

Integrating Design Thinking in Service Design Process: A Conceptual Review

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Abstract

This paper is based on a theoretical approach to service design, Design Thinking and the integration between the two concepts. The evolution of the traditional service design process was argued and its limitations critically examined. Furthermore, the adoption of Design Thinking in the service design process was discussed so that it helps organizations overcome the existing limitations in service design. This was aided graphically by comparing the differences and similarities between the service design process, with and without the Design Thinking approach. It was argued that Design Thinking has the ability to plug gaps in traditional service design methods due to its human-centric core and co-design shell. This paper shall help service designers and managers decide on the adoption of Design Thinking for service design process based on the slated arguments. Finally, a set of organizational challenges that may influence the application of Design Thinking were listed for managers to be cognizant of while trying to integrate Design Thinking in their existing service design process.

Keywords

Design Thinking, Service Design, Collaborative Design, Prototypes, Co-design.

Introduction

Service design has been a matter of research and attention to the service industry, especially due to the rising number of new services depending on various enablers like better liquidity, technological advancement and discerning customers (Silvestro & Silvestro, 2003). Service Design is defined as a developing step-by-step process that facilitates the interaction between the firm and the customers for mutual benefits. It has evolved due to the changing nature of both services and customers (Zeithaml & Bitner, 2003). The growth in this area has been well received by the academic world as well as the industry.

Services are different from products (Zeithaml et al., 1985) and also vary within themselves due to various endogenous classifying parameters postulated by Lovelock (1983). These peculiarities about services make the development section of the service — including the front-end planning and implementation (Zeithaml et al., 2012)— tricky but quite critical.

For services, designing process is vitally important, not only because it is the first step of service development, but also because the design process, although formulated, often leads to customer's perception of quality and value (Lin & Pekkarinen, 2011). However, the traditional literature in service design often has prominent discussion about the operational and technical aspects of the service offering like service capability (Puga-Leal & Pereira, 2007) and service delivery (Mascio, 2007). Few researchers have also tried to capture product design principles and methods for service and to draw lessons from already created knowledge in design and manufacture (Pullman & Moore, 1999).

The use of more visual tools, like Blueprinting and Quality Functional Deployment (QFD) through the House Of Quality (HOQ) (Bottani & Rizzi, 2006), brought in the idea of *design* in service in a way that looked at service in a much more expansive and innovative way. The expansion in the scope and coverage of service, where everything was dubbed as service in one or the other form by Vargo and Lusch (2004), paved the way to focus on service in a much wider way. This was possible having explained the service-dominant logic and allowing multidisciplinary tools and frameworks to the domain of service design. Despite having a variety of tools for service design, these tools often lacked the consumer point of view. They also often fell short of identifying the consumer requirement and linking that to the actual service design process (Lin & Pekkarinen, 2011).

Design Thinking, on the other hand, has been garnering a lot of attention since the early 2000s. It has been mentioned or touched upon albeit in different words in literature as old as 1960s and 1970s (Bazjanac, 1974; Rittel & Webber, 1973) and up to 1990s (Leonard & Rayport, 1997). Design Thinking discussed in its present, revolves around developing an understanding of people (Dam & Siang, 2020). It is one of the reasons of often being called a human-centered approach (Gruber et al., 2015) since it is centered around human needs in need of discovery.

Various tools Design Thinking offers are based on rich visualization and are deployed with the help of vivid imagination and creativity. This breaks away from the limitation of static frameworks and dyadic outputs that is provided.

Its iterative and non-linear process promotes the importance of quick prototypes instead of drawing-board ideas which have limitations in stimulating thoughts. Design Thinking achieves this iterative prototyping through open, alternative and creative generation as well as analytical thinking (Camacho, 2018).

A structured integration between the service design process and Design Thinking could be beneficial for the executives in designing a service that has the customer at its heart. The further sections of this paper clarifies the literature available on the evolution of service design and Design Thinking. The following section debates on the integration of Design Thinking with service design. The concluding section discusses the future course of action for design executives to integrate Design Thinking in service design as a systematic process, not an anomaly.

Evolution of Service Design

Design as a concept was intrinsically related to industrial products at the turn of the twentieth century as the economies were heavily biased towards manufacturing. The move from industrial design to product design could be tracked along with the shift from production orientation to product orientation as defined by Kotler et al. (2013). However, the shift from product design to service design has been much recent. As literature around services grew in the 1980s (Shostack, 1982; Parasuraman et al., 1988; Zeithaml et al., 1985; Lovelock, 1983) the concept of design for service that was different from product came forward. As more and more differences between the services and products were highlighted by growing service researchers, the service design literature grew on a multitude of perspectives and continues to grow today in like manner (Edman, 2011).

The service-dominant logic (SDL) postulated by Vargo and Lusch (2004) helped several domains of service research including service design. The service design research, since SDL, narrowed its focus on service-specific applications. The application of customer journey mapping — which tracks and details a set of experiences that a customer goes through while crossing various touchpoints (Kankainen et al., 2012)— is one of the outcomes of this mediation of SDL in services.

Service design research draws from various management-oriented fields, such as marketing and operations management (Bitner et al., 2008; Sampson, 2012), and owing to its interdisciplinary character (Ostrom et al., 2010) has brought forward two kinds of design ideas — product design and interaction design (Blomkvist et al., 2010; Sangiorgi & Pacenti, 2008).

Kimbell (2009) argued that the transition from interaction design to service design is similar to the shift from industrial design to service design. The interaction aspect of service design makes the modern services' design process singularly customer-centric (Holmid, 2009), differentiating itself from the traditional product design process.

The user-centered character of service design helps bringing in the human perspective (Hanington, 2003) in-service design. Krippendorff (2006) disputed that it represents the closeness of service design to human needs. This empathic ability is built on the idea of design co-creation which involves various stakeholders including the customers in the idea generation part of the service design process (Stickdorn, 2010; Lovlie et al., 2008).

Various participatory design techniques (Burns et al., 2006) are used in the co-creational process detailed by many researchers (Holmid, 2009; Junginger, 2011). Co-creation and participatory imply designing is done with people instead of for people. Clack and Ellison (2019) demonstrated that this attribute differentiates service design from other classical approaches such as marketing, QFD, which is used to extract customer requirements and map them against the controllable service elements (Bottani & Rizzi, 2006), employs a tool called HOQ to define this relationship. Blueprinting has been used as an effective tool to visualize the customer's interaction with the service as well as the service's internal interactions. It helps map the sequence of customer actions across various stages of a service encounter (Shostack, 1984). Structure and design analysis (Congram & Eelman, 1995) generates insights related to customer participation and role, while the fault tree analysis is used for large-scale and complex service processes which are often multifunctional and difficult to compress (Geum et al., 2009).

Despite the shift from the industrial design phase to service design, aided by seminal work in service domains, it has largely remained overtly process-driven which undermines the human-centric as well as the innovation-driven aspects of services. Blomkvist and Holmid (2010) pointed out that prototyping — which helps in creating ideas and implementing them faster without the traditional process restrictions— has largely been academic in nature and that too is researched sparsely. In addition, more research in the areas of design theory and design techniques are required (Blomkvist and Holmid, 2010). The following section explains what sets Design Thinking apart as well as various tools that Design Thinking employs. The discussion is restricted to tools that can play a critical role in services.

Design Thinking

Unlike what many believe, Design Thinking — from here on, DT— is not a set process or a framework to do things steadily; If at all, it would be an antithesis to the main definition. It is instead, a thought process or an approach that directs efforts in a particular direction which is human-centered and often built on fundamentals of openness and innovation. In fact, in their research on evolution of DT, [Johansson-Skoldberg et al. \(2013\)](#) posited that DT in itself cannot be defined in a closed structured process, it is rather a direction about how this concept can be deployed in different situations and scenarios.

Thus, in this section, instead of restricting the definition of DT, the variations and varied elements are explored. However, control on the age of these definitions — post 2000s literature only— is exercised which may not have a critical role to play in the modern service design process. In such a way, the neo-classical definitions of DT are acknowledged as a domain that would help integrate these concepts into the modern service design practice. This is in line with the argument made by [Lockwood \(2010\)](#) that while design has always been a catalyst for innovation processes, from the early 2000s, it has seen mainstream popularity and created awareness about how businesses can benefit from DT ([Tschimmel, 2012](#)).

DT revolves around human centrality at its core, and user centrality at its surface — which was highlighted in the service design section earlier. The definition, hence, puts humans at the center of all things in design ([Liedtka, 2017](#)). Further, the qualities of being hypothesis-driven, adductive and dialectical were set to form the foundation of DT. [Patnaik and Mortensen \(2009\)](#) had earlier postulated the following about DT which was emphasized by the latter definitions, including the one given by [Liedtka \(2017\)](#). The emphasis on features like empathy and being user-driven added to the human centrality bit of the latter definitions. Empathy has been identified as a key area for DT since it leads to effectiveness as well as practical human interactions among a wide range of stakeholders which include customers as well as service actors ([Grove & Fisk, 1992](#)).

Emphasis on including a more diverse set of people in addition to inviting heterogeneous individuals for design process highlighted the importance of diverse points of view. This was further developed into the concepts of co-design and co-creation. Finally, specific tools that helped conduct a variety of ethnographic research, like Journey Mapping, Mind Mapping, Storyboarding for Prototyping, etc. have been developed for achieving the set objectives for a DT process ([Liedtka, 2017](#)). The transformation and innovation-led evolution of DT has also opened up newer ways to develop and manage businesses. However, the true potential that can be realized by creating value for the customer with the help of DT has not been established yet ([Tschimmel, 2012](#)).

[Camacho \(2018\)](#) recently tried to delimit the terms human centrality and user centrality, by suggesting that the latter is actually a restricted version of the first one, hence, must be used cautiously while defining DT. Further, the societal impact of DT must be taken into account in order to think comprehensively about DT and appreciate its systemic nature, while also focusing on the individuals ([Norman, 2013](#)). The user centrality must be consciously transcended to human centrality by allowing multiple stakeholders during the design process.

It is critical that the end-user is still at the center of the design and the journey towards a service experience is viewed empathetically based on immersive research of users and their decisions. Thus, co-design is critical to DT due to having a diverse opinion in the design process explicitly in developing and delivering an inclusive and satisfactory service experience. Co-design refers to a collaborative design drawn upon ideas of participatory design ([Steen et al., 2011](#)) which was based on user involvement in design and development. While DT has often been restricted to some key features like human centrality, innovation mindset, creativity, empathy and co-design, [Tschimmel \(2012\)](#) and [Gloppen \(2009\)](#) argued that DT has also allowed the development of processes and toolkits that help in accelerating visualization of creative processes. DT has been identified to be heavily dependent on visualization tools as it aims to stimulate human senses which are extremely sensitive to visual cues ([Goldschmidt, 2003](#)).

DT can be visualized — as shown in [Figure 1](#)— as an iterative process that is based on an innovative mindset. Creative design approach has a humanistic element at its center along with an empathetic approach while being experimental in nature ([Tschimmel, 2012](#); [Kim et al., 2017](#)). Such an expansive yet objective scope helps DT in problem definition and creative problem resolution as well as exploration — instead of exploitation— of emerging opportunities ([Beckman & Barry, 2007](#)). The problem-solving attribute of DT has especially been highlighted by [Dam and Siang \(2020\)](#) as a collection of hands-on methods that includes five phases. These are:

1. Empathize with users
2. Define problems and needs
3. Ideate by challenging status quo
4. Prototype
5. Test solutions created in prototypes.

The next section discussed the incorporation of DT attributes in service design, foreseen challenges and expected outcomes.

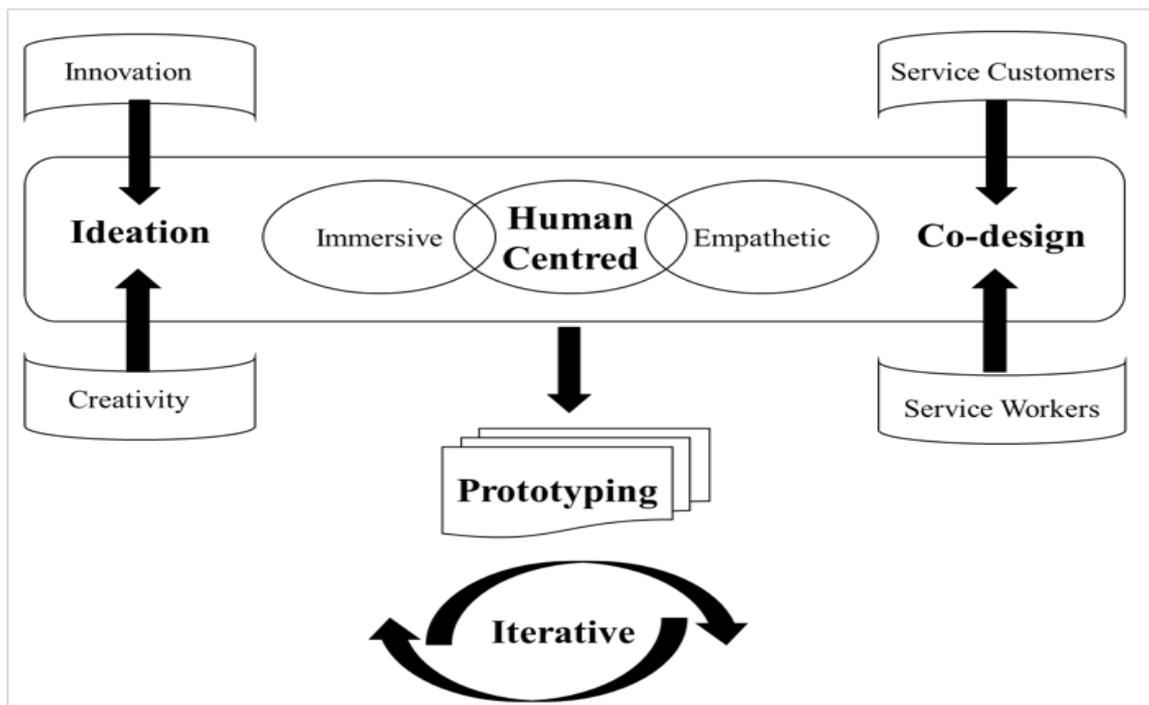


Figure 1: Design Thinking in a Nutshell.

Integrating Design Thinking with Service Design

Service design was traditionally seen as one of the many stages of an elaborate service development process ([Edvardsson et al., 2000](#)). But now due to the importance of this stage on key metrics like customer satisfaction, also due to its ability to bring creative service ideas to life ([Ostrom et al., 2010](#)) it is now seen as an approach to innovation ([Teixeira et al., 2017](#)). It has also been suggested as a critical matter in gaining a competitive advantage by creating customer personalization. This warrants an evolved and systematic approach to service design which takes into consideration the changing consumer needs and acquisition process. DT with its core attributes can be useful for service design 2.0.

Three unique attributes of DT are:

1. Immersive research of customer-led design by empathic design methods to create a human-centric design ([Leonard & Rayport, 1997](#)),
2. Rapid prototyping ([Buchenau & Fulton, 2000](#)) coupled with visualization,
3. Co-designing or collaborative design.

While service design on its own has employed sophisticated techniques for consumer research and co-creation of services, the aforesaid attributes of DT are largely ignored.

Service design itself has come a long way from being an unimaginative replica of industrial design to the present definition. However, services have become complex in nature as well, courtesy of technological advancement, insatiable consumer expectations, and intensive competition (Omachounu & Einspruch, 2010). While service design offers tools such as Blueprinting and HOQ which help in customer journey mapping, more human-centric approached tools like Rapid Prototyping can benefit the design and development of services (Miettinen et al., 2012). Visual prototypes that encourage customer involvement and feedback which are integral to DT (Lockwood, 2010) can help service design executives correspondingly.

The human-centric and empathetic attribute of DT can help create quick concepts and solutions that can be user-friendly and efficient (Miettinen et al., 2012).

Though there seems to be some overlap, at least in the execution between service design and Design Thinking, conceptual differences and objectives of the two entities exist which are explained in Figure 2. While traditional service design and development is a linear process with a pre-defined sequence — from step 1 to 6— service Design Thinking is an iterative process where the sequence can run in both directions, forward and backward, and that as well in order from 1 to 4 or 4 to 1 or 1-2-1-2-3-4, etc.

The research is much more immersive and intense in service design which employs Design Thinking since its human-centered core objective focuses on latent consumer thoughts and end-to-end service experience. Thus, ethnographic research, storyboarding, and the creation of personas are commonplace in Design Thinking practice (Liedtka, 2017; Dam & Siang, 2020). This is different from the traditional consumer research which relied upon personal interviews, focus group discussions and survey instruments which were more structured to extract definitive insights. This was often marred by the researcher or designer's bias (Arnott, 2006).

The core design aspect of visualization is especially critical for service design due to the intangible nature of services (Zeithaml et al., 1985). Diana et al. (2009) argued that lack of visualization within service design is one of the most critical issues since the rise of service design as a discipline. Some of the visualization tools have been identified by Alves and Nunes (2013) for being especially helpful for service design. Tools like Character Profiles, Contextual Interview, Customer Journey Map, Cultural Probes, Documentaries, Empathy Tools/Probes, Ethnographic Research, Immersion — workshop— Cresting Personas, Prototyping (Stickdorn, 2010), Shadowing, Stakeholder Map and Storyboarding (Greenberg et al., 2012).

Higher emphasis on experimentation, prototyping/testing and learning launch in DT helps it being more dynamic and flexible. This is especially helpful in competitive scenarios where the industry is fast-changing and customers are always expecting more. The commercialization process, though may not be significantly different between the two methods, is again flexible to change and build-up from what is already there, which the Design Thinking approach offers against the rigid traditional process. This is largely due to the collaborative engagement that allows for insights that help designers create a design that is fundamentally more malleable.

Practically, co-designing should include experts such as the service designers, current and potential customers, researchers and the lost customers coming together and adding value by sharing their experience with a given service or product (Sleeswijk et al., 2005). Involving various users and non-users is especially critical since it gives the most usable insights, while also laying bare open on the customer's buying behavior and reasons for choices (Alam, 2002; Kujala, 2003; Sanders, 2002). While co-design is a proven winner in design projects and has been gaining traction (Binder et al., 2008), service designers are often unable to leverage it (Sanders & Stappers, 2008).

There is a high emphasis on co-designing and prototyping in Design Thinking practice. This is because collaborative experimentation not only generates valuable insights for designers but also allows for diverse opinions which are critical for a robust design (Clack & Ellison, 2019). Traditional service design on the other hand is entirely left to the service designers and executives to plan, based on the consumer research which the designers are often not a part of. Blueprinting, despite its efficacy, does not help if the consumer research is not immersive and all stakeholders are not a part of the process.

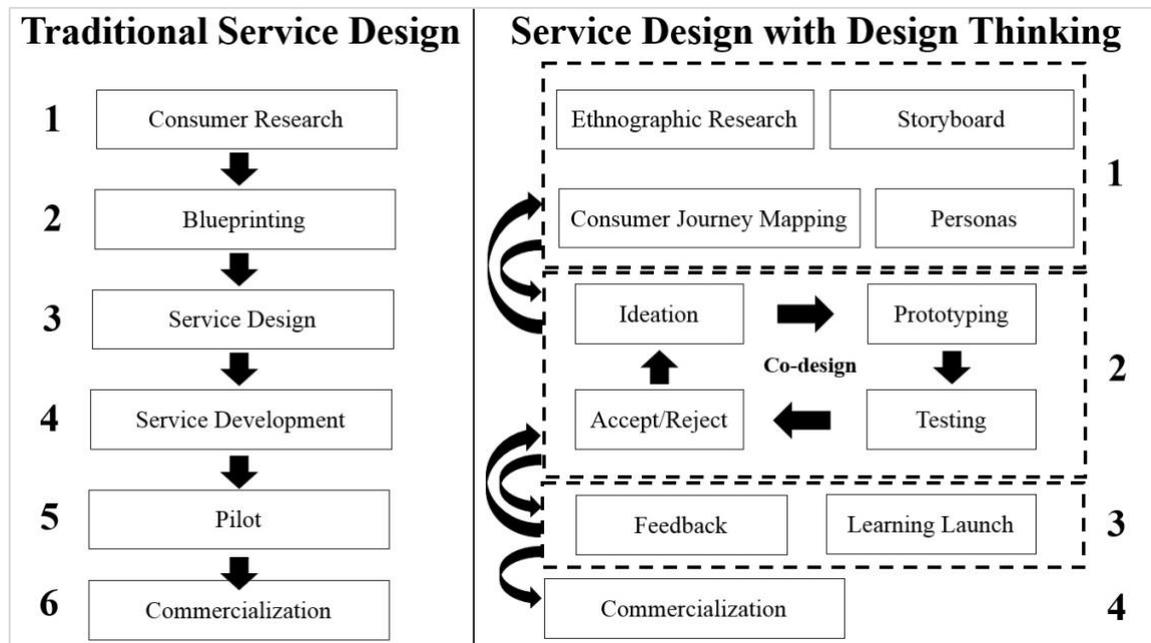


Figure 2: Difference between traditional service design and service design with Design Thinking.

Integrating Design Thinking in a service organization is a long-term strategy, but it impacts the vision as well as tactical operations alike. DT plays an equal role in the planning and implementation phase of a project or process.

This is because DT in itself is an end-to-end process enabler for a service organization. Practically, it subsumes multiple stages from the linear service design process into condensed stages, from six to four, as shown in Figure 2 DT must be looked at as a process to detangle the problem into a series of questions that would then be answered with tools available for each of the stages in DT (Liedtka, 2017). The iterative approach helps it move faster, while the human-centric core makes it customer-focused. The consumer research stage is executed with the help of native tools available in the DT toolkit like Ethnographic or the newer Netnographic (Heinonen & Medberg, 2018) research.

The power of observation plays a critical role in generating actionable insights through this process. The integration of DT into service design for consumer research must be calibrated carefully, to include tools like Persona Creation and Storyboarding for a visual and immersive experience in insight generation. Creating accurate personas in the research stage of DT helps in agile testing of the prototype, which is created in the next stage, and is similar to creating fail-safe services with fail fast thinking. Ideation and prototyping must go in an iterative process. The idea generation process must be based on creating a wider and open outlook, accepting uncertainties, seeing newer-experiences and building a broad repertoire (Liedtka, 2017). Co-design plays a critical role here in creating solutions which are to meet consumer expectations supporting the fail fast to make fail-safe approach. Several service organizations have made strides towards bringing in the Design Thinking concepts to their service design and redesign efforts. A case about a service organization is discussed which was a fledging start-up in 2000s using the concepts and tools of Design Thinking, albeit in its own adapted way, to its advantage.

Airbnb, in late 2000s, found itself in a stagnant position with the revenue stream showing a horizontal line. This was despite their data-driven approach that worked well on drawing-board and algorithms. As described by the team, the approach was to how usual Silicon Valley entrepreneurs drive their start-up with scalable ideas, data driven decision making and confidence in solving problems for 1, 1000 or 10000 people from the same piece of code (First Round, 2020).

Later, having committed to improve the performance, the team decided to take a more unconventional approach. They moved away from data towards the customers, hence, adapting to the customer-centered approach. After having realized a more human-centered approach that is required for an effective solution, the team went into consumer research in a much more humanistic way.

They not only followed the consumer journey for the guests booking a place through Airbnb, but also experienced the journey like them. Further, they also engaged with the supply side of this transaction, i.e., the property owners with greater emphasis on empathy and co-designing. This also helped everyone on the team have skin in the game, therefore, making the solution a co-created one generated through insights (Stone, 2017).

Like true Design Thinking professionals, the co-founders then brainstormed on ideas which were anything but conventional. For example, one of the first ideas that they came up with was to simply have professional grade pictures for the properties. Interestingly, these pictures were taken by the co-founders themselves on a rented camera. Subsequently, the property owners were taught and trained to take similar pictures which was the co-designing part of the process. Prototyping came quickly afterwards as this was implemented across all properties. Customer personas which were evaluated during the research came in handy, as idea prototypes were built for different customer personas. These were around service, communication, engagement and co-creation. The process was completely iterative and therefore, there was always a scope to improve and evolve.

Joe Gebbia, one of the co-founders acknowledged the impact of his design school experience on his ability to engage with customers in a more empathic and humanistic way. This was in order to generate insights that are hard to come by in a systematic or structured research. He emphasized the importance of empathy in understanding the problems of customers to create products that are truly cross sectional and useful. Airbnb accordingly put into use a number of Design Thinking tools like Ethnographic Research, Brainstorming, Prototyping, Learn Launch and Commercialization in its service design and redesign process in order to understand the customers better and to offer solutions that were appreciated by them. But at the core of this effort was customer centricity that was truly through empathy. Consequently, traditional service design process has a lot to gain from Design Thinking tools that would help strengthen the service offering for companies.

These seemingly simple tools can yield high-quality output in the design process and implementation for organizations. However, Liedtka (2017) argues that a large organization's inability to accept ambiguity and lack of appreciation for variances restrict their ability to absorb the DT approach in their service design process. Despite the availability of tools in DT, service organizations may still face challenges when it comes to acceptance and application of DT. The next section discusses two of the biggest challenges that the adoption of DT may face in service organizations.

Challenges of Integrating Design Thinking with Service Design in Organizations

DT adoption challenges can be broadly classified into two categories, Managerial and Organizational challenges shown in Figure 3.

Managerial Challenges are specific to managers who are responsible for adopting the Design Thinking approach for service design. Challenges here are often because of belief — or lack of it— and the knowledge or expertise of the concerned managers in Design Thinking as an approach. As for the former, the transformative approach of Design Thinking may create skepticism among certain managers about the practical importance of certain Design Thinking aspects in the overall service design endeavor.

This may stem from a long-formed attitude about how or why something works which may weaken this belief about a new approach like Design Thinking. Lack of belief in the idea of Design Thinking, especially among those who are responsible for implementing it, is the first roadblock towards the adoption of the Design Thinking approach.

Another challenge faced at the managerial level is the lack of knowledge about DT and its underlying tools. Tools such as Problem-Framing, Experimentation, Visualization and Co-Designing are usually found to be challenging to use without the right training and expertise (Carlgren et al., 2017). This is especially important since DT tools require a perspective shift from designing for — customers— to designing with — customers— (Sanders et al., 2008).

Organizational Challenges are specific to the organization which is a much broader entity and has an enabling — or disabling— effect on the people of action in the organization. Challenges here are because of an overarching effect of a higher entity, culture or leadership buy-in, which shapes the larger adoption of Design Thinking in the organization. Culture plays a critical role in the adoption of newer technologies, processes and policies. An organization that has a culture that welcomes change is often quick to adopt newer trends and technologies (Trompenaars & Woolliams, 2002).

This is true for Design Thinking as well; especially due to its transformative approach to various aspects of a service organization including, but not limited to, service design. On the other hand, organizations which foster a culture avoiding change and ambiguity are often the laggards in adopting newer trends and technology (Gagliardi, 1986). Such organizations would also act in an evasive manner when it comes to the adoption of DT for service design and development. This is also because ambiguity is not avoided but accepted in Design Thinking in steps like Prototyping, and Learning Launch, etc.

Leadership buy-in is extremely important in the adoption of Design Thinking in a wider range as management must be confident with the open-ended approach where the outcome is often generated and not confirmed. The aforesaid is evident in the case with traditional design. Leadership must be able to pose confidence in the ambiguity-ridden, experimental approach of Design Thinking that shares control with others during the co-design process. These attributes of DT contradict with the trusted idea of chasing stability and control by organizations (Liedtka, 2017). DT also often requires commitment from the top as results diverge from what is often known, therefore requires an open-minded approach to accept divergence. Traditional leaders have sometimes been identified as lacking in proactive attributes of flexibility, risk-taking, and broad-mindedness to newer ideas (Caldwell, 2003), indicating their aversion towards a wider adoption of Design Thinking in the service design phase of service development.



Figure 3: Application Challenges in Design Thinking.

Conclusion

Service design has evolved from being an adaptation of industrial design to having its tools and methods that have added flexibility as well as comprehension of exercise. Tools like Blueprinting, QFD and Service Development Frameworks have added to the research about service design. However, researchers have claimed that consumer point of view has often been ignored in service design. Designers and managers often map the customer journey and movement themselves with the help of insights generated through structured and often closed-ended research (Lin & Pekkarinen, 2011). Design Thinking with its core nature that includes features like human-centricity and co-designing, which are based on collaborative — also known as participatory— design, can help plug the gaps cited in traditional service design methods. The human-centered approach of Design Thinking helps uncover the latent needs of customers which can create various opportunities for service organizations.

Design Thinking also offers a rich spectrum of visualization tools that can help overcome the challenges which a service designer faces due to service intangibility. The integration of Design Thinking into service design can help bring the advantages of Design Thinking like immersive consumer research with tools like Ethnographic Research, Collaborative Ideation, Co-Design, Prototyping and Learning Launch that accentuate the speed of service design and development adding flexibility to the process. The Design Thinking approach also adds value to the service design process due to its multi-directional nature which allows the designer to shuffle between the stages of service design in no particular order. This flexibility helps service organizations learn and adapt faster and serve their customers better. With this outcome, DT remains true to its goal of having the customer as the core of everything.

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