

Design Thinking in Business: A Bibliometric Analysis and Research Agenda

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Abstract: This study explores the intellectual landscape, developmental trajectory, and emerging themes of design thinking (DT) in business contexts through a bibliometric analysis of 604 Scopus-indexed articles published between 2003 and 2024. Utilizing VOSviewer software, the study applies descriptive statistics, co-authorship network analysis, and keyword co-occurrence mapping to uncover key patterns. Findings indicate a growing scholarly interest in DT; however, the field remains theoretically diverse and empirically fragmented, with limited international collaboration and considerable methodological heterogeneity. Core thematic clusters include innovation management, user-centered design, and organizational change. Despite the conceptual richness, this fragmentation may hinder the formation of a coherent understanding of DT's contribution to enterprise performance, innovation capability, and strategic advantage. By charting thematic evolution and identifying underexplored areas, this study not only maps the current research terrain but also proposes a strategic research agenda aimed at integrating DT into business theory and practice. The roadmap is intended to guide future investigations toward a deeper, more actionable understanding of how design thinking enhances organizational effectiveness and drives sustained innovation in varied business environments.

Keywords: Design thinking, Bibliometric analysis, Innovation management, Organizational change, User-Centered design, Enterprise performance, Organizational innovation

1. Introduction

Design Thinking (DT) has emerged as a versatile approach to solving a wide spectrum of problems, ranging from complex, ill-defined “wicked problems” with no clear solutions to more structured, well-bounded challenges (Buchanan, 1992). As organizations increasingly prioritize human-centered innovation, DT is recognized for its ability to align organizational creativity with customer needs and aspirations (Beckman & Barry, 2007). In business contexts, DT promotes empathetic, iterative problem-solving, facilitating both value creation and competitive advantage. Rowe (1987) first introduced the term “Design Thinking” to highlight the significance of design methods in planning and decision-making, but its prominence in business gained momentum in the early 2000s with a shift toward user-centric innovation (Brown, 2008).

From a strategic management perspective, DT can be conceptualized not merely as a process but as an organizational capability within the Resource-Based View (RBV) of the firm. According to RBV, sustainable competitive advantage stems from resources and capabilities that are valuable, rare, inimitable, and non-substitutable (Barney, 1991). DT embodies these attributes by fostering unique combinations of creativity, empathy, and rapid prototyping, making it a resource that is difficult for competitors to replicate.

Moreover, DT can be framed as a dynamic capability that enhances a firm's ability to sense, seize, and reconfigure resources in rapidly changing environments (Teece, Pisano, & Shuen, 1997). This positioning emphasizes DT's role in helping organizations adapt to market volatility, drive innovation, and sustain superior enterprise performance. By embedding flexibility and learning into business practices, DT enables firms to remain resilient and responsive to evolving customer needs.

Although DT is becoming increasingly popular and more and more people adopt it, the academic discourse around its business use is still disparate and hypothesised. A limited nature, variability of methods, and the absence of integrated intellectual framework characterize the current research (Carlgren et al., 2016; Dorst,

2011). This divide keeps the systematic comprehension of the relation between the investments in DT to measurable organizational performance to be established, and it is not easy for scholars and practitioners to find coherent understandings of its strategic implications.

Bibliometric Analysis (BA) provides a quantitative and rule-based manner to deal with these problems. BA combines huge amounts of intellectual research, visualizes the studies of academics, and traces the intellectual frameworks, giving an overview of the evolution of any field in an enhanced and non-biased way (Zupic & Cater, 2015). In contrast to conventional literature review, BA provides reproducibility and rigor, providing comprehensiveness to the area of study with conceptual and methodological variation (Garfield, 1979; Maditati et al., 2018). Against this background, a bibliometric analysis of DT in business plays two important functions: (1) it systematizes a knowledge base in a chaotic state in order to define the patterns of influence, collaboration, and changes in themes, and (2) it forms a basis of further explorations of the strategic role of DT over enterprise performance and competitive edge.

This study applies bibliometric analysis to a dataset of 604 Scopus-indexed articles published between 2003 and 2024 to evaluate the composition, extent, and evolution of DT research in business contexts. The primary objective is to provide clarity in a disjointed field while developing actionable insights for both academics and practitioners. The study is guided by the following research questions:

RQ1: What are the key publication trends, influential contributors (countries, authors, journals, and institutions), and dominant research themes shaping the evolution of Design Thinking in the business domain?

RQ2: Which research methods and analytical approaches are most commonly employed in DT-related business studies, and how do they vary across leading publishing countries?

RQ3: What are the existing gaps and emerging directions for future research in applying Design Thinking within business contexts?

This article has three important contributions to the existing literature. First, it provides a detailed and evidence-based snapshot of publication trends, leading authors, leading institutions, and co-authorship networks in DT-related business research. Second, it provides fundamental thematic clusters and keyword trends, shedding light on dominant research streams and emerging themes. Third, it offers a future research agenda by highlighting methodological trends, geographical disparities, and neglected areas that could potentially be in need of additional scholarly investigation and cross-disciplinary research engagement.

The rest of this paper is structured as follows: Section 2 explains the bibliometric approach used in this research. Section 3 explains the results, which include performance indicators, co-authorship networks, and keyword analysis. Section 4 is the discussion of the results, along with suggestions for further research work. Lastly, Section 5 explains the limitations of the study and suggests directions for further research work by researchers.

2. Research Methodology

The research is based on Bibliometric Analysis (BA) as a systematic method of exploring the area of research on Design Thinking (DT) in the business area. It narrowed down to BA (or the use of mathematical and statistical techniques in literature and other spheres of communication) because this technique allows one to get an all-embracing picture of a field of research (Bjork et al., 2014). It has been useful in the analysis of tendencies, determining the dominant factors, and revealing theme groupings in different fields of business (Donthu et al., 2020).

In addition to descriptive power, BA in the present research is conceptualized as a tool of analysis to plot out the discourse of DT within researchers of business. The analysis done by using trends in publications, keywords correlations, and networks of collaboration allow discerning how the academic community has conceptualized the role of DT in terms of enterprise performance, organizational learning, and competitive advantage. The theoretical conceptualization raises the study of BA as more than an accumulation of literature to a discussion of how the body of knowledge about DT is constructed and spread in the management studies. It situates the research as the investigation of the intellectual development of DT as the strategic business potentiality.

2.1 Data Source and Analytical Tool

This paper used the scopus database in order to do a thorough research review on the literature list and citations under the topic Design Thinking (DT) (Vieira & Gomes, 2009). Scopus offers a lot of analytical information, such as keywords, names of authors, covers topics, years of publication, affiliation of the institutions, countries, and article identification numbers (EIDs) (Ahmi & Mohd Nasir, 2019). Scopus also has a wider coverage of peer-

reviewed journals published by different publishers than Web of Science (WoS); that is, Scopus covers more than 20,000 peer-reviewed journals as compared to about 12,000 ISI-indexed journals in WoS (Fahimnia et al., 2015; Yong-Hak, 2013). Scopus, especially in its interdisciplinary nature and in its scope that is broad and diverse, is especially useful in mapping the intellectual landscape of DT in a business context (Mongeon & Paul-Hus, 2016).

In the analysis of data, the study relied on VOSviewer software, which is described as a latest technology in visualization and exploration of a bibliometric network (Van Eck & Waltman, 2010). VOSviewer can be used to generate bibliometric maps which show relationships between words, authors and institutions and therefore VOSviewer can help in the process of revealing the intellectual structure of a field. Its particular capability to measure co-occurring of keywords played a key role when it came to this study because, through this approach, the thematic groups that define how DT is conceived and utilized in the business practices were identified. Moreover, VOSviewer allowed examining collaboration and identifying trends over time, which also corresponds to the purpose of the study that attempts to visualize the collaboration networks and monitor the development of the DT research topics over time (Donthu et al., 2021; Arruda et al., 2022). Through such capabilities, the paper was in a position to make deliberations about a discourse of DT and its strategic relevance in business innovation systematically.

2.2 Search Approach

Data for this study were extracted from the Scopus database on 12th January 2024 using a structured, multi-step search strategy to ensure rigor and transparency. The initial search was performed with the query TITLE-ABS("design thinking"), which retrieved 7,192 documents. To refine the dataset specifically to the business domain, business-related keywords—administrat*, business, organization*, entrepreneur*, company, and venture—were incorporated using the Boolean operator AND, forming the search query TITLE-ABS("design thinking") AND (administrat* OR business OR organization* OR entrepreneur* OR company OR venture). This refinement was further focused by restricting the search to the "BUSI" subject area in Scopus, narrowing the dataset to 741 documents.

To ensure inclusion of only original research articles, the Scopus document type filter was applied to exclude non-research outputs such as review articles, conference proceedings, editorials, and book chapters. This filtration removed 137 documents, resulting in a final dataset of 604 peer-reviewed articles. These documents span from 2003 to January 2024, offering a comprehensive overview of the evolution of Design Thinking literature in a business context. The entire search process is illustrated in Figure 1 to support methodological transparency and replicability.

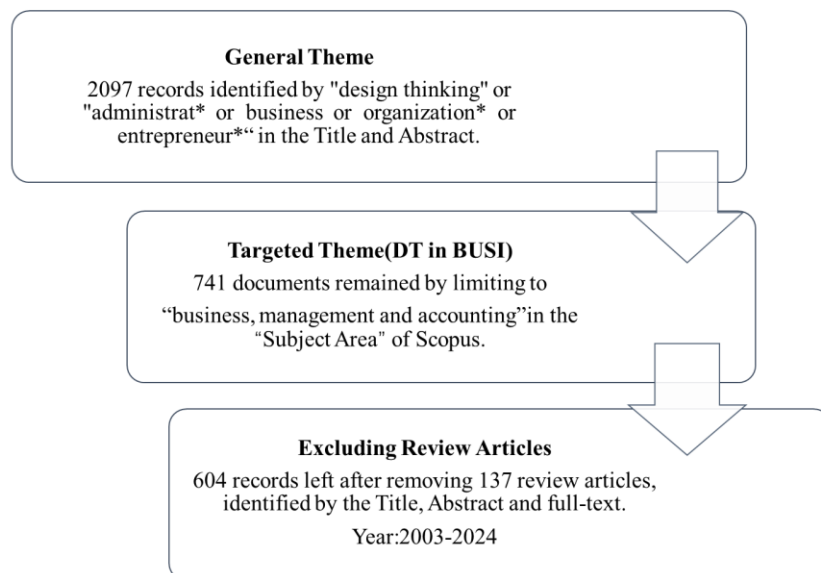


Figure 1: Data Collection Flow for DT in Business

2.3 Bibliometric Maps

Bibliometric maps were generated using data from the 604 selected papers, incorporating citation information, bibliographic data, and author keywords. VOSviewer was employed to create these maps, enabling the visualization of global collaboration networks, thematic structures, and keyword dynamics within the field of

Design Thinking (DT). In this context, a “link” represents a connection between two items, such as countries, authors, or keywords, and the associated link strength quantifies the intensity of that connection. Larger link strength values indicate stronger relationships between items.

In the co-authorship analysis, the links between countries reflect the number of publications co-authored across borders, and the total link strength of a country represents the sum of all such collaborative relationships. This analysis directly supports RQ1, as it reveals the global collaboration networks and identifies influential contributors (countries, authors, institutions) shaping knowledge dissemination in DT research.

Similarly, the keyword co-occurrence analysis examines how frequently two keywords appear together in the same publication. This process uncovers the intellectual structure of the field by highlighting dominant research themes and emerging conceptual linkages. By mapping how key concepts such as innovation, strategy, and user-centered design intersect with DT, this analysis provides insights relevant to RQ1 and RQ3, illuminating both the evolution of thematic clusters and potential gaps in the literature.

Thus, these bibliometric techniques not only provide a technical foundation for visualization but also align with the study’s broader objectives of mapping the intellectual landscape and identifying pathways for future research in DT’s application to business contexts (Van Eck & Waltman, 2018).

2.3.1 Analysis of co-authorship

Sixty-five countries/territories affiliated with 159 authors were included in the co-authorship analysis. These countries span across five continents: Asia, America, Europe, Africa, and Oceania, allowing the visualization of global research collaboration patterns in DT.

2.3.2 Analysis of co-occurrence

The co-occurrence of 1,426 author keyword (different from Scopus indexed keywords) from the 604 documents was studied. To ensure consistency and minimize repetition, THESAURUS FILE was used in VOSviewer to merge synonyms and stem congeneric phrases. For instance, “design-thinking” and “design thinking (dt)” were considered as duplicate terms. To concentrate on essential and frequent themes, a criterion of presence with a minimum of five times was used in VOSviewer. For visualization of the average publication year and frequency of occurrence and of link strength for each keyword the overlay mode was applied. The color of each keyword node reflects the average publication year of publications in which it was observed (Van Eck, 2018).

3. Results

3.1 Publication Output and Growth of Research Interest

The first known academic article on Design Thinking (DT) in a business context was published by Peng and Chien in 2003, titled *Data value development to enhance competitive advantage: A retrospective study of EDA systems for semiconductor manufacturing* (Peng & Chien, 2003). This early application of DT reflected the business priorities of the time, where organizations increasingly sought to leverage intangible assets like data for competitive advantage. Viewed through the lens of the Resource-Based View (Barney, 1991), this study illustrates how firms were beginning to explore innovative capabilities, such as data-driven design processes, to create value that was difficult for competitors to imitate and directly linked to performance improvement.

Figure 2 illustrates the annual and cumulative number of DT publications in the business field, as indexed in the Scopus database between 2003 and 2024. During the first phase (2003–2010), publication activity was relatively modest, increasing from 2 to 5 documents per year. However, the growing emphasis in management on moving from product-centric to customer-centric business models during this period created fertile ground for DT to emerge as a relevant research topic. Organizations were seeking systematic, human-centered processes to better understand customer needs, drive innovation, and improve enterprise performance.

A notable acceleration in publication output occurred after 2011, coinciding with the Cambridge Academic Design Management Conference, which highlighted intense debates at the intersection of design and management. While causality is difficult to establish, the timing suggests that both academic and practitioner communities were increasingly recognizing DT as a valuable strategic tool for navigating shifting market demands and fostering organizational adaptability.

In 2014, publication numbers rose to 19, and between 2015–2017, the annual average nearly doubled to 34. This surge reflects growing academic engagement with DT as businesses demanded approaches that could integrate empathy, creativity, and analytical rigor into their innovation systems. Another significant peak was

observed in 2018, with 55 publications. This may partly be attributed to Jeanne Liedtka's influential article, *Why Design Thinking Works* (Liedtka, 2018), which marked a shift in scholarly discourse. Rather than focusing solely on process descriptions, the academic community began validating DT's effectiveness and business value. This emphasis on empirical evidence aligns with management scholars' broader efforts to legitimize DT as a strategic resource capable of driving innovation outcomes, enhancing customer satisfaction, and improving overall organizational performance.

From 2020 to 2023, annual publication numbers remained well above those of the previous decade, reflecting sustained interest. This trend is expected to continue in 2024 and beyond. The anticipated growth is driven by contemporary management challenges, including digital transformation, the need for agile and adaptive business practices, and the growing emphasis on corporate sustainability. These challenges require novel problem-solving methodologies that are human-centered and iterative—attributes central to DT. Consequently, DT is increasingly being positioned as a core methodology for enabling firms to sense and respond effectively to market volatility, thus reinforcing their dynamic capabilities and enhancing long-term enterprise performance (Teece et al., 1997).

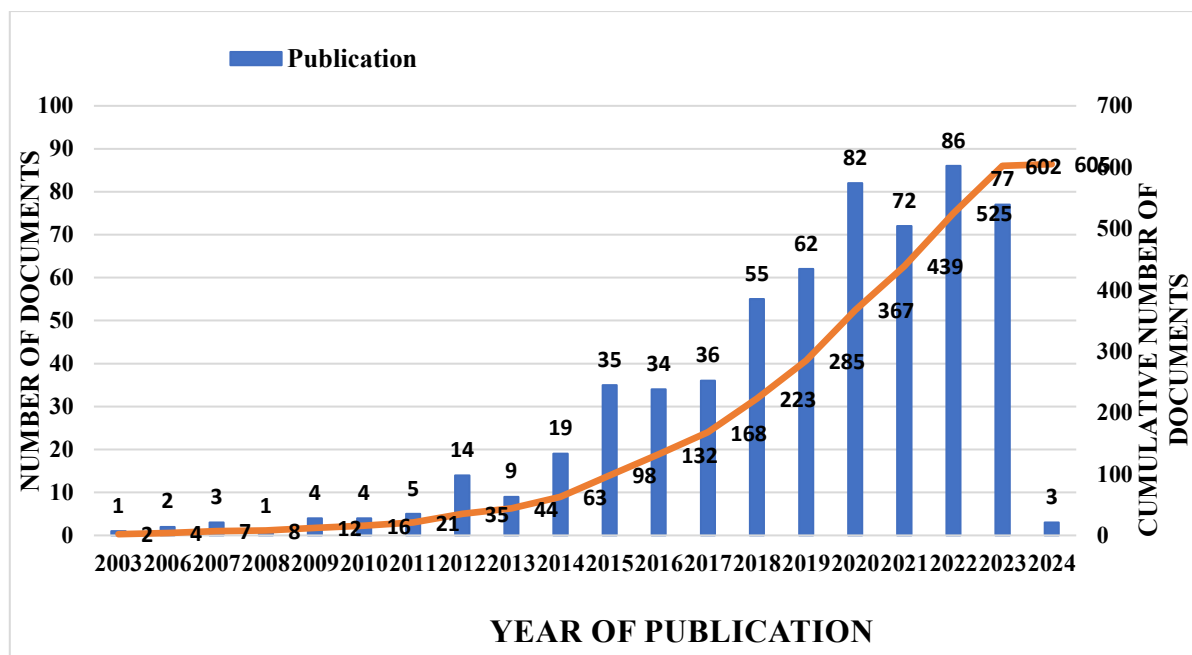


Figure 2: Annual and cumulative numbers of research documents on DT in business fields are indexed in Scopus from 2003 until 2024

3.2 Preferred Journals

The bibliometric analysis revealed that the top 10 most productive journals collectively published 79 articles on Design Thinking (DT) in the business domain, accounting for approximately one-fifth of the total dataset (604 articles). These 10 journals are published by nine different publishers, illustrating the interdisciplinary appeal of DT research. Elsevier and Wiley-Blackwell emerged as prominent publishers, each contributing multiple leading journals to the list, while others such as Springer Nature, Emerald, and Taylor & Francis published highly specialized outlets. The detailed distribution of these journals, along with their publication count, citation metrics, and leading articles, is summarized in **Table 1**.

The most prolific journal was the *Journal of cleaner production*, which furnished 12 articles (15.2 percent of the best 79). It has been majorly focused on sustainability; the significance of which is that DT is gradually being used to improve sustainable business models and efficient operations. The *Journal of Product Innovation Management* and *Creativity and Innovation Management* show, similarly, that there is a high level of compatibility between DT and innovation activities and as such, its power to lead to the concept of enterprise-level adaptability and market responsiveness. This trend indicates that scholars are mapping out DT not merely as a creative procedure but as an operational process of enhancing important performance aspects of enterprise.

Paradoxically, although *Journal of Cleaner Production* is the most productive in terms of publication, the *California Management Review* has received the largest number of citations (661 citations), a factor which is representative of its high level of development in the engines of DT in the context of strategic management. The article by Beckman and Barry (2007), *Innovation as a Learning Process: Embedding Design Thinking*, is one of the most cited articles in the recent past and it heralds a shift in the academic focus as it moves beyond the description of approaches to DT to validate its strategic value to organizational learning and competitive advantage. There is a mismatch that needs to be addressed between the pathways to productivity and influence; in short, the journals where sustainability and innovation researchers can find regular publication opportunities (in sustainability and innovation journals) are not the journals where management researchers currently form the high-impact theoretical debates (management journals).

The CiteScore metrics further reveal a wide range of journal impact within this field. Six journals achieved CiteScores above 5 in 2022, with the *Journal of Cleaner Production* leading at 18.5. On the other hand, practice-oriented journals like *Gruppe Interaktion Organization Zeitschrift Für Angewandte Organisationspsychologie* hold a lower CiteScore of 1.2 but contribute to niche communities focused on applied organizational psychology. This diversity highlights how DT knowledge circulates in both high-impact academic outlets and more specialized, practitioner-driven venues. It suggests that DT research not only advances theoretical understanding but also influences managerial practices across different business subfields.

Overall, these findings illuminate the intellectual structure of DT research in business. The presence of journals from domains such as production, innovation management, and organizational psychology reflects the versatility of DT applications across business functions. Moreover, the high citation counts for strategic management articles underscore the growing recognition of DT as a capability that enhances enterprise performance through innovation, sustainability, and organizational learning. This analysis provides a roadmap for researchers seeking to select journals that align with their desired audience—whether high-impact theoretical contributions or applied business insights.

Table 1: Top 10 most productive publications on DT research in the business field with their most cited article

Journal	TP (%)	TC	Cite-Score 2022	The most cited article	Times cited	Publisher
Journal Of Cleaner Production	12	545	18.5	Design thinking to enhance the sustainable business modelling process – A workshop based on a value mapping process (Geissdoerfer et al., 2016)	283	Elsevier
Journal Of Product Innovation Management	9	427	14.1	Innovation and Design in the Age of Artificial Intelligence (Verganti et al., 2020)	188	Wiley-Blackwell
Creativity And Innovation Management	9	590	5.8	Framing Design Thinking: The Concept in Idea and Enactment (Carlgrén et al., 2016)	284	Wiley-Blackwell
Gruppe Interaktion Organization Zeitschrift Fur Angewandte Organisationspsychologie	8	13	1.2	Co-creating innovation for sustainability (Erbguth et al., 2022)	6	Springer Nature
She Ji	7	171	6.5	Worlds in the Making: Design, Management, and the Reform of Organizational Culture (Buchanan, 2015)	83	Tongji University Press
Journal Of Innovation Management	7	38	1.6	The culture of design thinking for innovation (Prud'homme van Reine, 2017)	23	Universidade do Porto - Faculdade de Engenharia
Journal Of Business Strategy	7	34	2.7	Learning to design: Giving purpose to heart, hand and mind (Junginger, 2007)	18	Emerald Publishing

Journal	TP (%)	TC	Cite-Score 2022	The most cited article	Times cited	Publisher
California Management Review	7	661	21.6	Innovation as a learning process: Embedding design thinking (Beckman et al., 2007)	474	Haas School of Business
Academy Of Management Learning And Education	7	408	7.2	The need for design thinking in business schools (Glen et al., 2014)	177	George Washington University
Research Technology Management	6	82	3.5	Making Design Thinking Work: Adapting an Innovation Approach to Fit a Large Technology-Driven Firm (Mahmoud-Jouini et al., 2019)	22	Taylor & Francis

3.3 Leading Countries/Territories, top Institutions, and International Collaboration

The analysis of 165 countries/territories revealed that 65 of them have contributed scholarly publications on Design Thinking (DT) in the business context. Figure 3 highlights the top 10 most productive countries, showing a clear concentration of research output within a few Western nations. The United States leads with 144 publications across 101 DT-related business journals, accounting for nearly a quarter of global DT business research. Together, the top five countries—the US, Germany, the UK, Australia, and Italy—contribute 54.5% of all publications in this field.

This dominance may be attributed to several structural and historical factors. First, these nations host some of the world's leading business schools with strong ties to industry, enabling applied research that directly influences enterprise performance. The historical development of management education, particularly in the US and Europe, has created institutional environments where design thinking aligns naturally with innovation-driven business models. These ecosystems foster research at the intersection of design, strategy, and organizational change, reinforcing these countries' leadership in the field.

The study assessed international cooperation by examining Single-Country Publication (SCP) which are articles whose authors are all from same country. Large numbers of people had higher SCP especially in India (86.4%), Brazil (78.3%), the US (63.2%), Switzerland (60%), Australia (54%), and Germany (53.8%). Such numbers show that researchers in these countries tend to collaborate with national academic networks. The tendency might be explained by a number of factors. First, researchers in developing nations such as India and Brazil have access to few international research funds and limited infrastructures that can eventually encourage them to be overly dependent on national institutions and resources. Second, language issues might limit the access to global research communities, and in non-English-speaking nations academic speech is more local. Lastly, the fact that there exists robust national academic networks and national journals can foster the practice of inward-looking research. On the one hand, these national networks contribute to the growth of context-specific knowledge and the reinforcement of national research capabilities, but on the other, they can be discussed as the sign of certain academic closedness. In the views of organizational learning theory (Argote & Miron-Spektor, 2011), this kind of insularity would slow down the integration of global best practices and decrease exposure to different views which are essential in the development of dynamic capabilities and maintaining level of enterprises performance in the fast-paced markets.

Conversely, Sweden and France have remarkably low SCPs of 12.5 and 4.2 per cent respectively and this is an indicator of high international cooperation. This trend is an image of the open networks of innovation (Chesbrough, 2003), through which knowledge is cross-borderable, open-pollinating ideas and generating a research that is both world-wise and global, as well as local in its interests. These collaborations are capable of promoting knowledge transfer, development of an absorptive capacity (Cohen & Levinthal, 1990) and eventually a more innovative output. Such processes are reflective of the part that knowledge plays within global value chains through the fact that intellectual property has transformed into the component that has become essential as well as internationally traded with this affecting the competitiveness of enterprises.

Overall, these findings highlight two distinct models of knowledge creation: self-reliant national ecosystems with high SCP rates, and globally connected research networks with low SCP rates. Both approaches have implications for how DT research informs enterprise performance. While the former may promote context-specific innovations tailored to local markets, the latter offers the potential for developing globally scalable solutions

that draw on diverse expertise. Understanding these patterns is critical for scholars and practitioners seeking to leverage DT as a strategic resource within increasingly interconnected business environments.



TPC: Total publications of a given country

SCP: Single-country publications

Figure 3: Top 10 most productive countries in DT publications in business context

3.4 Leading Authors

Table 2 highlights the top ten most productive authors contributing to Design Thinking (DT) research in the business context. These scholars represent five countries—Italy (4 authors), the United States (3), Austria (1), Ireland (1), and Russia (1)—reflecting a predominantly Western intellectual base. Among them, Italian researchers Stefano Magistretti, Cristiano Cautela, and Claudio Dell’Era from the School of Management at Politecnico di Milano stand out as the most prolific contributors between 2011 and 2023. Their collective work indicates the emergence of a concentrated research hub that may represent a distinct “school of thought” in DT scholarship.

This concentration can be viewed in context in the management theories about knowledge network and invisible colleges (Crane, 1972). The high level of DT research at Politecnico di Milano implies building an intimate intellectual network based on collaboration, which strengthens each other through similarities in theoretical outlooks and methods. This clustering is of importance because it is defining the global research agenda, which influences, besides what is researched, how DT is conceptualized and implemented in any business setting. In many cases, their work focuses on the interrelation of DT with innovation management, which has several ramifications as far as enterprise performance is concerned since the approach enables firms to have a systematic way of undertaking product and service innovation.

Another influential figure in the sphere are U.S based Jeanne Liedtka and Roberto Verganti. The relatively large average number of citations to the works of Verganti is an indicator of a major influence on the DT scientific community. Their activity is not limited to academic life, but spreads over to the management practices. As such, most Liedtka models are highly embraced by organizations of different names attempting to integrate DT into the process of strategic planning and resolving problems, thus, supporting innovation and developing

competitive advantage. This highlights the value of thought leadership in DT as a tool to catalyse academic discourse on the one hand, as well as giving businesses the skills to handle dynamic and volatile environments on the other.

The difference in geographical home of such leading authors shows variance in the institutionalisation of DT in academia of various countries. Especially, Italy and the United States are among the major hubs of DT research. This leadership can be attributed to the high industry academia partnerships in these nations, where the business leaders are involved with the university in co-designing innovation policy. Moreover, educational philosophies that emphasize design-led thinking and interdisciplinary approaches could be fostering such scholarship.

The dynamics of co-authorship in this group is an interesting way to get to know more about collaborative knowledge creation. At Politecnico di Milano, co-publication of Magistretti, Dell'Era and Cautela on a regular basis shows a unitary research team with intellectual objectives. This kind of cooperation corresponds to the social theories of knowledge creation, where closely connected groups can enhance the process of ideas and methodology improvements, which eventually translates to the more effective research products. These dynamics show the power of the collaborative networks in incubating the improvement of the theoretical and practical contributions of DT to the management of businesses.

Table 2: 10 most prolific authors in the DT research area in the business context

Author	Scopus author ID	Year of 1st publication	TP	h-index	TC	Current affiliation	Country
Magistretti, S.	57190389248	2020 ^b	7	6	234	School of Management, Politecnico di Milano	Italy
Dell'Era, C.	57216474342	2020 ^a	5	5	217	School of Management, Politecnico di Milano	Italy
Liedtka, J.	6603632848	2011 ^a	5	4	198	Darden Graduate School of Business, University of Virginia,	United States
Verganti, R.	6603436283	2020 ^a	5	5	402	Harvard Business School, Boston, United States	United States
Suciu, C.	56463795900	2014 ^b	4	3	261	Department of Management, College of Business and Economics, Boise State University	United States
Cautela, C.	42860986200	2020 ^c	3	3	123	School of Management, Politecnico di Milano	Italy
Rau, C.	56100644300	2017 ^a	3	2	47	University of Applied Sciences Upper Austria, School of Engineering	Austria
Robbins, P.	56050203900	2017 ^a	3	2	18	Maynooth University	Ireland
Vasilieva, E.	57192954896	2020 ^a	3	1	1	Financial University under the Government of the Russian Federation	Russia
Vignoli, M.	55132721400	2021 ^a	3	3	24	Alma Mater Studiorum Università di Bologna	Italy

3.5 Citations

As of 14 January 2024, the 604 publications on Design Thinking (DT) in the business context have collectively accumulated 10,157 citations, resulting in an average of approximately 16.82 citations per document. **Table 3** presents the ten most cited publications, led by Brown's (2008) *Design Thinking* with 2,518 citations, followed by Beckman and Barry's (2007) *Innovation as a Learning Process: Embedding Design Thinking* with 471 citations. Other highly influential works include Geissdoerfer et al. (2016) on sustainable business models and Carlgren, Rauth, and Elmquist (2016) on framing the DT concept.

Rather than presenting these works as isolated contributions, a thematic grouping reveals the intellectual focus areas of DT research and how they connect to enterprise performance:

Design Thinking as a Strategic Process for Innovation

Authors including Brown (2008) and Beckman & Barry (2007) think of DT as a methodical cycle and method of solving problems that incorporates the elements of user empathy, ideation and rapid prototyping. Through these studies, it is argued that the DT principles ensure the organizations come up with customer-oriented solutions which will work towards promoting product and services innovations to enhance customer loyalty and competitive advantage. Specifically, Beckman & Barry (2007) place DT in the context of the learning process as an integrated part of the organization systems which connects it to the increased ability to adapt and dynamic potentials the latter being an important factor of enterprise performance in the new turbulent markets.

Design Thinking for Sustainable Business Practices

Geissdoerfer et al. (2016) place DT as a facilitator of the creation of sustainable business models. In their work-based research, they explain why DT can be regarded as tool that can ease the value mapping process; where economic objectives are in line with environmental and social concerns. This is how DT can help organizations to better understand sustainability issues and improve their competitive edge and connection to a legitimate brand.

Design Thinking and Organizational Culture Transformation

Carlgren et al (2016) focus on how DT shapes organizational culture and mindset. Their findings suggest that adopting DT can lead to more collaborative, innovative, and user-focused work environments. These cultural shifts, though intangible, are argued to contribute to improved innovation outcomes and enterprise performance by fostering agility and responsiveness.

Sector-Specific Applications of Design Thinking

Beverland et al. (2015) extend DT's application to brand management, showing how it supports more authentic customer engagement and strengthens brand equity. Such studies highlight DT's versatility across business functions, reinforcing its relevance as a capability for enterprise-wide innovation and performance enhancement.

Qualitative Dominance and its Implications

An interesting trend among the top-cited studies is their methodological preference for qualitative approaches, particularly case studies. Seven of the ten leading papers employ case-based research. This reflects DT's focus on exploring intricate, context-dependent organizational processes where experiential and contextual knowledge are vital. From a management perspective, this methodological choice is significant: it allows scholars to uncover practical challenges and success factors in implementing DT within real-world organizational settings.

However, reliance on qualitative methods also presents limitations. While these studies provide deep, context-rich insights, their findings may lack generalizability across industries and geographies. Future research could benefit from incorporating more quantitative and mixed-method studies to systematically measure DT's impact on key performance indicators such as financial results, innovation rates, customer satisfaction, and market share. This shift would complement the current body of work and provide stronger empirical support for DT's role in enhancing enterprise performance.

Table 3: The Top 10 Most Cited Publications

Authors	Title	Year	Journal	TC
Brown, T.	Design Thinking	2008	Harvard Business Review	2,518
Beckman, S.L., Barry, M.	Innovation as a Learning Process: Embedding Design Thinking	2007	California Management Review	471

Authors	Title	Year	Journal	TC
Geissdoerfer, M., Bocken, N.M.P., Hultink, E.J.	Design Thinking to Enhance the Sustainable Business Modelling Process – A Workshop Based on a Value Mapping Process	2016	Journal of Cleaner Production	281
Carlgren, L., Rauth, I., Elmqvist, M.	Framing Design Thinking: The Concept in Idea and Enactment	2016	Creativity and Innovation Management	280
Verganti, R., Vendraminelli, L., Iansiti, M.	Innovation and Design in the Age of Artificial Intelligence	2020	Journal of Product Innovation Management	181
Glen, R., Suciu, C., Baughn, C.	The Need for Design Thinking in Business Schools	2014	Academy of Management Learning and Education	175
Patrício, L., Gustafsson, A., Fisk, R.	Upframing Service Design and Innovation for Research Impact	2018	Journal of Service Research	146
Beverland, M.B., Wilner, S.J.S., Micheli, P.	Reconciling the Tension Between Consistency and Relevance: Design Thinking as a Mechanism for Brand Ambidexterity	2015	Journal of the Academy of Marketing Science	122
Cankurtaran, P., Beverland, M.B.	Using Design Thinking to Respond to Crises: B2B Lessons from the 2020 COVID-19 Pandemic	2020	Industrial Marketing Management	98

3.6 Author Keywords

A study of the co-occurrence author keywords was conducted in order to determine the thematic framework of research in the field. Author keywords contribute significantly to capturing the main concepts of the scholarly articles, thus highlighting the intellectual contours and topical areas of a certain research area (Donthu et al., 2021; Emich, Kumar, Lu, Norder, & Pandey, 2020).

The co-occurrence network of author keywords in the publications during 2003 to 2024 is shown in Figure 4. The analysis are keywords that were present, at a time, in at least five different publications, giving in total an amount of 88 individual research keywords. The produced network reveals six different clusters each of which of them refers to important thematic area within the boundaries of Design Thinking (DT) during business sphere. These clusters convey the spectrum of research streams and give the clues about the predominant conceptual domains, which are prevailed around, the DT-related studies in business.

3.6.1 Clusters and terminology

The network indicates six clusters. The first five largest clusters comprise the most relevant keywords.

Cluster 1 presented in Figure 4 and in red focus on the underlying concepts and features of Design Thinking (DT). The most widespread keyword in the given cluster is that of the design thinker, totaling 273 occurrences with total strength of links to the other keywords, which stands at 423. Words closely related with it are systems thinking and human thinking and can often be interchangeable with DT in the literature. This convergence was a feature of more user-friendly solutions based on holistic solutions to complex problems.

It is a well recognized problem solving methodology (especially in those problems known as wicked problems) (Buchanan, 1992). Approaches such as being agile, collaborating, co-creating, and user experience are key concepts describing its use by creating iterative learning and responsive solutions in an organization (Carlgren et al., 2016). Another notion, such as the collaborative innovation, creativity, value creation, experiential

DT's integration into curricula aimed at cultivating creativity, critical thinking, and problem-solving abilities among students and professionals. This trend reflects a paradigm shift where educational systems increasingly recognize DT as a transformative pedagogy that prepares individuals for complex, real-world challenges.

In parallel, these clusters underscore DT's function as an incubator for various innovation outcomes, including "innovation culture," "radical innovation," "service innovation," and "social innovation" (Amabile, 1988). Furthermore, DT is linked with developing entrepreneurial competencies through subjects such as corporate entrepreneurship, entrepreneurial intention, entrepreneurial opportunity, social entrepreneurship, startup, and lean startup.

Theoretically, the results of the study are in line with human capital theory (Becker, 1964), and it may be considered that DT is the tool of creating valuable human capital in organizations. DT will develop the ability of employees and entrepreneurs to recognize and utilize opportunities through its development of higher-order cognitive/creative skills, which are authoritative in the expansion of firms and long-run performance. In addition, the frequency of keywords connected to the entrepreneurial issue shows that DT corresponds to the theory of entrepreneurial orientation (Lumpkin & Dess, 1996) that considers the influence of innovativeness, proactiveness, and risk-taking as the success explanations of the organization. The stronger presence of these clusters, therefore, indicates that the detachment of DT to design-related areas extends to allow it to serve as a strategic facilitator of innovation and entrepreneurship training, creating dynamic human capital, directly linked to enterprise competitors and responsiveness in the changing market.

Cluster 5, depicted in purple, explores the intersection of Design Thinking (DT) with leadership and strategic management practices. This cluster contains keywords such as "design leadership," "strategic management," and "change management," alongside related terms from other clusters, including "innovation," "knowledge management," "product management," and "technology management." Together, these associations underscore DT's emergence as a managerial philosophy that emphasizes adaptability, creativity, and user-centric decision-making.

The prevalence of such sets of terminology as the design leadership marks the wider transformation of leadership models. The new orientation is based on the theory of strategic leadership (Boal & Hooijberg, 2001) that focuses on the capacities of leaders to perceive the changes in the environment, make sense of complex information, and lead an organization within changes. DT is providing leaders with the mental and emotional arsenal they need to perform this task by developing empathy, iterative learning and thinking of systems. This type of adaptive leadership is instrumental in the use of the innovative strategies and linking organizational objectives to the changing requirements by the stakeholders.

In the context of the organizational change theory (Burnes, 2017), DT would also enable transformational change by encouraging participatory and collaborative approach to the process of problem-solving. Leaders who use DT are better able to handle any resistance to change because the methodology promotes the co-creation and participatory dialog on both levels of authority. The given ability is especially critical in relation to the following of the complicated processes such as digital transformation and adoption of circular economy models because the success rates in the mentioned processes are conditioned by the restructuring of the processes and mentality (Clark & Smith, 2008).

Moreover, DT, in this respect, has increasingly become described as a dynamic capability, a resource to make firms reorganize their current pool of assets, take advantage of emergent opportunities, and maintain competitive advantage amid changing circumstances (Magistretti et al., 2021). Attributable to the incorporation of DT tenets into the strategic and operational systems, organizations will increase their chances of generating high-quality customer-experiences, attaining sustainable growth, and becoming immune to disruption.

3.6.2 The temporal evolution of author keywords

Table 4 reflects the chronological change in the author keywords throughout 4 different periods (2003-2014, 2015-2017, 2018-2019, 2020-2024). The trend indicates how Design Thinking (DT) has shifted in perception since being viewed as a specific process in the development of products to a business model of shaping organizational resiliency in a more volatile and complex business world.

2003–2014: Emergence and Foundations

During this early period, DT was mentioned here and there in business literature in a relation to such terms as design, business model, and innovation. It was mostly thought of, as a method of innovation to address so called wicked problems (Buchanan, 1992) or as the more encouraging idea of improving organization design. The

occurrence of topics, including the concept of the social innovation, radical innovation, collaborative innovation shows the first use of DT at the level of fragmented innovation projects. At this point, DT was considered to be a niche instrument that was concerned mostly with the development of new products and services and that was embedded only a little in larger business approaches.

2015–2017: Shifting Towards Organizational Agility and Responsiveness

It is at this time that DT started to gain popularity as organisations realised its importance in implementing human and experience-led innovation. The introduction of such new keywords as change management, sustainability, agility and lean startup indicate a move towards a more responsive and flexible strategy. The NT and GT of DT is higher due to the increased relevance of the concept to the world of entrepreneurship. It has been applied across a wide range of sectors, such as the “service design,” “tourism,” and “education,” marking the body of DT in finding innovative competencies that extend beyond former design roles. This movement is congruent with the fact that organizations are becoming more and more required to work in dynamic systems and in fast adaptation in the changes in the market place.

2018–2019: Deep Integration with Organizational Culture and Digitalization

This step was characterized by the further insertion of DT into the organizational and technological realities. Such keywords as empathy, corporate culture, and lean startup indicate the increased realization of DT as a cultural change driver and user-first principles. At the same time, the merge of DT with such notions as “digital transformation” and “Industry 4.0” became the turning point in the development of DT as the intersection between human-centered design and technologies of the emerging society. The convergence made DT a strategic facilitator where organizations can not only embrace the technological changes but also harmonize it with the requirements of customers and organizational goals boosting general competitiveness.

2020–2024: Strategic Resilience and Stakeholder Value Creation

The latest era demonstrates an acute growth in the number of themes and the level of research. The term of design thinking was still very popular (147 times used), but there were new terms introduced: agile, sustainability, strategic management, and the circular economy, which indicated that DT had grown into a comprehensive strategic ability. This phase goes hand in hand with the post-pandemic business challenges, as organizations were experiencing a disruption in their supply chains, the labour market and the market needs. The emergence of the so-called digital transformation further demonstrates the importance of DT in addressing these challenges and making companies re-conceptualize operations, embrace emerging technologies, and remain competitive. Moreover, the presence of such keywords as social entrepreneurship, sustainability, and circular economy indicates general transition to stakeholder capitalism. In this case, DT is a methodology that is gaining more awareness of not only being able to produce shareholder value but also good social and environmental impact. It is in line with the tendency in the global environment where accommodation of ethical conduct, inclusion, and the good of the entire society in the long-run gain priority. Remarkably, the advent of the concepts of the dynamic capabilities, prototyping, and experiential learning denotes the role of DT as an enabler of strategy. It also gives companies the capability of sensing opportunities and leveraging them with innovation and reengineering their resources to adapt and adjust themselves, which is one of the fundamental needs of business survival and growth in current turbulent markets (Teece, Pisano, & Shuen, 1997).

Synthesis of Temporal Trends

The temporal evolution of keywords demonstrates DT’s transformation into a central component of strategic management. Initially viewed as a design tool, DT has become a key enabler of organizational resilience, agility, and stakeholder value creation. Its growing relevance in sustainability and social impact further emphasizes its role in helping firms align their strategies with broader societal expectations, ensuring long-term survival and success.

Table 4: Temporal Evolution of Author Keywords (2003–2024) (number of occurrences).

Author keywords	2003-2014	2015-2017	2018-2019	2020-2024	Total
design thinking	19	60	47	147	273
innovation	9	17	12	53	91
creativity		3	4	20	27

Author keywords	2003-2014	2015-2017	2018-2019	2020-2024	Total
business model	3	8	2	9	22
design	3	5		12	20
agile		2	2	13	17
digital transformation			3	14	17
social entrepreneurship		2	4	11	17
entrepreneurship		2	3	11	16
entrepreneurship education		4	4	6	14
sustainability		3	2	9	14
service design	1	5	3	4	13
lean startup		1	6	4	11
new product development	1	2	1	7	11
strategic management	1		1	9	11
leadership	1	3	2	3	9
organization design	2	2	1	4	9
wicked problems	3	1	1	4	9
case study		3		5	8
co-creation	1	5	2		8
collaboration	1	2	2	3	8
effectuation		3	1	4	8
empathy			3	5	8
human-centered design	1	2	3	2	8
innovation management	1	2		5	8
problem-solving		1	2	5	8
social innovation	1		2	5	8
change management		3	2	2	7
management	1	2	1	3	7
organization development		2	2	3	7
project management		1	2	4	7
action research		2	1	3	6
circular economy				6	6
open innovation		2		4	6
organizational culture		3	1	2	6
prototyping			2	4	6
service innovation	1	3	2		6
dynamic capabilities			1	4	5
experiential learning		1	1	3	5

Author keywords	2003-2014	2015-2017	2018-2019	2020-2024	Total
knowledge management	2	1	2		5
organizational change	1	1		3	5
product development	1		1	3	5
product management		1	1	3	5
systems thinking		1		4	5
					...
technological innovation				3	3

3.6.3 Customizing co-occurrence analysis

In this section, the statement of variation of author-keyword co-occurrences by country is discussed to show the thematic priorities and research directions that happen to structure global Design Thinking (DT) literature. This score gives the contribution in total number of corresponding author keyword to the involvement of the country in the global total, indicating a regional difference in emphasis and utilization.

The presentation indicates that the USA prevails in most of the top 20 keywords especially in aspects like wicked problems, organization design, leadership, strategic management, new product development, sustainability, social entrepreneurship and business model. Such insistent focus indicates the institutional and managerial environment within the USA where DT has been frequently used to meet organizational complexity and to innovate between the level of strategy and operation.

There is a strong tendency in German researchers to incorporate DT in the context of agile practices. It coincides with the German focus on Industry 4.0 and highly developed manufacturing environment in which the key factors of competitiveness are speed and improving technology. UK is no exception, and has a very strong contribution to the keyword design, inclusive of its past achievements in the field of design-led innovation and creative industries. The scholars in Australia focus on the topic of “entrepreneurship education” which indicates the desire of this country to implement innovation and entrepreneurial skills into higher education curriculums. Italian researchers have invested heavily in the concept of lean startup, service design, and digital transformation in parallel to the increasing entrepreneurial ecosystem in Italy and the aspect of DT in aiding flexible business strategies to the small and medium businesses.

Moreover, the local author keyword co-occurrence analysis of 2023 provides the trends of new research. Among the top 10 author keywords of high relative country scores, there are: ‘Industry 4.0’ (0.67), ‘healthcare’ (0.50), ‘value creation’ (0.50), ‘user experience’ (0.50), ‘circular economy’ (0.50), ‘systems thinking’ (0.40), ‘new product development’ (0.36), ‘digital transformation’ (0.35), ‘social entrepreneurship’ (0.35) and ‘COVID-19’ (0).

These terms are indicative of the rising scholarly interest in the application of DT to solve complicated challenges in the society. In particular, the occurrence of healthcare and circular economy signals the use of DT to solve such global challenges as the public health crisis and sustainable development. It is a paradigm shift, as DT is no longer treated as a tool used to innovate (a product or a service) but rather as a strategic approach to achieving resiliency and building stakeholder value within current corporations.

The rise of DT is also intertwined with such trends as the idea of Industry 4.0 and digital transformation that helps to situate the concept in the context of perspectives on which organizational capability to rupture and transform the marketplace. Figure 5 reveals how these regional areas of research interest are part of the larger global scenery of DT research, both in terms of common concerns and local response.

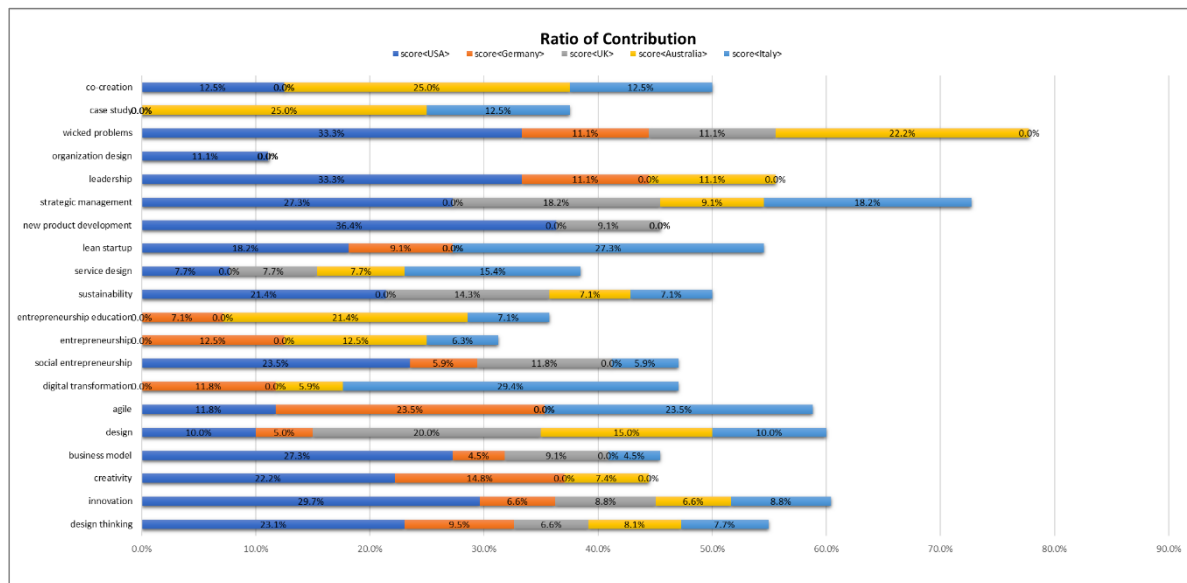


Figure 5: Contribution of top 5 leading countries to the top 20 keywords on DT in business

4. Discussion

This study aimed to enhance understanding and application of design thinking (DT) in the business context by analyzing 604 publications indexed in Scopus using a bibliometric approach. VOSviewer software facilitated mapping the intellectual landscape and revealing thematic patterns, enabling an in-depth understanding of DT's historical development, current trends, and future directions.

4.1 Growing but Lacking

The results reveal a paradox in the trajectory of Design Thinking (DT) research: while there has been significant quantitative growth in DT-related studies within the business domain (Nakata & Hwang, 2020; Wang et al., 2021), this growth is not mirrored by its presence in top-tier management journals or its widespread adoption as a central business strategy.

Two key inflection points have fueled the rising visibility of DT research. First, its emergence in business literature around 2003 marked the initial foray of DT into managerial discourse. Second, the post-2011 surge, catalyzed by events such as the Cambridge Academic Design Management Conference, intensified scholarly engagement. Liedtka's (2018) highly influential Harvard Business Review article further amplified business interest by framing DT as a practical methodology for organizational innovation and strategy.

However, only 13% of the 604 identified DT-related business publications originate from the top 10 management journals, raising concerns about the selectivity, ranking, and perceived legitimacy of DT research within mainstream business academia (Osterloh & Frey, 2020). Moreover, DT research in business remains a minority, comprising merely 10.3% of all DT publications, which are otherwise more prominent in engineering and industrial design fields (Carlgren, Rauth, et al., 2016; Pande & Bharathi, 2020).

This gap can be partly attributed to practical hurdles in adopting DT within business contexts. Many organizations exhibit resistance to change, lack interdisciplinary collaboration between designers and strategists, and remain entrenched in traditional analytical management frameworks. From a theoretical perspective, this hesitancy can be interpreted through the **Resource-Based View (RBV) of the firm** (Barney, 1991). While DT possesses qualities that could make it a valuable, rare, and potentially inimitable resource—such as fostering empathy-driven innovation and complex problem-solving—it has yet to be recognized and cultivated as a core organizational competency capable of delivering sustained competitive advantage.

Additionally, the persistence of **organizational dominant logic** (Prahalad & Bettis, 1986) creates cognitive barriers to DT adoption. Firms entrenched in conventional, analytical approaches may struggle to embrace DT's more intuitive, user-centric, and iterative processes. This misalignment can inhibit strategic renewal and limit the potential performance gains that DT might offer. Nussbaum (2011) suggests that viewing DT merely as an imaginative or secondary instrument rather than a principal strategic tool risks marginalizing its role in

transformative business initiatives. As a result, organizations may underutilize DT's capacity to drive innovation and adaptability in turbulent environments (Collins, 2013).

4.2 The Main Knowledge Creator

The results indicate that 159 authors from 65 countries have contributed to DT research within business contexts, representing only 27.9% of all global countries. Notably, five countries—the USA, UK, Germany, Australia, and Italy—account for 54.5% of total contributions, marking them as the primary knowledge producers in this field. Among these, the USA emerges as a clear leader, distinguished by its prolific authorship, institutional affiliations, and total citations.

However, international collaboration remains notably weak. Authors tend to work locally rather than across borders, suggesting limited integration of diverse perspectives into the DT discourse. This phenomenon can be examined through the lens of **institutional theory** (Scott, 1995), which posits that organizational and academic practices are shaped by normative (cultural expectations), cognitive (shared belief systems), and regulative (laws and funding policies) environments. For instance, the United States' strong venture capital ecosystem and entrepreneurial culture have likely influenced its DT research to emphasize lean startups, rapid prototyping, and market-driven innovation. While effective within the U.S. context, such a framing may not translate seamlessly to regions with different institutional logics, such as those prioritizing policy-driven innovation or community-based economic models.

Similarly, Anglo-American academic traditions tend to favor pragmatic, innovation-oriented approaches, while other parts of the world may lean towards more theoretical or policy-driven perspectives on DT. These differences underscore the risk of a culturally and economically narrow DT knowledge base, which could limit its relevance for businesses operating in diverse institutional contexts.

The top 15 keywords—including “strategic management,” “new product development,” “sustainability,” “social entrepreneurship,” “business model,” “agile,” “entrepreneurship education,” “lean startup,” and “digital transformation”—reflect the thematic priorities of researchers from the USA, Germany, UK, Australia, and Italy. However, these priorities may not fully address the realities and needs of businesses in regions with differing economic structures, regulatory environments, and cultural values.

The lack of robust international co-authorship further exacerbates this issue. Without cross-national collaborations, the development of a more universal and inclusive understanding of DT remains hindered. This limitation has practical implications for multinational corporations seeking to implement DT strategies across diverse markets. The absence of a consistent yet locally adaptive DT framework could impede their ability to align innovation practices with local institutional conditions, thereby constraining enterprise performance and competitive advantage at the global level.

4.3 Future Research Directions

The thematic development revealed in this study highlights several underexplored areas in Design Thinking (DT) research within business contexts. While prior efforts have focused on DT's conceptual foundations, procedural models, and organizational implementation (Dorst, 2011; Liedtka, 2015; Micheli et al., 2019), more recent studies integrating DT with digital transformation and human-centered approaches (Carlgrén & BenMahmoud-Jouini, 2022; Schraven et al., 2021) indicate a promising shift towards dynamic and strategic applications.

The field is methodologically unbalanced though. The existing literature uses mostly qualitative research and conceptual papers as well as cases studies that in spite of their usefulness lack generalizability and are not able to deliver substantial, measurable augmentations on the effects of DT on business performance. The next studies have to be conducted in a quantitative and mixed-methods design to examine tangible business results like return on investment (ROI), speed of innovation, progress in the procedures, customer satisfaction, and market performance. Regarding the examples, longitudinal research could be used to understand the long-term impacts of DT on the organizational culture and transformation, while controlled experimentation may aim to check the effects of DT interventions on lead times of product development or even experience measures.

One of the most important priorities relates to the formation of a common theoretical framework. Though the existing literature in the field refers to systems theory, cognitive theory, and capital theory (Stefaniak, 2020), such integrated approach may offer the more comprehensive picture of the collaborative and structural relations in DT, involving the concepts data provided by organizational psychology and team science, as well as institutional theory. As an example, the application of the theories of teamwork may clarify the extent to which the multidisciplinary cooperation within the DT environment could improve the quality and pace of innovation.

Importantly, framing these future directions within the **Dynamic Capabilities Theory** (Teece et al., 1997) offers a powerful conceptual lens. This perspective positions DT not merely as a process but as a **strategic dynamic capability** that enables firms to sense emerging opportunities, seize them through agile innovation, and reconfigure their assets and routines to adapt to volatile market environments. Future quantitative studies could assess how the maturity of a firm's DT capability correlates with its innovative performance, market responsiveness, and long-term financial sustainability—directly addressing the central management question of how enterprises achieve and maintain competitive advantage in turbulent contexts.

Table 5 provides a structured summary of identified research gaps and potential directions. These align with the thematic, theoretical, and methodological findings of this study, offering a roadmap for advancing scholarship and practical applications in DT within business.

Table 5: Future Research Directions in Design Thinking for Business

Research Gap	Suggested Future Research Direction
Limited DT research in business compared to other fields	Investigate sector-specific barriers to DT adoption (e.g., finance, healthcare, logistics) and explore frameworks for scaling DT in non-creative industries.
Weak international collaboration and geographical concentration	Promote cross-cultural, multi-country comparative studies; examine how sociocultural and institutional factors influence DT practices.
Overreliance on qualitative case studies	Conduct quantitative and mixed-methods research to measure DT's impact on ROI, innovation speed, process efficiency, and customer satisfaction.
Fragmented theoretical foundations	Develop integrated frameworks combining design, strategy, organizational behavior, and dynamic capabilities perspectives.
Underexplored business outcomes of DT	Analyze DT's long-term effects on organizational transformation, employee engagement, and market performance through longitudinal studies.
Lack of empirical studies on team collaboration	Study multidisciplinary team dynamics in DT using teamwork and group dynamics theories; assess the impact of team diversity on DT effectiveness.
Minimal focus on DT in emerging economies	Examine DT's adaptation in resource-constrained contexts and its role in frugal innovation and grassroots entrepreneurship.
Limited digital integration in DT research	Explore DT's interplay with AI, IoT, blockchain, and other emerging technologies in digital product/service development.
Few studies linking DT with organizational change	Investigate DT's influence on organizational culture, change management, and leadership development strategies.
Lack of focus on DT metrics and performance indicators	Develop robust performance indicators for DT initiatives and assess their alignment with strategic business objectives.

5. Implications of Research

5.1 Theoretical Implications

This study contributes to advancing the theoretical discourse on Design Thinking (DT) by mapping its evolution in business contexts and exposing critical gaps that must be addressed for DT's integration into mainstream management theory. While DT is increasingly recognized as a tool for innovation, much of its current scholarship

remains fragmented across disciplines and lacks comprehensive incorporation into business strategy frameworks.

A key theoretical implication lies in conceptualizing DT through the lens of the **Resource-Based View (RBV)** of the firm (Barney, 1991). From this perspective, DT practices—empathy-driven exploration, iterative prototyping, and user-centric ideation—can evolve into organizational routines that are valuable, rare, and difficult to imitate. If institutionalized effectively, these routines could constitute core organizational capabilities, fostering sustained competitive advantage and superior enterprise performance.

Further alignment with **Dynamic Capabilities Theory** (Teece et al., 1997) positions DT as a practical mechanism enabling firms to sense environmental changes, seize emerging opportunities, and reconfigure resources in volatile markets. For example, the empathy phase helps firms sense customer needs and market shifts, while ideation and prototyping support seizing opportunities through innovative solutions. Testing and iteration further enable reconfiguration for rapid adaptation. Framing DT in this way elevates it from a creative methodology to a strategic competence underpinning organizational agility and resilience.

Addressing **Research Question 2 (RQ2)**, this study also highlights methodological trends in DT research. The bibliometric analysis reveals a heavy reliance on qualitative approaches—particularly case studies, conceptual analyses, and narrative reviews. While such methods yield rich, context-specific insights, they limit generalizability and the ability to empirically validate DT's business impact. Few studies have applied quantitative designs or mixed-methods approaches capable of testing hypotheses and measuring outcomes such as return on investment (ROI), innovation speed, or customer satisfaction. This methodological imbalance underscores the need to diversify research approaches. Integrating **quantitative metrics, longitudinal studies, and experimental designs** would enhance rigor and produce actionable insights that align DT practices with measurable organizational performance indicators.

Moreover, the theoretical foundations of DT research remain fragmented. Current scholarship borrows selectively from systems theory, cognitive science, and innovation studies (Stefaniak, 2020), but lacks unified conceptual models linking DT practices to business outcomes. Bridging DT with theories from **management control systems** (Simons, 1995) and **performance measurement** could help explain how DT practices serve as leading indicators influencing lagging financial and operational metrics.

The issue of contextual relevance, critical for **Research Question 3 (RQ3)**, also emerges prominently. Most DT research originates from Western, developed countries, raising concerns about its universal applicability. This limitation can be addressed through **Contingency Theory** (Donaldson, 2001), which emphasizes aligning practices with environmental and organizational factors. The effectiveness of DT may depend on variables such as national culture, industry dynamics, and organizational structures. Developing adaptive, context-sensitive DT frameworks is therefore essential for its broader adoption across diverse business ecosystems, especially in emerging markets and resource-constrained environments.

5.2 Practical Implications

This study offers actionable recommendations for business leaders, educators, and policymakers, emphasizing DT's strategic and functional relevance in contemporary organizations.

A major practical implication concerns DT's potential to foster a market-oriented culture. By centering on user needs and experiences, DT helps organizations create superior customer value—an established driver of profitability and market share. Embedding DT within strategic planning processes transforms it from a design tool to a critical enabler of competitive advantage and organizational renewal.

The findings also underscore DT's role in promoting cross-functional collaboration. Its emphasis on “teamwork,” “co-creation,” and “multidisciplinary collaboration” aligns with organizational learning (Argyris & Schön, 1978) and knowledge management (Nonaka & Takeuchi, 1995) theories. Businesses can leverage DT to break down silos, encourage knowledge sharing, and build collaborative innovation systems that draw on diverse organizational perspectives. This integration enhances operational agility and accelerates innovative problem-solving.

In education and policy, incorporating DT principles into business and management curricula equips future leaders with essential problem-solving and creative thinking skills for navigating complex environments. Policymakers, too, can apply DT methodologies to public sector innovation, improving service delivery and governance through citizen-centric, participative approaches.

Addressing RQ2, the study highlights the lack of standardized performance metrics for DT initiatives. To remedy this, organizations could develop a Balanced Scorecard for DT (Kaplan & Norton, 1996), tracking performance across four dimensions:

- **Financial:** Cost savings, revenue growth.
- **Customer:** Improved satisfaction, loyalty.
- **Internal processes:** Innovation speed, process efficiency.
- **Learning & growth:** Employee engagement, capability development.

This tool would enable managers to directly link DT practices to strategic objectives and measure their contribution to enterprise performance.

Finally, for **RQ3**, the study emphasizes the necessity of **localizing DT strategies** to overcome cultural and institutional barriers to global diffusion. Adapting DT practices to align with local contexts is not merely a matter of sensitivity but a strategic imperative for ensuring successful implementation and maximizing the performance gains from DT investments. Inclusive, context-aware innovation practices will allow DT to deliver tangible benefits across a variety of industries and regions, including resource-constrained environments.

6. Conclusion

The famous aphorism expressed by Kuhn (1951), "There is nothing so practical as a good theory," best captures the inter-active relationship between practice and theory. A sufficient theoretical basis should be supported by empirical applications, whereas, conversely, good practical outcomes should enhance theoretical models. The current study illustrates the important role of research and scholarly publications in the formation of a solid scholarly discipline. Based on bibliometric analysis, we have followed the history of Design Thinking (DT in the corporate sector, determining key trends, lines of development, and future directions for research.

The recurring themes from this research provide a complete picture of the maturity of digital transformation in the business world. The development of a research field can be gauged on different dimensions, such as the number of authorship, co-authorship network patterns, research methodologies used, and citation network (Keathley-Herring et al., 2016). Based on this, the research shows that while the research on DT in business is growing, there is still room for improvement in some key areas. A key requirement is the linkage of DT with strategic management models, as well as empirical validation of its business impact, such as performance improvement and return on investment (ROI). In addition, more focus needs to be given to researching the cross-cultural applications of DT, especially through international collaboration and inter-disciplinary research that can provide insight in different business environments (Elsbach & Stigliani, 2018). The findings highlight the need for expanding DT research in business not just in terms of volume but also in terms of diversity of methods. Although DT has witnessed a massive increase in research interest, particularly in top business journals, there is still a gap in terms of depth and rigor of empirical study. With DT continuing to revolutionize business, future researchers must come to terms with central unanswered questions, such as DT's tangible business value, DT's role in organizational change, and measuring DT success in practice. Future research must also pursue more stringent methods, such as experimental and longitudinal designs, in a bid to yield more actionable findings concerning the effects of DT on business environments.

7. Limitations

Although this study offers valuable insights into the use of Design Thinking (DT) in the business world, it is not without its limitations. First, the study was based largely on teaching and ancillary materials, which could have led to the exclusion of valuable scholarly papers on DT in business settings. Second, the use of a single database—Scopus—while reputable and widely used in social sciences, could have limited the diversity of the dataset. Future studies should, in an attempt to make the overall completeness higher, incorporate other databases like Web of Science and Google Scholar, which could provide access to more journals and publication types. A second limitation is the exclusive focus on business-focused DT literature, which might miss rich interdisciplinary data where DT is being used in other disciplines like healthcare, engineering, and education. The exclusion of such data might have limited the exploration of DT's full potential and versatility across disciplines. Future research would be better off being more inclusive and considering cross-disciplinary application and theoretical implications, thus enhancing the overall knowledge of DT's applicability and relevance in the business environment.

Data Availability Statement: The underlying data for the conclusions presented in this paper can be shared by the corresponding author on request. All such data are contained in the article or supplementary files. Additional

datasets, if appropriate, will be shared on a case-by-case basis on Mendeley Data with regard to privacy issues, ethical considerations, or confidentiality restrictions.

AI statement : This article did not use AI tools

Ethics statement : Ethical review is not applicable

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