an aggregate form, four determinants related with what is being transferred (knowledge), the actors involved in sharing (knowledge senders) and absorbing knowledge (knowledge receivers), and the context (organizational, social, relational as well as transfer mechanisms), the design literature does not seem to acknowledge the heterogeneity of all those factors and their impact on the successful transference of design knowledge in organizations. The identification of those four groups of determinants might provide an initial base for future reflections on how to improve the effectiveness of efforts directed toward the building of sustainable design capabilities in organizations.

The authors have reviewed and integrated this literature as a starting point to deepening the understanding of the transmission of design knowledge, as a mechanism to develop design capabilities in organizations. The proposed model can be used as a theoretical lens to inform case study research into varied examples of integration of design in non-design intensive organizations, such as in-house design teams/innovation labs, or entire design agencies acquired by consultancies. Moreover, it could be used also to reflect on the consequences of absorbing design knowledge, for example, to assess whether the cultural distance between actors decreases when design knowledge is effectively absorbed.

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