

Responsible Design Thinking and Sustainability

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Abstract

Design thinking was developed as a problem-solving strategy that centralized on creative and economic issues. But, in its implementation, it has failed to address social and environmental factors that are so vital for sustainable development. This paper provides a literature review that evaluates previous studies on design thinking, its shortcomings in its current form, and a new concept of responsible design thinking grounded in principles of responsible innovation. What is more, the framework unveiled seeks to steer design thinking back to essential issues like climate change, resource scarcity, and social injustice. This paper also provides a research agenda to expand and implement the RDT approach in real-world contexts.

Keywords-Design, Responsible innovation, Circular economy, Sustainable development, Design thinking.

Introduction

After the establishment as a distinct methodology in the 1960s, design thinking has transitioned from a problem-solving methodology to a fundamental technique of innovation management. Just emerging from rational problem solving, it came to mainstream attention in 2009 with the rechristening of it as design thinking by design consultants and business academics. This evolution thereby located design thinking as a way of getting solutions faster and improving competitiveness in markets that are sustained by continuous economic growth. While design thinking has been widely adopted in recent years, the current design thinking discourse mainly focuses on economic outcomes, while the social and environmental perspectives of design thinking are critical for sustainable development. This critical oversight calls for an imperative to rethink design thinking within the framework of responsible innovation.

Literature Review

The literature review included in this study offers the synthesis of the development process as well as practical implication of design thinking in the field of innovation management. Originally, design thinking was developed in fields such as engineering and architecture and has later been translated for organizational settings where it is meant to streamline the idea generation process. An important aspect of this methodology is that it is cyclical, which consists of several stages arranged in stages, for example, listening to the users, defining the problem and coming up with concepts and models for solutions, designing and evaluating the solutions (Baldassarre et al., 2024). This cyclical process has a twofold goal: to foster creative thinking and, simultaneously, to get a broad perspective on users' requirements that may contribute to the commercial success.

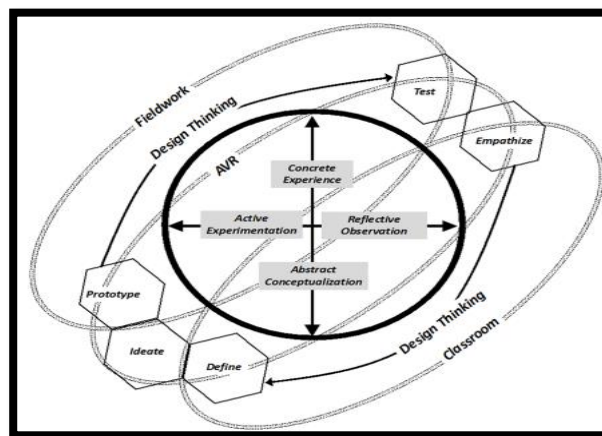


Fig.1 Design Thinking. Based On: Earle and Leyva-de la Hiz, 2021)

This singular business philosophy sometimes leaves out or ignores social and environmental issues, which are becoming more relevant in the contemporary global business environment (Secretariat, 2023). Despite the growing popularity of contemporary management approaches in business education, many programs still rely on conventional analysis-based methods for developing problem-solving heuristics, despite the fact that these methods are effective in addressing only specific challenges while lacking sufficient focus on key global and environmental issues.

Responsible Innovation Theory

Based on RI theory, this literature review synthesizes how design thinking has evolved and can be applied practically in innovation management. RI has evolved into a critical system in addressing the need for ethical and sustainable considerations in the technological-developmental and organizational advancements. Responsible Innovation aims at identifying the potential impact of innovations on society, ethics, and environment as early as possible. This is in contrast to more conventional approaches that are based purely on quantifiable economic returns, such as RI is more encompassing and emphasizes such elements as openness, and the future perspective. The insights recommend incorporating stakeholders, including members of vulnerable communities, in the generation of innovative ideas in order to incorporate aspects like their concerns and values from inception. This paper shows that incorporating Responsible Innovation principles into design thinking frameworks increase the capability of design thinking methods to respond to challenging issues such as GSCs like climate change, inequality or pandemics.

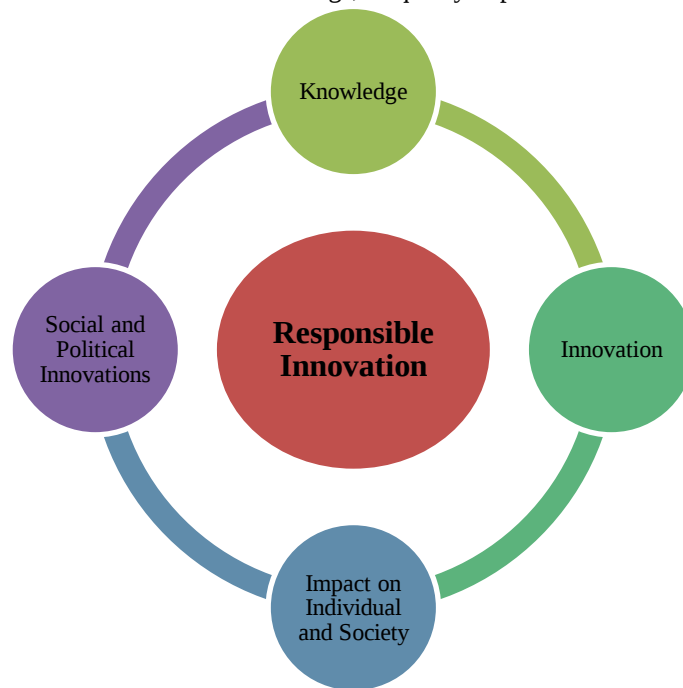


Fig.2 Responsible Innovation. Based On: Self-created)

It is crucial to note that design thinking is mainly used to solve specific and refined problems without much attention to the grand challenges like climate change, resource scarcity, and social justice (Sætra, 2023). These are multifaceted and multiple issues that cannot be solved by simple solutions or fixing a single aspect, but need both systemic and multiple or multi-hazard approaches. However, to fill this gap and increase the applicability of design thinking skills to tackle global challenges, it is crucial to incorporate the principles of responsible innovation. Responsible innovation promotes the moral principles, efficiency, and equality in the innovation process with the intention of positively influencing technological developments and business experiences (Kuźniarska et al., 2023). Applying RISP into the DT approach to sustainability enables organizations go beyond just considering the economic bottom line impacts to embrace the triple bottom line impacts. When RI principles are incorporated into the process of implementing the design thinking concept, the latter may become a more comprehensive approach providing for the creation of sustainable solutions to the problems of the 21st century (Baldassarre et al., 2024). This evolution does not only refine the theoretical paradigm of design thinking but also expands the pragmatic objective of design thinking to identify and enable positive change towards a better society.

New Conceptual Framework of Responsible Design Thinking

The concept of responsible design thinking as proposed below combines principles of RI with the basics of design thinking. It propounds the need to move toward more wholesome schemes rather than focusing solely on the accumulation of profits at the expense of people and planet. At the core of this framework is ethics-specifically, ethical design principles, systems thinking, and

participatory decision making. Responsible design thinking, which integrates professionalism with values like openness, collective participation, and considering systemic consequences at different stages, allows addressing global challenges like climate change, resource depletion, and social scarcity (Apostu & Gigauri, 2023a).

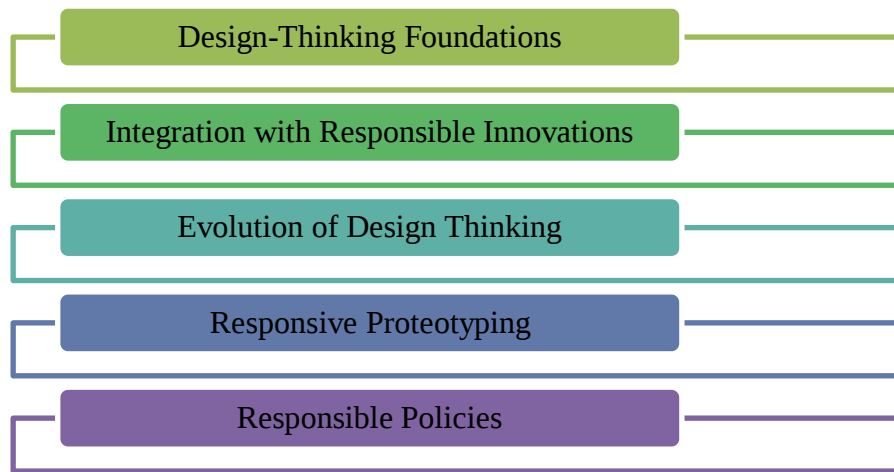


Fig.3 Conceptual Framework. Based On: Self-created

Design Thinking

Design thinking is an innovation process that seeks to identify human needs and desire and then come up with solutions that meets those needs. Design thinking is not just about introducing new products; it is a problem-solving approach that attaches emphasis on human needs. Close your eyes and think about yourself as a private detective who is trying to uncover secret ambition and struggle of an ordinary person. Design thinking therefore prepares with the right tools towards this mission. The process of research is a voyage into the life of your audience where they pay keen attention to details, conduct interviews with the audience, and even experience a feeling of empathy to identify their major concerns. With this in mind, they shift from focused analytic mode to creative mode of operation. One example is to rethink brainstorming and prototyping workshops as lively spaces for creating solutions that are immediately applicable to addressing the problems outlined above (Apostu & Gigauri, 2023b). In other words, its endless cycle guarantees that the result achieved is not only scientifically perfect but is also comprehensible, meaningful, and desirable for those for whom it is designed. Design thinking also benefits not only business companies that want to design innovative products for consumers but also other social organizations that face problems. It provides the people and the teams with the tools that will enables them to create substantive work that will make a difference in the world. In addition, design thinking encourages teamwork, causes minimal compartmentalization between departments or within disciplines. They produce solutions that are well rounded as all sorts of ideas are available to bear on a certain problem.

The Evolution of Design Thinking

The practice of design thinking has existed for quite some time now but in the early days the design thinking was all about creating products that people would want to use. It was all about making good products that I wanted to see on the shelves and that people wanted to buy. Yet, as time passed, people started to discover that design thinking is not only capable of contributing to the generation of revenues but it has much broader potential. It could be utilized to enhance the world for everyone (Baldassarre et al., 2024). Although design thinking is currently at the forefront of today's innovation strategy, it has evolved in quite an interesting way. It wasn't as grandiose as addressing world problems; the purpose at the beginning was much more mundane, namely user satisfaction and the product's demand. While this user-centric approach was an effective strategy, the concept was not limited to its commercial applications, although it most assuredly had those. Designers and innovators then realized that the systematic approach of design thinking could indeed be employed for service to mankind. This realization made a paradigm shift, which was instrumental in breaking new ground. Standard design thinking, initially, focused on user satisfaction and profitability but shifted its orientation to signify a more noble, far-reaching purpose. It was not just about developing new tech products that consumers needed; it was about giving consumers what they wanted and needed, matters that would really make a difference (Ozili, 2023).

Just like the public consciousness was raised toward global matters, so was the practice of design thinking. Introducing IS: Sustainability concerns, social inequalities and such global issues like climate change challenge the use of traditional approaches. Design thinking of aiming at understanding the end-users' needs, using prototypes, and testing become a good approach to solving such problems. This meant that designers and change makers were not only able to comprehend the system and interact with different stakeholders and also be able to prototype solutions in real contexts. It is, however, important to note that this shift towards a more sociotechnical perspective was not without its challenges. Classic design thinking frameworks had a focus on the way things

looked and worked, while the impact on the environment and social frameworks was not given the due attention (Patrício, et al. 2021). Sustainability and social responsibility had become important elements that have to be incorporated. There were also new frameworks arising that included the life cycle assessment to measure the effects to the environment and stakeholder considerations to meet needs and mitigate adverse effects as part of the solutions (Apostu & Gigauri, 2023c). Today, design thinking is in a position where it owns a great potential for making a positive impact. It enables people or groups be it commercial or non-profit, striving for change on behalf of themselves or others to co-create purposeful change that truly lasts.

The Need for Responsible Design Thinking

The growing global crises such as climate change, poverty, and inequality, designers and companies have begun to contemplate how they can employ design thinking for the benefit of the world (Subramaniam et al., 2023). This is commonly referred to as responsible design thinking. This includes contemplating as to how people and planet might benefit from what we create, rather than just focusing on revenues. This new emerging trend in business and design is known as responsible design thinking, which is where the goal of design moves from just being functional and aesthetic to also being socially and environmentally sustainable. This approach goes beyond profits and aims to create solutions that are the best for the majority and the environment. Design thinking orientation requires integration of different approaches while designing solutions (Patrício et al., 2021). This means that designers are not only supposed to look at users' requirements and how a particular product can be developed or implemented, but also to think or calculate environmental ramifications of the objects they design. Such aspects therefore become thoroughly evaluated using life cycle assessments as core tools in determining materials and production processes' impacts. This allows solutions to have drastic negative impacts on the further depletion of resources, pollutions, and wastage (Baldassarre et al., 2024).

In the same way, responsible design thinking promotes both fairness and equality. It is important to have stakeholders involved and consulted throughout the design process to capture the unique views of all the clients. This could reach to partnering with communities most impacted by a particular issue, leveraging input from environmental scientists, or engaging with social justice activists (Sharma et al., 2023). The purpose of responsible design thinking is to capture all the mentioned facets of design thinking while also addressing needs of a more diverse group of people and not just the privileged ones. Design Responsibility is about using design power and being a positive leverage for designers and businesses.

Problematization Method

This theory entails posing questions about a specific domain with a view of developing problematization so as to understand the gaps that exist in the field. Therefore, in this case, problematization was employed to problematize the approach to design thinking or its concentration on user-centric innovation (Leal Filho et al., 2023).

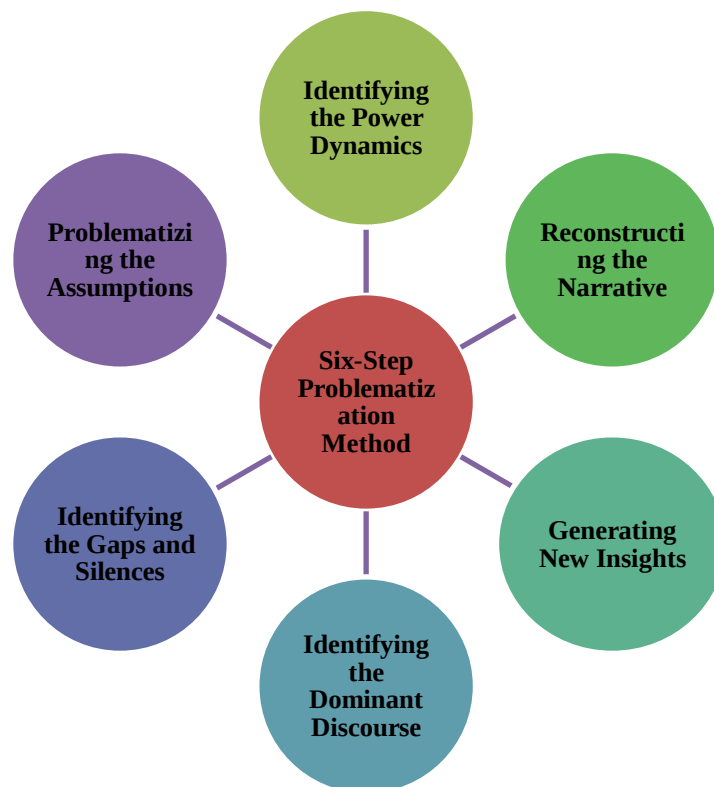


Fig.4 Problematization Method. Based On: Self-created

The Six-Step Problematicization Method

The six-step problematicization method used in this study involves the following steps:

Identifying the Dominant Discourse

The first one is to establish what it can call ‘the discourse’ or more precisely the ‘dominant discourse’ in the context of design thinking. This normally entails a consideration of everything that has been previously written on the subject to get a sense of the existing paradigms.

Identifying the Gaps and Silences

The second move is to recognize wounds and absences within the mainstream narratives. Recognizing absence advocacy entails a process of reviewing the literature to look for the holes where certain concerns are given limited or no attention at all. Such gaps may present as overlooked angles, missing views or sides within a specific area of research or discussion topic (Mrzygłocka-Chojnacka & Ryńca, 2023). They identified the following deficiencies That’s where researchers can discover such deficiencies and the lack of knowledge, unexamined assumptions, or incomplete understanding of developing trends.

Problematicizing the Assumptions

The third step is to bring into question the presuppositions that the business leaders and the business schools hold Problematicizing refers to questioning of the presuppositions that the business leaders and the business schools hold as valid and unproblematic. This is a crucial step that ensures that the existing knowledge in a given discipline is critically analyzed based on basic premises, theories or approaches (Achim et al., 2023). This process enables critical reasoning and challenges the thinking and doing processes to enhance understanding of the assumed principles, thus promoting comprehensiveness of difficult challenges in research and practice.

Identifying the Power Dynamics

The fourth important step is learning the power relations that exist in the discursive formation. This entails examining how power relations operate and how power shapes processes of knowing and knowledge.

Reconstructing the Narrative

The fourth and fifth steps involve reconstructing the narrative and providing other interpretations as well as an opposing account.

Generating New Insights

The last analysis step is to come up with new ideas and to find new research directions. This involves examining the results obtained towards the preceding steps to determine areas of focus that could be explored further.

In several ways, the problematicization method helps pinpoint gaps and develop new perspectives on them (Mohamad Taghvaei et al., 2023). First, it enables an evaluation of the prevailing hegemony and the detection of the gaps that deserve attention. Secondly, it can be used to raise questions and come up with the different angles to approach a material. Last but not least, it enables the definition of the power relations and coming up with the revised story, which paves the way for further investigation.

Challenging the Innovation Management Literature on Design Thinking (Problematicization Steps)

Problematicization Step 1: Identifying the Dominant Discourse

Innovation management has evolved that many scholars and practitioners consider design thinking as a prominent approach to support business and societal advancement. Nevertheless, a review of literature shows that there is a prevailing paradigm that seeks to enhance the usability of items through innovation at the expense of sustainability as espoused (Earle and Leyva, 2021). This feature is evident in the works of leading design thinkers who have underscored the role of empathy and understanding of users.

Problematicization Step 2: Uncovering the Power Dynamics

On reflection, it is possible to identify that the mainstream discourse and practice of design thinking is produced by the relations of power that privilege corporate and affluent customers. For example, the majority of the design thinking aims to develop new products and solutions to satisfy the wealthiest population without considering low-income groups and environmental impact. This power dynamic is compounded by the fact that the design thinking profession has remained largely homogeneous, composed of predominantly white, male, and economically privileged practitioners (Sovacool et al., 2021).

Problematicization Step 3: Identifying the Gaps and Tensions

The study of the innovation management literature on design thinking highlights some gaps as well as tensions that should be resolved. Another significant issue is that sustainability and social responsibility have not been integrated into design thinking consideration. The one main critique that has been made about design thinking today is that it is founded on human-centered innovation but does not consider environmental and social consequences of invention. This is seen most clearly in the omission of such topics as sustainable design, environmental ethos and social concerns in the design thinking literature (Patrício et al., 2021). One more tension which can be identified is the conflict between commercial interests and sustainability. Unfortunately, design

thinking is often used in pursuit of achieving the primary business objective of the maximum sales and therefore the maximal market share. This tension is compounded by the fact that design thinking is all about generation of new business opportunities and not about solving social and environmental issues.

Thus, confronting the main storytelling of the design thinking concept in the innovation management literature, it is possible to shift the focus from existing narratives and reveal power relations for further analysis of gaps and tensions to be filled (Ogryzek, 2023). This critical analysis paves the way for the creation of a new framework that will cover the needs of implementing sustainability and social responsibility to the design thinking process (Khan et al., 2023).

Conclusion

In conclusion, the critical literature analysis and the framework for RD thinking, it is crucial to emphasize the need to reconsider the paradigms of innovation for sustainability. Although the concept of design thinking was initially developed for the pursuit of competitive advantage and economic returns, it has to realign itself for the consideration of social benefit and sustainability. Just as in the case of previous meta-syntheses, current analyses depict a worrying state of affairs, in which economic indicators dominate over equity, justice, and the capacity and fragility of ecosystems. Building upon principles of responsible innovation, the emerging framework of responsible design thinking addresses the need for a more comprehensive approach. He champions openness, stakeholders' engagement, and sustainability in solving the problems that are difficult to solve such as climate change and the depletion of resources. This research agenda identifies strategies by which these principles can be applied in different organizational contexts, enhance collaboration between disciplines and offer training solutions. Lastly, adopting responsible design thinking presents an innovative chance that may revolutionize the innovation process with an aim of attaining the objectives of sustainable development. These dimensions do not merely reinforce the ethical quality of design practice but also enable the participants to become agents of change for a positive future.

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