A STUDY ON THE PROCESS OF HUMAN-CENTRIC - DESIGN THINKING

Dr. N. Seshadri,

Assistant Professor, Dept. of Management Studies. MITS, Madanapalle.

Dr. D. Pradeep Kumar,

Professor, Dept of Management Studies. MITS, Madanapalle.

Abstract:
This study explores the concept of Design Thinking—how it works, how it can be implemented in business and real life, and why it has become a crucial skill in today's dynamic world. Design Thinking revolves around a deep understanding of the people for whom we are designing products or services. It emphasizes empathy, questioning assumptions, re-framing problems, and taking a hands-on approach through experimentation, prototyping, and testing.
Keywords: Design Thinking, human-centric, hands-on approach, prototyping, testing.

I. Introduction

Design Thinking is an iterative process that aims to understand users, challenge assumptions, and redefine problems to identify alternative strategies and solutions that might not be immediately apparent. It offers a solution-based approach to problem-solving and combines a way of thinking with a set of hands-on methods. Importantly, Design Thinking is not exclusive to designers. Innovators across literature, art, music, science, engineering, and business have historically practiced it. The principles behind Design Thinking can be systematically extracted, taught, and applied to creatively and innovatively solve problems across various fields—including design, business, governance, and daily life. Leading global brands such as Apple, Google, Samsung, and GE have embraced Design Thinking. Top universities like Stanford, Harvard, and MIT also teach it, recognizing its broad applicability and power to drive innovation.

II. Core Concepts of Design Thinking

Design Thinking revolves around:
Empathy: Developing a deep understanding of users' needs and challenges. Questioning: Challenging the problem itself, underlying assumptions, and potential implications. Human-Centric Problem Reframing: Looking at problems from the users' perspective. Brainstorming: Generating a wide range of ideas. Hands-on Prototyping: Building tangible versions of solutions. Experimentation: Testing and iterating based on real-world feedback. It is particularly effective for addressing ill-defined or "wicked" problems—situations where neither the problem nor the solution is clearly understood at the outset.

III. Importance of Design Thinking in Today's World

In an era marked by rapid change, complexity, and global interconnectivity, there is an urgent need for skills that allow us to adapt, understand, and respond to evolving environments and behaviors. Design Thinking meets this need by offering a human-centric and flexible approach to innovation. Design teams often employ Design Thinking when faced with ambiguous or complex challenges, as the process focuses on what matters most to users. It enables: Deeper research into users' real needs. Creative idea generation. Rapid prototyping and testing. Continuous learning and improvement. Organizations like Google, Apple, and Airbnb have leveraged Design Thinking to achieve remarkable success, reinforcing its value. Consequently, Design Thinking is now taught globally and integrated into business strategies at every level.

IV. Conclusion

Design Thinking not only provides a process for innovation but also instils a mindset geared toward human-centric problem solving. It encourages creativity, agility, empathy, and resilience—all Crucial in today's fast-paced world. By embracing Design Thinking, individuals and organizations alike can uncover groundbreaking solutions and drive meaningful change.

Rather than viewing solutions as simply right or wrong, they are seen as better or worse, and evaluating them can take considerable time as their effects ripple across the system (Buchanan, 1992). Design Thinking (DT) offers a promising approach to addressing such complex design challenges (Liedtka, 2015) and is well-suited for both radical and incremental innovation (Fleury et al., 2016). DT's ability to support the development of possible solutions to wicked problems—by fostering learning and managing uncertainty (Beckman and Barry, 2007)—makes it highly relevant in the context of Circular Business Model Innovation (CBMI).

DT is particularly adept at integrating opposing perspectives, addressing conflicts between customer needs, market opportunities, and technological and economic constraints at the strategic level, as well as differing viewpoints within innovation teams. This conflict, often termed 'creative friction' (Fleury et al., 2016), is seen as a catalyst for creativity. Multidisciplinary teams that include both formally trained designers and non-designers are encouraged to harness this friction (Carlgren et al., 2016a). In CBMI, where collaboration between multiple stakeholders is often essential for achieving systems-level innovation (Antikainen and Valkokari, 2016; Geissdoerfer et al., 2018a), DT's ability to incorporate diverse viewpoints becomes especially valuable. DT has similarly proven effective in the related field of sustainable business model innovation (Geissdoerfer et al., 2016).

Although definitions, terminology, and the number of process steps in DT vary across the literature (d.school, n.d.; Brown, 2008; Seidel and Fixson, 2013; Carlgren et al., 2016b; Fleury et al., 2016), Liedtka (2015) identifies some consistent features of the process. Across sources, DT is characterized by iterative cycles of exploration grounded in deep user research to uncover insights and establish design criteria, followed by the generation of multiple ideas and concepts, and then prototyping and experimentation to refine and select the most promising solutions. These activities are typically carried out by functionally diverse teams working closely with users.

Problem Solving Example: The Encumbered vs. the Fresh Mind

Thinking outside the box can lead to innovative solutions for challenging problems. However, doing so isn't easy, as we naturally fall into patterns shaped by repetitive tasks and familiar knowledge that surround us. A well-known story illustrates this. Years ago, a truck became stuck under a low bridge. The driver couldn't drive forward or reverse out, causing a major traffic jam. Emergency personnel, engineers, firefighters, and other specialists quickly arrived and began debating solutions. Each expert proposed ideas based on their own experience—some suggested dismantling parts of the truck, others considered chipping away at the bridge. Amid the heated discussions, a boy walking by observed the situation and casually asked, "Why not just let the air out of the tires?" To everyone's amazement, this simple idea worked. With the tires deflated, the truck lowered just enough to drive free, escaping with only the damage caused by its initial collision with the bridge. This story highlights how the most obvious solutions can be the hardest to see when we're trapped by our own assumptions and habitual ways of thinking.

Science and Rationality in Design Thinking

Scientific approaches in design thinking often involve understanding user interactions with products and investigating the environments in which they operate. Activities include researching user needs, gathering lessons from previous projects, assessing current and future operating conditions, testing problem parameters, and experimenting with alternative solutions.

Unlike traditional scientific methods, which focus primarily on measurable and known factors, Design Thinking embraces ambiguity. It actively seeks out the unclear and unknown aspects of a problem to discover hidden parameters and develop innovative strategies. After generating multiple potential solutions, rational analysis becomes essential. Designers systematically evaluate and falsify ideas to select the most effective solution for each stage of the design process. In this light, Design Thinking isn't so much about breaking out of the box, but rather about exploring its edges, its corners, its flaps—even the barcode, as Clint Runge aptly described.

The Origin of the 5-Stage Model

In his 1969 seminal text on design methods, *The Sciences of the Artificial*, Nobel Prize laureate Herbert Simon outlined one of the first formal models of the Design Thinking process. Simon's model consists of seven major stages, each with component stages and activities, and it was highly influential in shaping many of the widely used Design Thinking process models today. There are now many variants of the Design Thinking process in use in the 21st century. Although they differ in the number of stages—ranging from three to seven—they are all rooted in the fundamental principles featured in Simon's 1969 model. In this context, we focus on the five-stage Design Thinking model proposed by the Hasso-Plattner Institute of Design at Stanford University (commonly known as the d.school).

Description of the 5 Stages

Stage 1: Empathize — Research the User's Needs The first stage of the Design Thinking process involves gaining an empathetic understanding of the problem you are trying to solve, typically through user research. Empathy is crucial to a human-centered design process like Design Thinking because it allows you to set aside your own assumptions about the world and gain real insight into users and their needs.

Stage 2: Define — State the User's Needs and Problems In this stage, you gather and organize the information collected during the Empathize phase. Observations are analyzed and synthesized to define the core problems identified so far. It is important to frame the problem statement in a human-centered manner.

Stage 3: Ideate — Challenge Assumptions and Create Ideas By the third stage, designers are ready to start generating ideas. With a solid background of knowledge from the first two phases, it becomes possible to "think outside the box," explore alternative perspectives on the problem, and identify innovative solutions to the problem statement created.

Stage 4: Prototype – Start to Create Solutions

Purpose: Experiment with possible solutions. Action: Create multiple inexpensive, scaled-down versions (prototypes) of the product or specific features. Goal: Explore and validate ideas generated during the earlier stages (Empathize, Define, Ideate). Outcome: Identify the most promising solutions to move forward.

Stage 5: Test – Try the Solutions Out Purpose: Evaluate the prototypes rigorously. Action: Test the complete product (using the best prototype solutions) with users or evaluators. Goal: Gather feedback to understand how the solutions work in the real world. Outcome: Validate successful solutions. Identify flaws, leading to possible redefinition of problems. Iteratively improve the product

by returning to earlier stages if necessary (Empathize, Define, Ideate, or Prototype).

IV.CONCLUSION

Design Thinking is an iterative and nonlinear process. This simply means that the design stages are not always sequential — they often occur in parallel, repeat, or be revisited as needed. Designers may return to earlier stages to redefine problems or explore new directions based on what they learn through prototyping and testing. By prioritizing empathy, creativity, and user feedback, Design Thinking offers a powerful framework for solving complex problems and creating innovative, user-centered solutions. Ultimately, it fosters collaboration, experimentation, and a deep understanding of real human needs, ensuring that solutions are both practical and meaningful. The team continuously uses their results to review, question, and improve their initial assumptions, understandings, and outcomes. Findings from the final stage of the initial work process inform our understanding of the problem, help define its parameters, and often lead us to redefine the problem itself. Most importantly, they provide new insights, allowing us to uncover alternative solutions that may not have been visible with our earlier level of understanding.

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