DESIGNING THE DESIGN. APPLICATION OF DESIGN THINKING TO SOCIAL INNOVATION PLANNING

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Purpose: This narrative review shows the scope of the application of design thinking in planning social innovations based on the goals of implementing design thinking identified in the literature.

Design/methodology/approach: This paper is a classic literature review, with particular emphasis on articles from recent years presenting specific practices in the application of design thinking.

Research limitations/implications: This study is a qualitative review and cannot constitute the basis for a quantitative assessment of the effectiveness or convenience of using the discussed approach in social innovation. Moreover, this is not a systematic review. Therefore, it is not free from possible areas that have not been fully exposed.

Practical implications: This study can help build a strategy for using design thinking to plan social innovations by entities that are interested in them. In particular, it allows you to identify the goals of using design thinking that are consistent with the goals of a given organization. However, this approach has not yet been used.

Social implications: This paper identifies the goals of using design thinking based on the analysis of current practices; therefore, it contributes to a better understanding of the organization's operating strategy, which is particularly useful in promoting and planning social innovations. It can accelerate social innovation where it can be the subject of this approach.

Originality/value: The presented paper is an original review of scientific work. It is particularly addressed to management theorists and practitioners, who may find it helpful in identifying new areas in which they can apply the design thinking approach.

The term 'desing thinking' is generally understood as an approach to problem-solving or a specific problem-solving process based on this approach.

Keywords: design thinking, social innovation, social development, co-design.

Category: narrative review.

1. Introduction

In an increasingly intricate and interconnected global context, society grapples with multifaceted predicaments that necessitate inventive solutions. These predicaments, which span from socioeconomic disparities to environmental apprehensions, call for a fundamental change in the approach to problem-solving. Here enters design thinking, a methodological process that prioritizes empathy, collaboration, and experimentation, with a focus on human needs. Initially grounded in the realm of product and service design, its scope has expanded beyond conventional boundaries, revealing its profound potential for stimulating social innovations. As communities worldwide strive for sustainable and inclusive resolutions to urgent matters, the integration of design thinking into social innovation initiatives has become increasingly relevant. This article delves into the diverse objectives of design thinking applications in social innovations, illustrating its transformative ability to reshape communities, foster inclusivity, and drive impactful change. Through an exploration of various case studies and interdisciplinary perspectives, author emphasize the importance of design thinking as a pivotal tool for contemporary social innovation endeavors.

2. Concept of design thinking

The broad definition of design thinking and its generally accepted use of the term refers to a problem-solving approach that emphasizes empathy, collaboration, and iteration to generate innovative solutions based on human needs.

Design thinking may, however, be defined using a more process-oriented definition as a systematic, human-centered approach to solving complex problems, encompassing stages such as empathizing with users, defining problem statements, ideating solutions, prototyping, and testing, and being an innovation methodology that prioritizes the user's perspective in all phases of the problem-solving process (Lee, 2017).

It is yet a flexible process during which creators designing a technology usually follow an exact set of five continuous stages (empathize, define, ideate, prototype, and test), returning to earlier stages iteratively (even indefinitely in any given technology development project) (Landers, Marin, 2021).
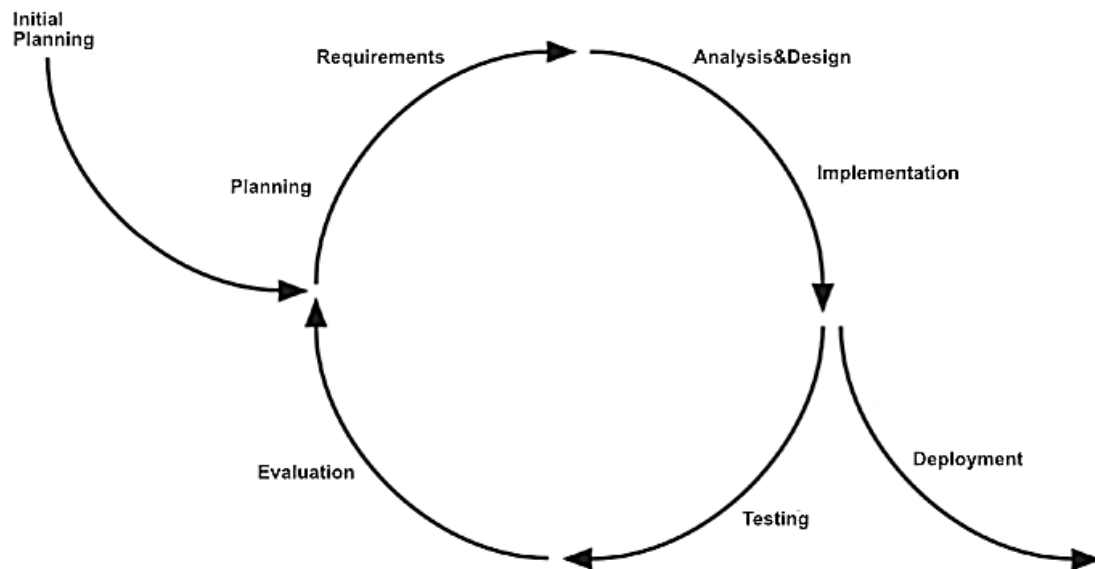
Figure 1. A depiction of the iterative design process.

Source: own study.

In another approach, the definition emphasizes the importance of problem solving, which combines the intuition and methods of designers with the goal of aligning the needs of individuals with what is technologically feasible and can generate value in the market (Micheli et al., 2018). It represents a formal creative problem-solving technique that fosters innovation (Dell'Era et al., 2020). Design thinking has been described as a sequential process involving steps such as empathy, definition, ideation, prototyping, and testing, providing a structural framework for identifying and approaching problems (Greenwood et al., 2019).

One crucial element of design thinking lies in its prioritization of empathy and comprehension concerning the requirements and encounters of users. By adopting the user perspective, designers can acquire valuable understandings and develop resolutions that genuinely cater to their needs (Dunne, Martin, 2006; Glen et al., 2014).
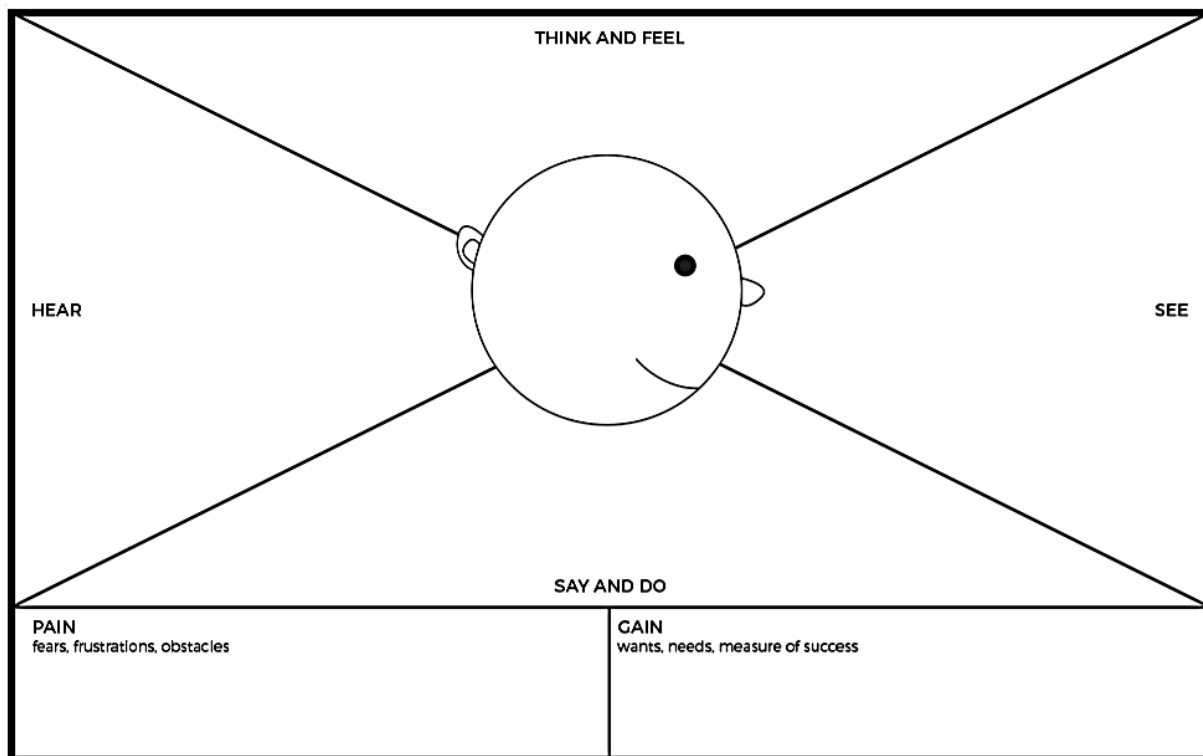
Figure 2. Example of empathy map used in design thinking process.
Source: own study.

Design thinking is based on a user-oriented methodology that prioritizes understanding, collaboration, and trial and error. Its essence lies in grasping the wants and needs of those it seeks to serve. Instead of starting with detailed technical criteria or business needs, the process dives deep into understanding the user's journey and experience.

Therefore, this approach must be cyclic by nature, as the proposed solutions undergo creation, assessment, and fine-tuning based on actual user feedback. The repetitive process promotes ongoing enhancement, ensuring that the final result meets user demands and is both efficient and intuitive. This iterative process allows designers to continuously learn and adapt their designs, leading to more effective and innovative solutions (Micheli et al., 2018). The design thinking iteration process is driven by the goal of understanding user needs and creating solutions that meet those needs (Sandars, Goh, 2020).

Teamwork is a defining characteristic of design thinking, with diverse groups comprising creative designers, technical experts, business strategists, and users themselves coming together to exchange knowledge and perspectives. This combination of expertise and experience can stimulate originality, resulting in many ideas and comprehensive insights into challenges and their potential resolutions.

The significance of teamwork in design thinking stems from several factors. First, it facilitates the sharing of insights and perspectives among team members, thereby fostering a comprehensive comprehension of the problem and users' needs (Stempfle, Badke-Schaub, 2002). By collaborating, team members can harness their collective knowledge and

experiences to generate a broader spectrum of ideas and potential solutions (Hölzle, Rhinow, 2019). Furthermore, teamwork nurtures creativity and cultivates a supportive atmosphere where individuals feel at ease expressing their ideas and taking risks (Hölzle, Rhinow, 2019).

In addition, the applicability of design thinking is vast and not constrained to a particular sector or profession. Originating in the realms of product and service creation, its tenets are versatile and suitable for tasks ranging from conceptualizing fresh business strategies to envisioning educational frameworks or shaping societal policies. The versatile nature of the method has led to its widespread adoption across diverse arenas, as entities see the merit in solutions that are both innovative and tailored to user needs in a dynamic, evolving landscape.

Empathizing is the foundational stage of the process. The design teams immerse themselves in the specific world of the end-users to deeply understand their perspectives, motivations, and challenges. This involves a rigorous process of data collection through methods such as interviews, observations, and surveys. By connecting with users on a personal level, innovators can gain invaluable insights into the real-world nuances of the problems they solve with the new technology. This immersion goes beyond just quantitative data; it is about interpreting emotional responses, understanding cultural contexts, and unveiling unmet needs. This stage allows designers to gather customer insights such as behavior feelings and experiences (Rosario, 2023).

Upon assimilating the insights from the empathize stage, the next step is to articulate and crystallize them into a clear and actionable problem statement. This involves formally stating the end-user's needs, challenges, and specific problems that the technology seeks to address. The clarity gained in this phase ensures that the design team has a laser-focused direction. It is not just about identifying the problem but also understanding its depth, breadth, and impact on the user. This stage especially refers to understanding the scope of information that has yet to be gathered, including a problem statement (Somerville et al., 2008).

With a well-defined problem statement in hand, the ideation phase takes center stage. This is where creativity and innovation flourish. Teams collaboratively generate a plethora of potential solutions, often using techniques such as brainstorming, mind-mapping, and even role-playing (Li, Zhan, 2022). The goal is to think wide ('out-of-the-box'). However, this stage may be described as more about quantity over quality as it is about generating as many ideas as possible (Gonçalves, 2021).

As the design thinking process progresses, the abstract ideas from the ideation phase begin to take a material form in the prototype stage. The focus is on creating possibly low-cost, simplified versions of the solutions to represent the potential products or features. Prototyping, similar to design thinking, is iterative. The scope of possible prototypes is generally indefinite because it is the set of possible solutions that may be designed. Typically, this process is associated with the creation of virtual or physical models that can range from sketches, 3D models, and digital mock-ups. The prototypes act as tools for visualization and further

refinement. They are quick and inexpensive, allowing teams to represent multiple solutions and test their viability (Micheli et al., 2019).

Prototypes are created when the end user's needs are already defined and the ideas to meet them are known. For this reason, this phase mainly serves to present forms of solving the problem that can later be tested to select, improve, and implement the best solution.

Testing may be seen as a pivotal phase, where rubber meets the road, as the developed prototypes are introduced to end-users to gage their reactions and feedback and understand the efficacy of the possible solutions in addressing the defined problems. It should be emphasized that testing is not just about validation but also about learning and iterating. Observing how users interact with prototypes can unveil unforeseen challenges or opportunities. In the simplest terms, however, this is the phase in which users test the prototypes (Cchallmo, Williams, Lang, 2018).

The specificity, scope, and even the order and complexity of the entire process and its stages can be freely changed as long as the whole thing deeply implements the three general factors of effectiveness of the discussed approach: consumer empathy, visualization with rapid prototyping, and collaborative nature (Olsen, 2015).

A phase that may belong to the structure of the overall approach is implementation, because this may be handled by teams other than those that have been involved in the project so far.
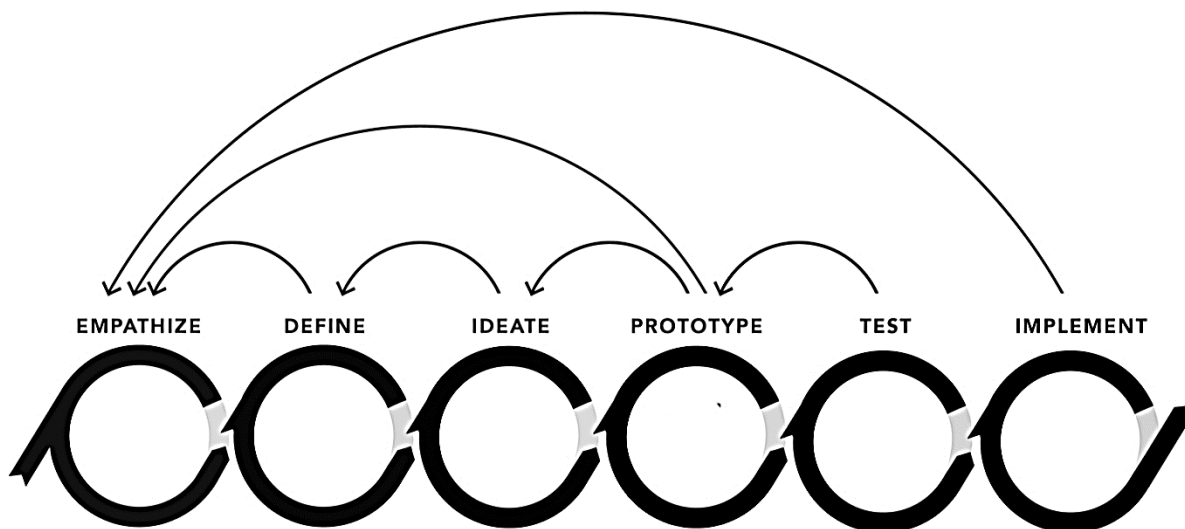

Figure 3. Stages of design thinking.
Source: own study.

At the same time, it should be emphasized that individual phases have certain common features and may specifically interpenetrate. Conveniently, this can be described using an example of prototyping. Prototyping is not only a stand-alone phase, but when necessary, it also becomes an element of other phases. The transition from early prototyping to testing can be relatively complex, depending on the depth of the idealization of the collected ideas. The first prototype to be created appears to be one that will allow for a preliminary assessment of the prospects related to individual ideas through the prism of their materialization.

Such material should be understandable, legible, and perceptible to designers. In turn, the final prototypes should be functional enough for the end users to test them. For instance, cardboard prototypes may be considered an ideation phase activity, whereas functional prototypes may be considered an implementation phase activity (Oliveira Zancul, Fleury, 2021).

The aforementioned depiction demonstrates the evident benefits of design thinking, which encompass its human-centric nature, promotion of creativity and innovation, use as an iterative problem-solving tool with greater depth, facilitation of collaboration and teamwork, adaptability in various industries and contexts, comprehensive resolution of complex issues, early identification and rectification of errors, emphasis on empathy and comprehension of user needs, facilitation of a superior understanding of problems, and ultimately leading to more sustainable and effective solutions.

The broadest description of the advantages of this approach can be made in the sphere of participatory design (co-design), i.e., design in which end users participate.

Co-design is an evolving approach to design practices rooted in participatory design traditions and user-centered methodologies. It has gained prominence in scholarly literature and has been widely adopted in diverse practices. This approach is lauded for its ability to enhance the effectiveness of general processes, ensuring a harmonious match between users' needs and the features of products or services. Scholars advocate the benefits of shifting from traditional top-down design methods to a co-design approach. Through a comprehensive review of significant contributions in the literature, this study seeks to highlight prospective advancements in the field, drawing from the evolution of the co-design approach over the years. This paper suggests a constructivist approach anchored in cultural psychology theory as a promising advancement for the discipline (Antonini, 2021).
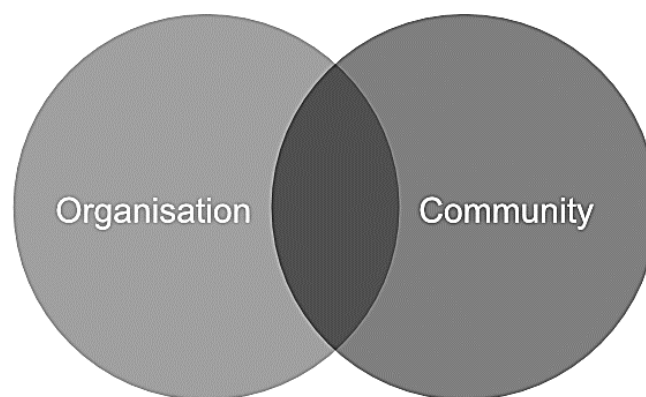

Figure 4. A democratization of the design process.
Source: own study.

In this context, design thinking seems to be, above all, a simple, productive version of co-design, in which the designer empathises with the end user, who is directly involved only in the testing phase, while the iterative nature of the whole allows for a very broad consideration of the opinion and experience of end users.

However, these are not all aspects of the approach described. Design thinking, like any other approach, has the following drawbacks and limitations:

- the time- and resource-consuming nature of the iterative process (Othman, Bamasood, 2021);
- possible "analysis paralysis" during ideation and conflicts at other stages, etc. (Haines, 2014);
- requires a shift in thinking and relies heavily on user feedback, which is not always available, and can introduce the risk of overemphasizing user needs or creative outputs (Pinkow, 2023);
- possible lack of a clear structure or framework, which may make it difficult for some individuals or organizations to implement and consistently follow (Liedtka, 2014; Randhawa et al., 2021);
- relying on empathy and understanding of users' needs through what this subjective nature can introduce biases and assumptions that can affect the design process and outcomes (Liedtka, 2014; Ramdani et al., 2021);
- it is often applied to small teams or projects, which can limit its scalability to larger organizations or complex systems (Randhawa et al., 2021).

It may also not be suitable for all problems or industries. The issue of what can and cannot be solved using this approach can be described as extremely important. In recent years, the increase in its popularity has led to the use of models based on this approach in new areas of management. For example, it is not clear how helpful and effective these methods are, for example, in strategic management (Sandro, 2021). It can also be seen as too open-ended or lacking structure for those who have no previous experience with this approach (Clatworthy, 2011).

A critical shortage of empirical evidence of the effectiveness of design thinking seems to be a significant weakness of this approach (Tantiyaswasdikul, 2019).

3. Social innovation process

In management, innovation has traditionally been defined as a unit of technological change, and most definitions include an enterprise perspective (Cumming, 1998). Thus, in its most primitive approach, innovation is a change related in some way to technology, or preferably the narrowest change, understood individually, as the smallest independent whole. From this perspective, not only the evolution of a given organization but also the development of all humanity appears as an uninterrupted chain of successive innovations (Poirier et al., 2017).

To fully understand the concept of innovation, it is necessary to emphasize that innovation is not only an individual activity but also a process. Understanding the process essence of innovation is crucial because it is a fundamental requirement for economic growth and maintaining competitiveness in today's globalized environment. The innovation process refers to the sequence or progression of activities that encompass innovation. It is not just an isolated act but involves multiple stages or processes. For an innovation to be genuinely effective, each of these stages or partial processes must be successfully executed. This procedure sets the foundation for subsequent research, measurement, and management of innovation outcomes (Žižlavský, 2013).

The main resource necessary to create innovations is innovative thinking. Innovative thinking is the cognitive process that propels innovation. It involves a set of cognitive competencies that, when combined, lead to novel and improved outcomes. These competencies, as deduced from the synthesis of various definitions, encompass identifying a need or problem, coming up with new or modified ideas, developing an outcome aligned with these fresh ideas, putting into action a novel or enhanced outcome, and embracing this new or refined result that brings added value (Morad, Ragonis, Barak, 2021).

In an environment where innovations take place, regardless of whether it is an organization or society, certain attitudes and skills in the cognitive aspect are necessary. Thus, it can be argued that innovation always has a psychosocial nature and requires favorable conditions for development.

These conditions are met in an environment that is ready for innovation. These conditions are met in the innovation ecosystem, which is one of the most important concepts regarding innovation, both from the perspective of management and other social sciences.

Traditionally, attempts to define this concept have focused on the complementarity and cooperation of the participants of such an ecosystem, i.e., individual actors of interrelated processes. Over time, the focus also began to be on competitiveness and competitive impacts, which also drive innovation. In this context, an innovation ecosystem refers to a dynamic network of participants, actions, tools, and organizational structures and relationships, encompassing both complementary and alternative interactions that play a crucial role in the innovative success of an individual or group of individuals (Granstrand, Holgersson, 2020).

In the realm of technological advancement, innovation ecosystems play a pivotal role in promoting proficiency in intricate products and systems. Deliberate efforts to establish dynamic innovation ecosystems empower participants to harness the dual forces of competition and cooperation, thus expediting the process of catching up. Consequently, the profound significance of innovation ecosystems in propelling technological advancement and fostering economic growth becomes evident. (Yang et al., 2022).

Innovation is characterized by the fact that by its nature, it brings a specific (although not always predictable) result, and that is the way it is usually examined. Studies using this perspective in research on innovations are the most numerous and tend to focus on the impact

of new technology, which is seen as the main driver for innovations (Wittel et al., 2016). Thus, innovations, in today's most common understanding, can be seen as fuels of growth and development, generators of new technologies that they themselves also use. This leads to a view in which innovations are not only desirable but also necessary.

From the standpoint of an enterprise, innovations can be perceived as primarily a requirement from the standpoint of society. This is attributable to the reality that, similar to an organization, society also necessitates resolutions to subsequent challenges, encompassing those that have persisted in the past as well as those that arise during its progression.

Society necessitates innovative solutions to many problems because innovation has the capacity to engender enhanced healthcare, tackle societal obstacles, and instigate social transformation. For instance, the digital revolution can revolutionize healthcare and improve patient outcomes (Toole, 2013). By harnessing external sources of innovation, such as open innovation practices, organizations can access a broader reservoir of knowledge and expertise to find solutions to complex problems (West, Bogers, 2013).

Social innovation, in particular, plays a vital role in accentuating the shortcomings of conventional solutions and established paradigms across all sectors of society (Lee et al., 2019). It functionally operates as a catalyst for change, fulfilling social needs, and resolving social predicaments (Lee et al., 2019). Responsible research and innovation (RRI) also underscores the significance of contemplating the ramifications of innovation on society and identifying solutions to emergent societal problems (Jiya, 2019).

Innovations are necessary to optimally design and use warehouse space (Zemke, Stöwer, Borgmeier, 2005) or information resources of an organization (Gakidou, Hogan, Lopez, 2004). They are also necessary to improve medical care (Azuara-Blanco et al., 2022), combat poverty or hunger in the world (von Braun, 2010), and ensure an appropriate level of environmental protection or food safety (Barrientos-Fuentes, Berg, 2013.

Social innovation can be viewed essentially from two perspectives. While sociology looks at social change from a macro, societal level, management approaches it from a more micro, organizational perspective.

From a sociological perspective, these are changes occurring in society, subject to the influence of new technologies, capable of specific forms of spontaneous organization. In such a society, conditions for innovation are created, thanks to which it changes itself, is ready to accept new solutions to problems, and evolves in accordance with the direction of its development. Social innovation is also a process in which specific actors are involved - institutions, networks, social movements, and organizations themselves (Krlev, Mildenberger, Anheier, 2020).

From a management perspective, social innovation refers to novel strategies, concepts, ideas, and organizations that meet social needs and create new social relationships or collaborations. It emerges as a response to address societal issues, particularly in a context where traditional for-profit business models may not suffice. Social innovation is closely

associated with social entrepreneurship and focuses on the role of entrepreneurs, their networks, systems, and institutions. It often involves cross-sectoral partnerships and is seen as part of a broader "systems of innovation" approach. Essentially, social innovation aims to bring about positive change in society, emphasizing collaboration, adaptability, and a deep understanding of social issues (Phillips et al., 2015).

Moreover, as powerful entities within society, organizations can shape values behaviors and norms, playing a pivotal role in driving social changes by influencing the ways people live, work and interact with one another (Kullak et al., 2022). Their policies and practices often reflect larger societal values, but they can also challenge and transform these norms (Campbell, Baxter, 2019).

For instance, organizations can introduce progressive workplace policies that promote diversity and inclusion, which can then set standards for other organizations and influence broader societal attitudes (Soeters et al., 2021). Furthermore, by creating employment opportunities and contributing to economic growth, organizations can affect social mobility and the structure of communities (Aparicio et al., 2022). Corporate social responsibility initiatives can directly address societal issues, from education and healthcare to environmental sustainability (Purtell, Kang, 2022). As they innovate, they can lead the way in technological advancements that alter how society functions, although it is generally considered that current grand societal challenges require innovative solutions that go beyond technological innovations (Bayuo, Chaminade, Göransson, 2020).

In fact, social innovation usually occurs in constrained contexts and develops as a frugal answer to a social problem (Rizzo, Deserti, Komatsu, 2020).

The process of social innovation unfolds through five distinct stages (idea generation/mobilization, advocacy and screening, experimentation, commercialization diffusion and implementation) and spans micro-, meso-, and macro-institutional tiers. Furthermore, this process thrives on the collaborative involvement of various partners. It is not strictly linear, meaning that there is flexibility to revert to previous stages. In addition, its progress has been consistently assessed over time (Morais-da-Silva et al., 2022).

Commercialization, understood as introducing innovations to the market for profit generation, is a distinct stage from diffusion, which focuses on spreading innovations in society, often independently of commercial objectives. This distinction emphasizes that social innovations, in addition to market aspects, are crucial in spreading social impact and implementation.

The notion of social innovation is influenced by the concept of the Anthropocene, which emphasizes the necessity for transformative responses to challenges related to sustainability (Olsson et al., 2017). Social innovation plays a particularly significant role in adaptive processes because it enables systems to create and disseminate new and innovative ideas, thereby enhancing their resilience and capacity to adapt to external disturbances (Baker, Mehmood, 2013). In the realm of nonprofit profit, social innovation encompasses the generation and

implementation of novel ideas for social services (Weerawardena, Mort, 2012). In summary, social innovation is a pivotal concept in the pursuit of addressing sustainability challenges and catalyzing transformative change within society.

In recent years, there has been a strong tendency to study social innovations in the context of systems analysis, with the Social Innovation Systems concept being a crucial term. The concept refers to a network of actors, organizations, institutions, and processes that collaborate to identify and address societal challenges and create positive social change through innovative solutions. This concept recognizes that complex social problems often require multi-stakeholder collaboration and novel approaches to finding solutions. Such systems may be seen as an outcome of ongoing debates on material, technology, knowledge, and economic rationale in innovation studies (Shah, 2022).

4. Practices of applying design thinking to social innovation and its goals

Design thinking serves as one of the mechanisms that enable and promote social innovations because it can foster new approaches to innovation as well as complex and persistent social problems through a framework of co-creation, systemic thinking, abductive reasoning, and iteration (Tantiyaswasdikul, 2019).

Furthermore, the application of design thinking can be observed within the framework of citizen science for social innovation (Goi, Tan, 2021). Through the incorporation of citizens into the process of innovation, design thinking possesses the capability to use collective intelligence and bestow empowerment upon communities to effectively address social issues (Goi, Tan, 2021). This participatory approach actively promotes inclusiveness and guarantees that solutions are customized to specifically cater to the requirements and aspirations of the community.

Identifying the goals for which design thinking is used is complex because there are many actors in the social innovation system who can use or promote its use.

Social innovation can be designed, supported, and coordinated from above by public authorities, but it cannot be fully controlled (Galego et al., 2022). Examples of social innovations may be various social institutions that respond to specific needs of society, both those that have a top-down element related to the activities of the state or local authorities (like participatory budgeting processes) (Godwin, 2018), and those created completely bottom-up (local food-sharing initiatives) (Sánchez-Vergara, Ginieis, Papaoikonomou, 2021).

However, the most stable generators of lasting social innovations and their frequent manifestations or effects are organizations. These include microfinance institutions (Milana, Ashta, 2020), community land trusts (Moore, McKee, 2014), time banks (Del Moral, Pais, 2015), housing communities (Dang, Seemann, 2021), and many others.

Therefore, it seems reasonable to assume that in the entire system, the actors-planning the process are overwhelmingly organizations.

The first goal of using design thinking in planning social innovations is to solve specific problems. In the literature, two goals can be identified for the use of design thinking to directly solve a problem, which could take the form of social innovation. The first is solving problems by a single action or a set of ad hoc actions related to project management. An example is the choice of food delivery method (Hye-Young, 2022). The second method is to implement a long-term plan using design thinking. This practice is more related to strategic management and covers the cycles of many projects, sometimes within a time horizon that is difficult to specify. An example is the use of design thinking to encourage people to get involved in sports (Joachim, Schulenkorf, Schlenker, 2022).

It should be emphasized that design thinking faces the limitation that it is primarily suitable for a specific target group. If problems affecting society as a whole can be identified, the strength of design thinking is undoubtedly empathizing at the first stage and testing at the second stage. Hence, design thinking is most often used in relation to specific social groups or communities and their problems.

The range of problems that can be solved through design thinking is very broad and does not face any fundamental limitations. The literature shows that examples of the application of this methodology include: eliminating food deserts (Fernhaber et al., 2019), supporting mental health (Champ, 2018), promoting cultural understanding (Hantsiuk et al., 2021), improving the delivery of social services, including health care, education, and community development (Brown, Wyatt, 2010), generating solutions to environmental challenges by promoting sustainable practices and developing environmentally friendly solutions (Clark et al., 2020), alleviating poverty, and creating opportunities for economic empowerment (Kummitha, 2018). Design thinking can help develop inclusive business models, improve urban environments, and foster community engagement (Mintrom, Luetjens, 2016). Design thinking can also promote social justice and equity by addressing systemic inequities and biases (Shrier et al., 2020). Design thinking can be used in humanitarian and disaster response to develop innovative solutions to emergencies (Newman et al., 2015). Design thinking can support civic engagement, participatory decision-making, and democratic processes (Mintrom, Luetjens, 2016). Design thinking is used, among other things, to address the problems of people at risk of social exclusion, particularly the elderly (Jussli, Gewald, 2021).

In summary, design thinking can solve several social problems in different fields. Its human-centered and iterative approach allows the development of innovative solutions that are tailored to users' needs and aspirations while promoting social impact and positive change.

A distinctive area of application of design thinking in social innovation is shaping the market position of specific players. Social innovations related to this direction of application are, in particular, globalization technologization, social convergence, and shaping mass

customer loyalty. This area of application is characteristic of global corporations, especially technological ones.

Design thinking has been widely adopted by several companies as a problem-solving approach that emphasizes empathy, collaboration, and iterative prototyping. Companies such as Apple and Google have embraced design thinking to create innovative and user-centered products (Liedtka, 2014). These companies prioritize user experience and apply design principles throughout their product development processes. IBM is another company that has recognized the value of design thinking and has integrated it into its organizational culture for innovation and problem-solving (Elsbach, Stigliani, 2018). IBM's design thinking approach involves understanding user needs, generating ideas, and rapidly prototyping solutions. IDEO, a renowned design consultancy, and Airbnb, a platform for booking accommodations, have built their entire business models around design thinking principles. IDEO uses design thinking to drive innovation and create human-centered solutions for clients (Dunne, Martin, 2006). Airbnb has applied design thinking to create a seamless and enjoyable user experience, which has contributed to its success in the hospitality industry.

The adoption of design thinking as a core philosophy is effective in fostering innovation, enhancing user experience, and driving business success. By prioritizing empathy, collaboration, and iterative problem-solving, companies can create products and services that meet the needs and desires of their target audience.

The next purpose of using design thinking in designing social innovations is to provide services that are key to society in the best possible way (Campbell, Stockman, Burns, 2020). There are certain services whose provision can be considered crucial to maintaining the quality of life of society. Their modification leads to social changes occurring directly because improving their quality and availability results in a direct benefit for the community. In this area, the literature describes particular applications in health care and education. Examples include the use of this approach in shaping the way services are provided by academic teachers (Eloranta et al., 2021) and medical doctors (Campbell, Stockman, Burns, 2020).

Another purpose for which design thinking can be used in social innovations is to consider activities aimed at overcoming resistance to a specific factor.

A study of the literature indicates that the fundamental application of design thinking in social innovations may be to overcome resistance to innovation in situations when it is really needed. An example of this is the resistance of traditional organizations to the use of cloud technologies. The identified case study proves that developing and delivering a product using this method allows one to overcome resistance to innovation (Levchenko, Taratukhin, 2021).

Design thinking can also overcome resistance to innovation in relation to individual people, for example, managers who use them, with a measurable effect for the entire sector and even the economy (Wang et al., 2023). It should be emphasized that design thinking can be used not only to address resistance to innovation but also to tame the fear of challenges in general (Mikelsone, Uvarova, Segers, 2022). It should be noted that many commercial products and

solutions are subordinated to services that are essential for society's level and quality of life. In this regard, particular attention should be paid to the applications of design thinking in medicine and biomedical engineering, which directly translate into the quality of these types of services (Oliveira, Zancul, Fleury, 2021).

A closely related area in which design thinking works is the adaptation of society to innovation. In this respect, we are talking about solutions that will make specific technological solutions, currently needed or even necessary, easier to adopt and accept.

Design thinking, which is rooted in everyday esthetics, drives social change planning by involving citizen designers and nurturing creativity. It emphasizes the importance of esthetics that naturally emerge from local contexts, ensuring an authentic connection between design and users. Understanding lived experiences is essential for crafting appealing and functional renewable energy solutions. Moreover, design thinking complements governance efforts, aligning projects with local culture and preferences, ultimately fostering sustainability. In summary, design thinking empowers citizen designers, enhances esthetics, and promotes sustainable social change (Törnroth, Nilsson, Luciani, 2022). Another area may be interior esthetics (Rashdan, Ashour, 2022).

Design thinking is also commonly used to overcome cultural resistance to innovation in healthcare (Andersson et al., 2023).

The next group of applications of design thinking in planning social innovations are activities aimed at changing lifestyles. It should be emphasized that environmental and social conditions occurring within the limits of specific technological solutions have an undoubted impact on the lifestyle of people and communities. However, there are numerous areas in which planned social innovation involves lifestyle modification. This applies particularly to healthcare. This concept works well in presenting patients with solutions regarding both the implementation of a healthy lifestyle and greater involvement in treatment (Fleury et al., 2022).

Another group of applications of design thinking is the shaping of specific social resources, especially human resources. In this field, the key area of application of design thinking is education. The development of entrepreneurship resources, which may then influence the entire national economy and provide generations of people with specific, active attitudes, may serve as an example (Nguyên et al., 2019).

Another task that design thinking fulfills in shaping social innovations is social participation. Design thinking is, by definition, a process that requires social participation. The more widespread it is, the deeper the participation (Yoon, Kang, 2021). However, it should be emphasized that the literature shows that there are more ways in which design thinking engages society (Qaed, 2020). Design thinking shapes people's perceptions that they live in harmony with technologies that are better tailored to their needs. Thus, they have a chance for deeper participation. This example applies particularly to shaping smart technology landscapes, especially smart cities (Qaed, 2020). Design thinking is suitable for engaging the community in various participatory processes in which it decides on its shape, environment, and future (Qaed, 2020).

5. Discussion and Conclusions

Design thinking, while lauded for its innovation potential in various spheres, notably in management and design, encounters significant criticism, particularly in its practical application and integration in diverse fields. This methodology, often seen as a panacea for creativity and innovation in management, paradoxically faces neglect and underutilization in the very domain it originates from – design. Such a dichotomy suggests a misalignment or misunderstanding of its core principles and potential in different contexts.

Further complicating its application, design thinking is rooted in a cognitivist tradition that emphasizes a separation between thought and action. This theoretical underpinning raises concerns about its real-world applicability and effectiveness, especially in complex, dynamic environments where theoretical ideas must quickly translate into practical solutions. The cognitivist approach potentially underestimates the importance of tacit knowledge and the fluidity of thought-to-action processes that are crucial in design and innovation.

Evaluating the efficacy of design thinking also poses challenges, especially when considering the intangible or qualitative outcomes it aims to foster, such as creativity and critical thinking. Traditional metrics and assessment methods may not adequately capture the nuances and transformative aspects of these skills, leading to an undervaluation of the process's true impact. This gap in evaluation further obscures understanding of design thinking's effectiveness, particularly in educational and professional settings where these skills are increasingly crucial.

The debate extends to the need for discipline-specific instruments to measure critical thinking and creativity. The one-size-fits-all approach of design thinking might not cater effectively to the unique demands and problem-solving methodologies inherent in different fields. This necessitates a rethinking of how design thinking is taught, applied, and evaluated, taking into account the specificities of each discipline and the complex interplay between thinking and action in creative processes.

On the other hand, the complex and expansive panorama of global challenges requires an approach that prioritizes empathy, inclusiveness and adaptability. Within this context, design thinking emerges as a guiding light, providing a structured framework that is pliable and centers human requirements at the core of constructing solutions. As evidenced throughout this manuscript, the use of design thinking in the realm of social innovations is both extensive and profound, as it tackles various predicaments ranging from community development to global sustainability. The numerous instances and assessments presented serve to underscore the transformative potential of design thinking when wielded purposefully and perceptively. In addition to its utilitarian advantages, design thinking champions a cultural transformation toward collaborative problem-solving, emphasizing the collective over the individual. As we navigate the intricacies of the 21st century, design thinking will remain an indispensable

comrade in our pursuit of a more equitable, sustainable, and harmonious world. Its adaptability and human-centered approach not only resonate with the fundamental principles of social innovation but also expedite the very change we aspire to observe in our global society.

In the realm of design thinking, numerous crucial domains exist in which this innovative approach exerts a substantial influence and attracts attention. One particular domain that stands out as a primary application of design thinking is problem solving. It transcends the mere addressing of broad social challenges by offering a nuanced approach that tailors solutions to unique and specific scenarios. This can encompass the resolution of individual social problems and the tackling of issues that necessitate swift and ad hoc measures. It also serves as an essential instrument for catering to the needs of specific demographics, especially those communities or groups that are most vulnerable or at risk of social exclusion.

Venturing into the realm of strategic planning and execution, design thinking demonstrates its value in comprehensive planning. It assists in the development of long-term strategies and provides a framework for their efficient execution. Moreover, design thinking is a transformative force for both businesses and social organizations, as it aids in establishing and strengthening market positions. Nevertheless, its significance surpasses mere corporate maneuvering; it plays a crucial role in driving societal transformation. This is accomplished not only by involving citizen designers in the planning process but also by actively engaging the wider community through various participatory initiatives.

The realm of lifestyle and societal transformation is profoundly impacted by the principles of design thinking. In the contemporary and swiftly progressing technological environment, design thinking plays a crucial role in advocating for lifestyles that agree with these advancements. This impact is particularly observable in sectors such as healthcare, where design thinking is revolutionizing individuals' approaches to their well-being. Furthermore, design thinking acts as a catalyst in aiding societies to adapt to innovations and serves as a cornerstone in endeavors aimed at attaining sustainable social change.

In terms of service provision and enhancement, design thinking is all about optimizing delivery. It ensures that societal services are not only accessible but also provided in the most effective and efficient manner possible. In addition, design thinking appreciates the value of esthetics in enhancing user experience in various service sectors.

The multidimensional nature of design thinking is apparent in its capacity to address numerous challenges and its potential to bring about meaningful change. Its human-centered approach, adaptability, and emphasis on collaboration make it a formidable tool for tackling the intricate problems of our contemporary world. As we grapple with the complexities of the 21st century, design thinking will continue to be a crucial ally in our pursuit of a more equitable, sustainable, and harmonious global society.

Design thinking, recognized for its innovative and problem-solving capabilities, requires a nuanced and context-specific approach for effective application. Its theoretical foundations and evaluation methods need careful consideration to align with various real-world challenges.

Despite facing obstacles and resistance, design thinking demonstrates its strength in overcoming barriers, fostering cultural and educational transformation, and enhancing community engagement. It plays a significant role in resource development and actively promotes social participation, establishing itself as a valuable tool for societal progress and innovation.

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