

Digital Customer Experience: Retrospective Insights And Future Directions

Pengalaman Pelanggan Digital: Wawasan Retrospektif Dan Arah Masa Depan

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ABSTRACT

The rapid acceleration of digital transformation and rising customer expectations have positioned Digital Customer Experience (DCX) as a critical yet fragmented research domain. This study systematically reviews the DCX literature to identify key research trends, dominant themes, theoretical foundations, and methodological approaches. Using a PRISMA-guided systematic literature review of 365 Scopus-indexed journal articles, the study employs bibliometric and content analysis techniques. The findings reveal a significant increase in DCX research, particularly after 2020, with core themes centered on customer experience, digital transformation, and digital marketing. Six major thematic clusters emerge, including value creation, technology, engagement, consumer behavior, customer journey, and business performance. The results also indicate a dominance of qualitative and conceptual studies, alongside a growing adoption of quantitative methods such as structural equation modeling. Despite diverse theoretical applications, the field remains fragmented, highlighting the need for integrative frameworks. This study contributes by consolidating the intellectual structure of DCX research and proposing future research directions using the TCCM framework. Practically, it offers insights for organizations to design integrated and customer-centric digital experiences that enhance engagement, satisfaction, and competitive advantage.

Keywords: *Digital customer experience, digital transformation, customer journey, customer engagement, omnichannel experience.*

ABSTRAK

Percepatan transformasi digital yang pesat dan meningkatnya ekspektasi pelanggan telah menempatkan Pengalaman Pelanggan Digital (DCX) sebagai domain penelitian yang penting namun terfragmentasi. Studi ini secara sistematis meninjau literatur DCX untuk mengidentifikasi tren penelitian utama, tema dominan, landasan teoritis, dan pendekatan metodologis. Dengan menggunakan tinjauan literatur sistematis yang dipandu PRISMA dari 365 artikel jurnal yang terindeks Scopus, studi ini menggunakan teknik bibliometrik dan analisis konten. Temuan menunjukkan peningkatan signifikan dalam penelitian DCX, khususnya setelah tahun 2020, dengan tema inti yang berpusat pada pengalaman pelanggan, transformasi digital, dan pemasaran digital. Enam kluster tematik utama muncul, termasuk penciptaan nilai, teknologi, keterlibatan, perilaku konsumen, perjalanan pelanggan, dan kinerja bisnis. Hasil juga menunjukkan dominasi studi kualitatif dan konseptual, bersamaan dengan meningkatnya adopsi metode kuantitatif seperti pemodelan persamaan struktural. Terlepas dari beragam aplikasi teoritis, bidang ini tetap terfragmentasi, menyoroti kebutuhan akan kerangka kerja integratif. Studi ini berkontribusi dengan mengkonsolidasikan struktur intelektual penelitian DCX dan mengusulkan arah penelitian masa depan menggunakan kerangka kerja TCCM. Secara praktis, ini menawarkan wawasan bagi organisasi untuk merancang pengalaman digital yang terintegrasi dan berpusat pada pelanggan yang meningkatkan keterlibatan, kepuasan, dan keunggulan kompetitif.

Kata Kunci: Pengalaman Pelanggan Digital, Transformasi Digital, Perjalanan Pelanggan, Keterlibatan Pelanggan, Pengalaman Omnichannel.

1. Introduction

The rapid acceleration of digital transformation has fundamentally reshaped how organizations design and deliver customer value, positioning DCX as a critical and timely area of scholarly inquiry. The widespread adoption of artificial intelligence, digital platforms, and data-

driven technologies has elevated customer expectations toward seamless, personalized, and consistent interactions across multiple digital touchpoints. Empirical evidence shows that DCX plays a central role in driving firm performance, innovation, and competitive advantage (Masoud & Basahel, 2023; Nguyen et al., 2022). Despite its growing importance, organizations continue to face persistent challenges, including fragmented customer journeys, inconsistent service delivery, and customer dissatisfaction with automated systems. For instance, many customers report frustration with chatbot-based services due to a lack of personalization and perceived inefficiency (Blümel et al., 2024). In addition, industries such as retail and tourism are under increasing pressure to adapt digital strategies to evolving consumer expectations and sustainability demands (Gibson et al., 2022; Mandagi et al., 2026). These conditions highlight the urgency of advancing DCX research to better understand how digital technologies can create coherent, engaging, and value-driven customer experiences.

DCX refers to the holistic perception that customers develop through interactions with a firm's digital interfaces, encompassing cognitive, behavioral, and sensory responses throughout the customer journey. Prior research has emphasized the importance of DCX in influencing customer satisfaction, engagement, and loyalty, particularly through personalization, convenience, and omnichannel integration (Aw et al., 2022; Batat, 2024). Studies have also highlighted how digital interfaces, such as voice assistants and mobile platforms, shape user perceptions and behavioral intentions (Aw et al., 2022; Aseng et al., 2025). However, despite these advancements, the conceptualization of DCX remains fragmented, particularly in emerging contexts such as phygital environments where digital and physical experiences intersect (Batat, 2024). Furthermore, the effectiveness of digital transformation initiatives often depends on how well customer experience is integrated into organizational strategies, yet empirical findings remain inconclusive regarding its direct impact on performance (Masoud & Basahel, 2023). These limitations indicate the need for a more comprehensive and integrated understanding of DCX in the digital age.

Existing literature on DCX reflects a growing but dispersed body of knowledge across multiple disciplines, including marketing, information systems, and service management. Prior studies have explored themes such as customer journey optimization, digital personalization, conversational interfaces, and phygital experiences (Batat, 2024; Blümel et al., 2024). At the same time, sector-specific research reveals gaps in understanding customer experience in contexts such as convenience retail, where there is limited development of customer-centered metrics and evaluation frameworks (Gibson et al., 2022). In tourism, research on digital marketing and customer experience remains fragmented, particularly in linking digital strategies with broader sustainability outcomes (Mandagi et al., 2026). Moreover, while digital technologies enable advanced personalization and interaction, there is still insufficient clarity on how these elements collectively shape a coherent and meaningful customer experience. This fragmentation suggests that DCX research lacks an integrative perspective that consolidates theoretical, methodological, and contextual insights.

Given these limitations, there is a clear need for a systematic and integrative review that consolidates existing knowledge on DCX. Although prior studies have contributed valuable insights, no comprehensive synthesis has systematically examined the evolution, theoretical foundations, and methodological approaches within DCX research. Addressing this gap is essential for advancing both academic understanding and managerial practice, particularly in an increasingly competitive and digitalized environment. Therefore, this study aims to systematically review the literature on DCX to identify key themes, dominant theories, and methodological trends, as well as to highlight critical research gaps and future directions. By doing so, this study seeks to provide a comprehensive and structured understanding of DCX and its role in shaping customer value in the digital era.

2. Methodology

This study undertakes a systematic review of the DCX literature, with an emphasis on understanding how digital technologies and platforms influence customer interactions, engagement, and value creation throughout the customer journey. The primary objective is to map the intellectual structure of the field by identifying key publications, prevailing research themes, dominant theoretical perspectives, and commonly used methodologies. Following best practices in recent review studies, the present research adopts a SLR approach, which follows a structured and replicable procedure for collecting, evaluating, and synthesizing existing research (Lule et al., 2026; Tappy & Mandagi, 2026; Mandagi et al., 2026). This approach enhances the credibility of the findings by minimizing bias and providing a clear audit trail of methodological decisions (Pati & Lorusso, 2018).

The review process is guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework, which organizes the study selection into four main stages: identification, screening, eligibility, and final inclusion. This structured protocol facilitates a consistent and systematic evaluation of relevant literature while maintaining methodological rigor (Phillips & Barker, 2021). The analysis is driven by a set of research questions that aim to examine the development of DCX research, its theoretical underpinnings, and the methodological approaches employed to investigate digital customer interactions.

As illustrated in Figure 1, the study selection process began with an initial pool of 7,056 documents retrieved from the database. After removing duplicate records, 6,531 articles remained. In the subsequent screening stage, non-English publications were excluded, resulting in 6,397 articles. The dataset was then refined by removing non-journal sources, such as conference proceedings and book chapters, which reduced the sample to 2,484 articles. Further screening based on relevance to the research topic led to the exclusion of unrelated studies, yielding 1,227 articles. In the final stage, only articles with full-text availability were retained, resulting in a final sample of 365 studies included in the analysis.

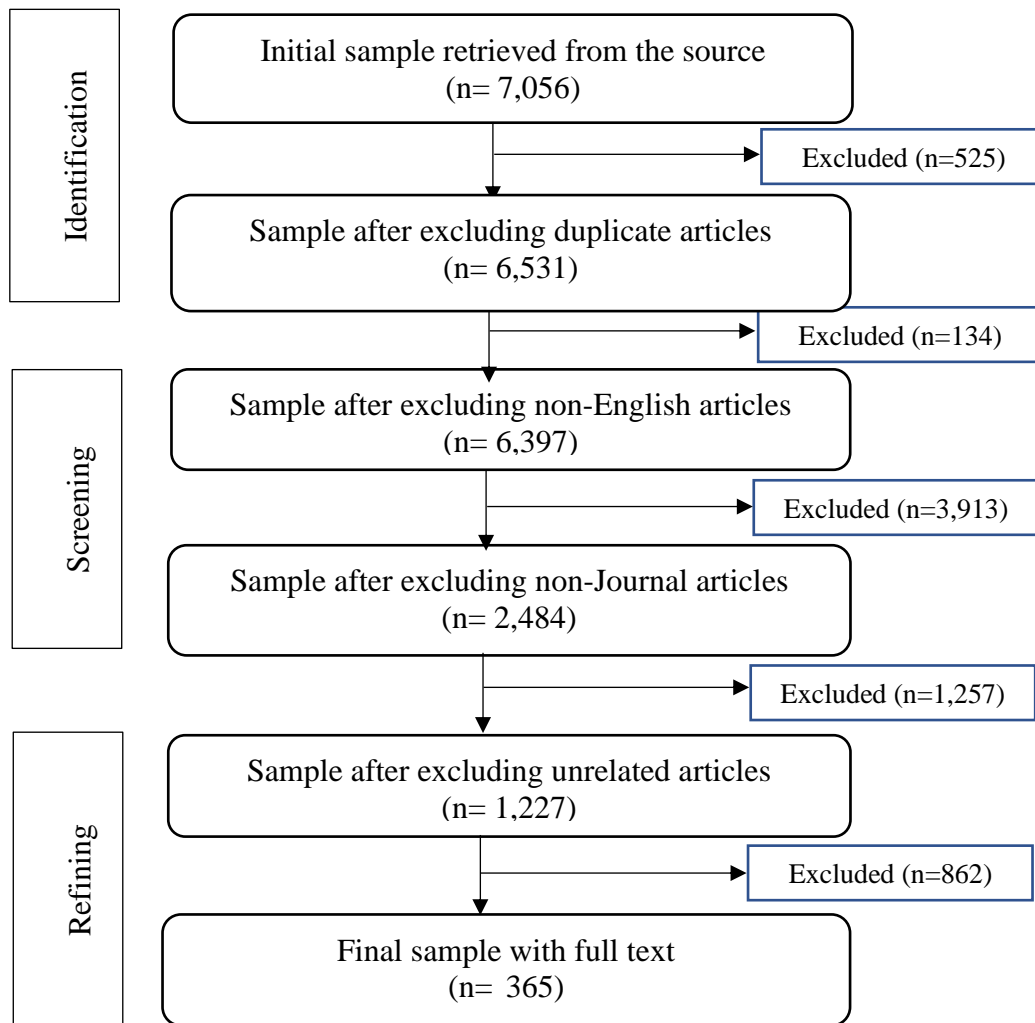


Figure 1. Prisma process

The final set of selected articles forms the empirical foundation for subsequent bibliometric and content analyses. These analyses are designed to uncover the intellectual structure of DCX research by identifying dominant themes, key theoretical perspectives, and evolving research trends over time. Through this combined approach, the study provides a comprehensive understanding of how DCX scholarship has developed and highlights potential directions for future research.

Table 1. Research Protocol

Research Protocol	Description
Document type	Scientific articles from Journal
Source	Scopus Database
Time frame	2010-2025
Search field	Title, abstract & keywords
Language	English
Search terms	digital AND customer AND experience
Subject area	Business, Management and Accounting
Inclusion criteria	Articles focus on digital customer experience

Exclusion criteria	non-peerreviewed articles, books, book chapters, conference papers, working papers non-English articles and articles without full text.
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By systematically applying the inclusion and exclusion criteria outlined in Table 1, this study ensures that only high-quality and relevant publications are included in the analysis. The resulting dataset represents a focused body of literature that enables a critical examination of research trends, theoretical development, and emerging gaps within DCX studies. Bibliometric analysis was conducted using VOSviewer to map co-authorship networks, keyword co-occurrence patterns, and citation linkages across the selected articles. In addition, content analysis was employed to classify the literature into thematic categories, allowing for a deeper exploration of conceptual foundations, theoretical frameworks, and managerial implications. Together, these complementary methods provide a structured and holistic overview of the DCX research landscape.

3. Results and Discussion

3.1 Research profile on DCX

Publication trends

Figure 2 illustrates the evolution of scholarly publications on DCX, revealing a substantial rise in academic attention over time. While early foundations of customer experience research predate the digital era, the integration of digital technologies into customer journeys remained relatively underexplored until the late 2010s. From 2002 to 2019, publication output grew slowly, indicating a fragmented and emerging research stream. However, a clear inflection point occurred around 2020, coinciding with the COVID-19 pandemic, which accelerated digital transformation across industries. Following this shift, the number of publications increased sharply, reaching nearly 100 documents by 2024. This surge reflects a paradigm shift in marketing and service research, where digital interfaces, omnichannel interactions, and data-driven personalization have become central to understanding and managing customer experience.

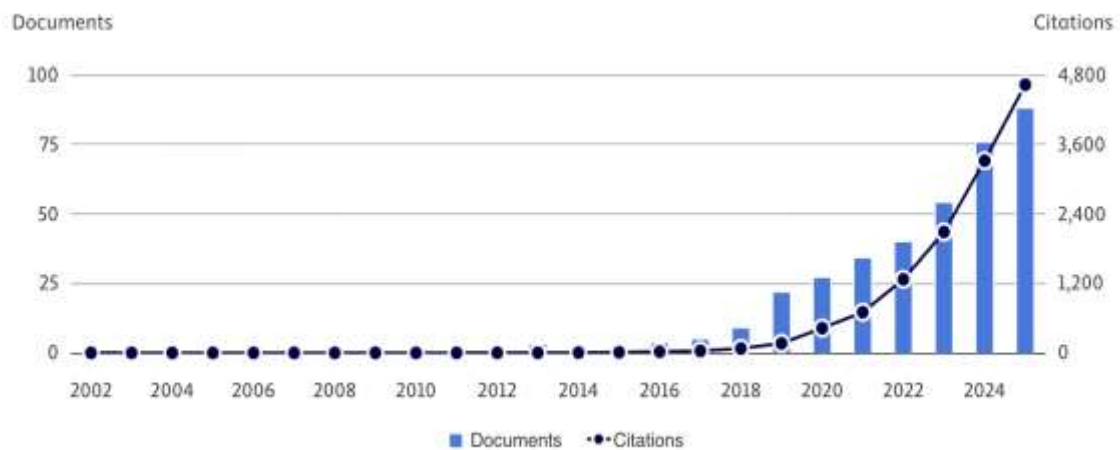


Figure 2. Publication and Citation Trends in DCX research

Figure 2 further highlights the rapid growth in citation impact within the DCX domain. Although publication counts rose steadily after 2020, citations expanded more dramatically, peaking at over 4,000 in 2024. This divergence suggests not only increased research output but also a strong consolidation of influential, high-impact studies shaping the field. The citation surge is largely driven by interdisciplinary contributions spanning digital marketing, information systems, and service management, emphasizing themes such as customer journey analytics, AI-

enabled personalization, platform ecosystems, and immersive technologies. Overall, the post-pandemic momentum underscores a broader transformation toward digitally mediated experiences, positioning DCX as a critical and rapidly advancing area of scholarly inquiry.

Research methodologies

Table 2 reveals a clear methodological pattern in DCX research, with a strong dominance of qualitative and conceptual approaches. Conceptual/theoretical studies emerge as the most frequently used methodology (59 articles), followed by in-depth and semi-structured interviews (49) and literature reviews (45). Case study research (40) and thematic/content analysis (35) further reinforce this qualitative orientation. This distribution suggests that DCX remains a conceptually evolving field, where scholars are still actively building theoretical foundations, frameworks, and contextual understanding of digitally mediated customer journeys. In contrast, quantitative approaches are comparatively less prevalent, although still significant. Structural Equation Modeling (SEM/PLS) stands out as the most commonly applied quantitative method (42 articles), indicating a growing effort to empirically validate relationships between key DCX constructs such as satisfaction, engagement, and loyalty. Other methods, including statistical regression (16) and experimental designs (12), are less frequently used, reflecting limited causal and predictive testing in the field. Overall, the methodological landscape highlights an imbalance favoring exploratory and theory-building studies over rigorous quantitative validation, suggesting opportunities for future research to adopt more mixed-method and experimental designs to strengthen empirical generalizability and causal inference in DCX studies.

Table 2. Most Commonly used research methodology in DCX research

Approach	Methodology	Total Articles	Sample studies
Quantitative	Structural Equation Modeling (SEM/PLS)	42	El Hilali et al. (2020); Sharma et al. (2024); Aw et al. (2022)
	Statistical Regression	16	Bethapudi et al. (2025); Agus et al. (2021); Aljazzaf et al. (2025)
	Experiments	12	Dennis et al. (2013); Bauer et al. (2020); Pahi et al. (2024)
Qualitative	In-depth & Semi-structured Interviews	49	Lazrak et al. (2024); Rocha et al. (2023); Christou et al. (2023)
	Case Study Research	40	Nohutlu et al. (2022); Rocha et al. (2023); Büyüközkan et al. (2021)
	Thematic & Content Analysis	35	Lazrak et al. (2024); Christou et al. (2023); Bueno et al. (2024)
	Conceptual / Theoretical	59	Hänninen et al. (2019); Faulds et al. (2018); Bolton et al. (2018)
	Literature Review	45	Duralia et al. (2025); Prados-Castillo et al. (2025); Mahr et al. (2019)

Theoretical Foundations in DCX research

Table 3 indicates that DCX research is grounded in a diverse yet relatively concentrated set of theoretical perspectives, with a strong emphasis on technology- and service-oriented

frameworks. The Technology Acceptance Model (TAM/TAM2) emerges as the most frequently applied theory (7 studies), reflecting the centrality of user adoption, perceived usefulness, and ease of use in understanding digital interactions. Closely following are Service-Dominant Logic (SDL) and Dynamic Capabilities (6 studies each), highlighting a shift toward value co-creation and organizational adaptability in digitally mediated environments. These dominant theories suggest that DCX research is positioned at the intersection of technology adoption and service innovation.

Additionally, Servicescape Theory (5 studies) and the Elaboration Likelihood Model (ELM) (3 studies) provide complementary lenses, focusing on the experiential and cognitive dimensions of digital interactions. Servicescape theory extends into digital contexts by examining virtual environments and interface design, while ELM explains how customers process digital content and form attitudes. Overall, the theoretical landscape demonstrates a multidisciplinary foundation, integrating insights from information systems, marketing, and strategic management. However, the relatively limited use of each theory also suggests fragmentation, indicating opportunities for future research to develop more integrative and unified theoretical frameworks in DCX.

Table 3. Most commonly used theories in DCX research

Theory	Number of Studies	Sample Studies (3+ authors)
TAM/TAM2	7	Martínez Puertas et al. (2024); Luceri et al. (2022); Yelfiarita et al. (2025); Van Ninh & Danko (2023); Muharam et al. (2025); Duy & Thanh (2023); Chotisarn & Phuthong (2025).
SDL	6	Neuhofer et al. (2021); Firdaus et al. (2023); da Silva & Cardoso (2025); Swan et al. (2024); Chotisarn & Phuthong (2025); Cardoso et al. (2024).
Dynamic Capabilities	6	Warner & Wäger (2019); Pistrui et al. (2023); Felipe et al. (2025); Akter et al. (2020); Pachni-Tsitiridou & Fouskas (2022); Chotisarn & Phuthong (2025).
Servicescape Theory	5	Rosenbaum et al. (2025); Bonfanti et al. (2023); Nyrhinen et al. (2022); Klaus et al. (2024); Patel et al. (2024).
ELM	3	Dwivedi et al. (2023); Lee & Han (2020); Muharam et al. (2025).

3.2. Performance profile of research on DCX

Most influential journals

Table 4 highlights the key journals contributing to DCX research, with the Journal of Retailing and Consumer Services (Elsevier) leading at 12 publications, followed by the Journal of Services Marketing (10 articles). The Journal of Business Research and Journal of Service Management each contribute 9 articles, indicating strong integration of DCX within business and service disciplines. Other notable outlets, including the Journal of Theoretical and Applied Electronic Commerce Research and the Journal of Digital and Social Media Marketing (8 articles each), along with several journals contributing 7 articles, reflect the interdisciplinary and widely distributed nature of DCX scholarship across marketing, digital, and service-focused domains.

Table 4. Most influential journals by number of articles published in in DCX research

Journal name	Publisher	Number of counts
Journal of Retailing and Consumer Services	Elsevier Ltd	12
Journal of Services Marketing	Emerald Publishing	10

Journal of Business Research	Elsevier Inc.	9
Journal of Service Management	Emerald Publishing	9
Journal of Theoretical and Applied Electronic Commerce Research	MDPI	8
Journal of Digital and Social Media Marketing	Henry Stewart Publications	8
Applied Marketing Analytics	Henry Stewart Publications	7
Journal of Brand Strategy	Henry Stewart Publications	7
Cogent Business and Management	Cogent OA	7
Journal of Research in Interactive Marketing	Emerald Publishing	7
International Journal of Retail and Distribution Management	Emerald Publishing	6

Most influential authors

Figure 3 highlights the top 10 most influential authors in DCX research based on publication count, revealing a relatively balanced and emerging scholarly landscape. Mihardjo, L.W.W. stands out as the most prolific contributor with around four publications, while the majority of other leading authors, including Dwivedi, Y.K., Elidjen, Rosenbaum, M.S., Sosmoko, Sharma, A.K., Sharmo, R., Wirtz, J., and Zaki, M., each contribute approximately three articles. Alamsjah, F. appears with slightly fewer contributions, indicating a developing presence among key contributors. Overall, the distribution suggests that DCX research is still evolving, with no single dominant author, reflecting a collaborative and open field that continues to offer opportunities for broader scholarly contribution.

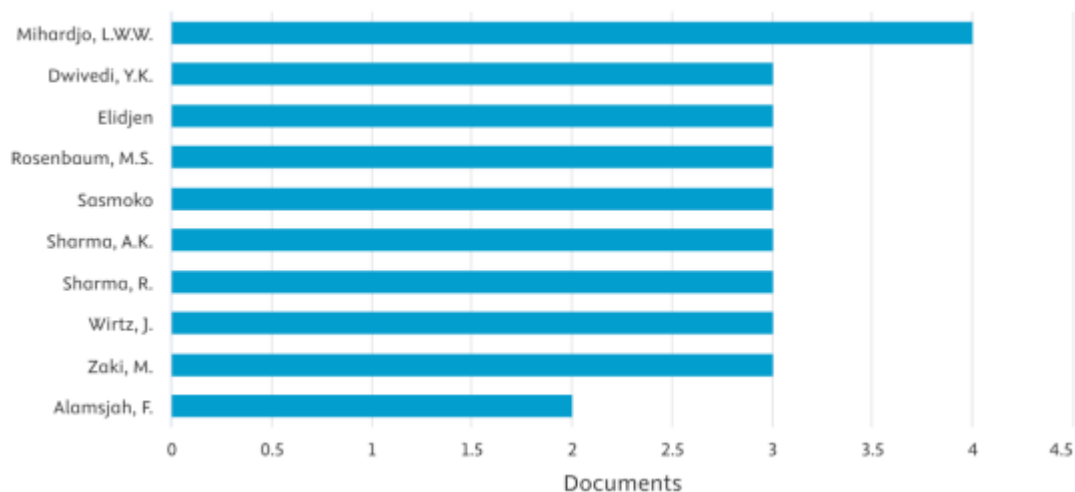


Figure 3. Most influential authors by number of articles published in in DCX research (Top 10)

Top contributing institutions

Figure 4 presents the top 10 most influential affiliations in DCX research based on publication output, indicating a relatively balanced institutional contribution. One leading affiliation stands out with approximately four publications, while the remaining institutions contribute around three articles each, suggesting no single institution overwhelmingly dominates the field. This distribution reflects a dispersed and collaborative research landscape,

where multiple universities and research centers actively contribute to the development of DCX scholarship. Overall, the findings indicate that DCX research is globally distributed and still evolving, offering broad opportunities for institutional participation and future contributions.

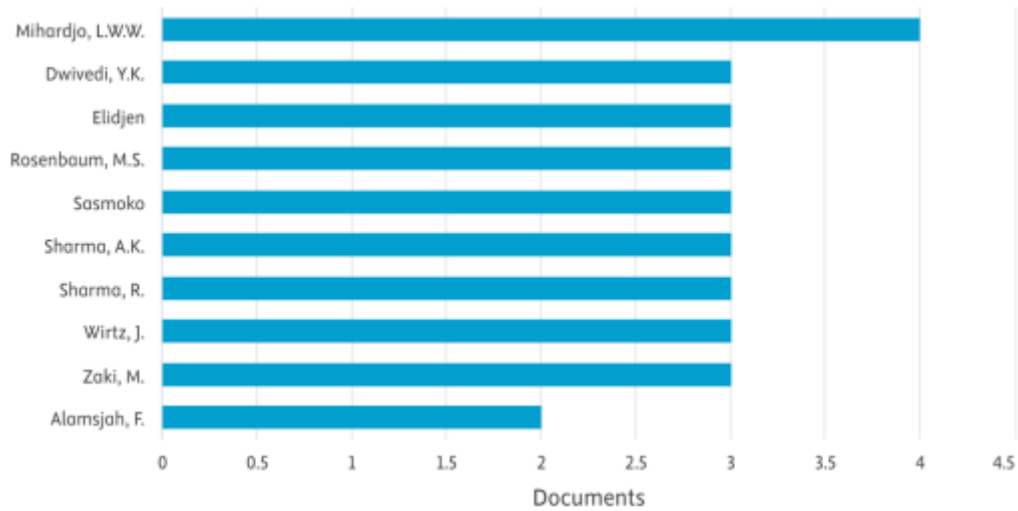
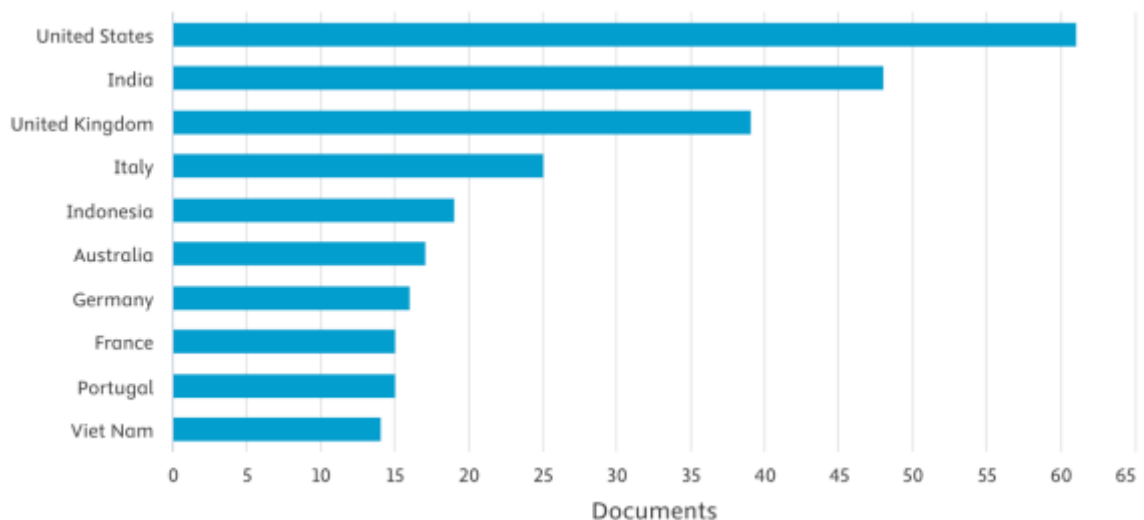


Figure 4. Most influential affiliation by number of articles published in in DCX research (Top 10)

Top contributing Country

Figure 5 presents the top 10 most influential countries in DCX research based on publication output, highlighting a geographically diverse yet concentrated distribution of scholarly contributions. A few leading countries contribute the highest number of publications, indicating strong research capacity and established academic interest in DCX, while the remaining countries show relatively similar levels of output. This pattern suggests that DCX research is driven by both developed and emerging economies, reflecting its global relevance across different market contexts. Overall, the distribution indicates that although certain countries lead in productivity, the field remains widely dispersed, demonstrating growing international engagement and opportunities for broader global collaboration in DCX research.

Figure 5. Most influential country by number of articles published in this field (Top 10)



Most influential research on DCX

Table 5 highlights the most influential and highly cited studies shaping the development of DCX research. The work by Bolton et al. (2018) stands out as the most cited, emphasizing the integration of digital, physical, and social realms in shaping customer experience, which reflects the foundational shift toward omnichannel and holistic experience design. Earlier contributions such as Parise et al. (2016) and Melero et al. (2016) further reinforce the importance of digital transformation and omnichannel environments in redefining customer interactions. More recent studies, including Gao and Liu (2023) and Aw et al. (2022), highlight the growing role of advanced technologies such as artificial intelligence and digital voice assistants in enhancing personalization and interaction quality. Research in sector-specific contexts, such as digital banking (Mbama & Ezepue, 2018; Mbama et al., 2018) and hospitality (Bonfanti et al., 2021), demonstrates the practical implications of DCX in improving performance and service delivery. Additionally, studies like Mihardjo et al. (2019) and Moore et al. (2022) underline the strategic importance of leadership and emerging technologies in shaping customer experience. Overall, the table reflects a progression from foundational digital transformation concepts toward more advanced, technology-driven and context-specific applications, indicating the dynamic and evolving nature of DCX research.

Table 5. Most influential research on DCX

Title	Authors	Year	Source title	Cited by
Customer experience challenges: bringing together digital, physical and social realms	Bolton et al.	2018	Journal of Service Management	694
Solving the crisis of immediacy: How digital technology can transform the customer experience	Parise et al.	2016	Business Horizons	284
Artificial intelligence-enabled personalization in interactive marketing: a customer journey perspective	Gao & Liu	2023	Journal of Research in Interactive Marketing	225
Alexa, what's on my shopping list? Transforming customer experience with digital voice assistants	Aw et al.	2022	Technological Forecasting and Social Change	214
Digital banking, customer experience and bank financial performance: UK customers' perceptions	Mbama & Ezepue	2018	International Journal of Bank Marketing	200
Digital leadership role in developing business model innovation and customer experience orientation in industry 4.0	Mihardjo et al.	2019	Management Science Letters	147
The impact of the Covid-19 pandemic on customer experience design: The hotel managers' perspective	Bonfanti et al.	2021	International Journal of Hospitality Management	141
Recasting the customer experience in today's omni-channel environment; [Redefiniendo la experiencia del cliente en el entorno omnicanal]	Melero et al.	2016	Universia Business Review	129
The social significance of AI in retail on customer experience and shopping practices	Moore et al.	2022	Journal of Retailing and Consumer Services	97

Digital banking, customer experience and financial performance: UK bank managers' perceptions	Mbama et al.	2018	Journal of Research in Interactive Marketing	91
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* Citation counts as of April 2026

3.4 Current Research Trend in DCX

Keywords co-occurrence analysis

Figure 6 reveals the intellectual structure of DCX research through keyword co-occurrence patterns, highlighting several interconnected thematic clusters. At the center, customer experience emerges as the dominant and most interconnected concept, strongly linked with digital transformation and digital marketing, indicating that DCX is primarily studied within the broader context of organizational digitalization and marketing strategy. Surrounding this core, multiple clusters reflect key research streams. One prominent cluster focuses on technology-driven themes such as artificial intelligence, personalization, and customer engagement, emphasizing the role of advanced technologies in shaping digital interactions. Another cluster highlights social media and consumer behavior, suggesting the importance of online platforms in influencing customer perceptions and engagement. Additional clusters capture themes related to service quality, loyalty, satisfaction, and omnichannel experiences, reflecting traditional marketing constructs adapted to digital contexts.

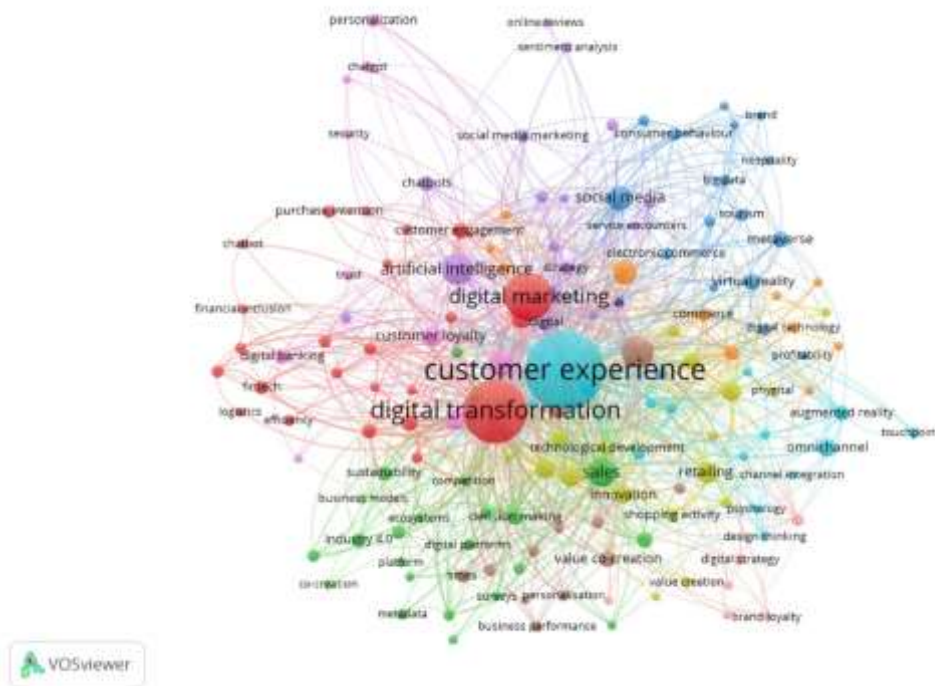


Figure 6. Keyword co-occurrence analysis

Table 6. Clusters of high frequency keywords related to DCX

Cluster	Items (n)	Keywords	Issues / Thematic Focus	Sample Authors
Cluster 1: Customer Experience & Value Creation	18	customer experience, customer satisfaction, perceived value, service quality, trust, customer value	Antecedents and outcomes of customer experience, value creation, and satisfaction	Bolton et al. (2018); Mbama & Ezepue (2018); Aw et al. (2022)

Cluster 2: Digital Transformation & Technology	15	digital transformation, artificial intelligence, automation, digital platforms, technology adoption	Role of digital technologies in shaping customer experience and organizational transformation	Mihardjo et al. (2019); Gao & Liu (2023); Moore et al. (2022)
Cluster 3: Digital Marketing & Engagement	14	digital marketing, social media, customer engagement, online marketing, content marketing	Digital marketing strategies and customer engagement in online environments	Dwivedi et al. (2023); Blümel et al. (2024); Batat (2024)
Cluster 4: Consumer Behavior & Loyalty	12	customer loyalty, consumer behavior, repurchase intention, brand experience, satisfaction	Behavioral outcomes of digital experiences including loyalty and repeat purchase	Melero et al. (2016); Gibson et al. (2022); Nguyen et al. (2022)
Cluster 5: Omnichannel & Customer Journey	10	omnichannel, customer journey, touchpoints, multichannel integration, user experience	Integration of multiple channels and touchpoints across the customer journey	Parise et al. (2016); Batat (2024); Märtin et al. (2023)
Cluster 6: Service & Business Performance	9	service quality, firm performance, innovation, business performance, service management	Impact of DCX on service effectiveness, innovation, and organizational performance	Masoud & Basahel (2023); Mbama et al. (2018); Bonfanti et al. (2021)

Cluster 1 (Customer Experience & Value Creation).

This cluster represents the conceptual core of DCX research, focusing on how digital interactions shape perceived value, satisfaction, trust, and overall experience outcomes. Foundational studies emphasize that customer experience is inherently multidimensional and extends across digital, physical, and social touchpoints, requiring integrated management approaches (Bolton et al., 2018). Empirical research further demonstrates that high-quality digital experiences significantly influence satisfaction and loyalty, particularly in service-intensive sectors such as banking and retail (Mbama & Ezepue, 2018; Nguyen et al., 2022). Recent work also highlights the role of interactive technologies, such as voice assistants, in enhancing experiential value through personalization and perceived interactivity (Aw et al., 2022). Overall, this cluster underscores that value creation in DCX is driven by the alignment of service quality, trust, and user-centric design across digital environments.

Cluster 2 (Digital Transformation & Technology).

This cluster centers on the technological foundations enabling DCX, particularly the role of digital transformation, artificial intelligence, and platform-based ecosystems. Studies show that digital transformation initiatives are strongly linked to improved organizational performance, with customer experience acting as a key mediating factor (Masoud & Basahel, 2023). Research also highlights how advanced technologies, including AI and automation, facilitate personalized and scalable customer interactions, although their effectiveness depends on strategic implementation and integration (Gao & Liu, 2023; Moore et al., 2022). Additionally, leadership and organizational capabilities are identified as critical enablers of successful digital transformation, shaping how firms align technological innovation with customer-centric strategies (Mihardjo et al., 2019). This cluster reflects the growing recognition that DCX is fundamentally technology-driven but requires organizational alignment to deliver meaningful outcomes.

Cluster 3 (Digital Marketing & Engagement).

This cluster focuses on how digital marketing strategies and online platforms influence customer engagement and interaction. Research demonstrates that social media, content marketing, and interactive communication channels play a crucial role in shaping customer perceptions and fostering engagement in digital environments (Batat, 2024). Studies on conversational AI further reveal that personalized communication, including adaptive tone and relational cues, enhances user engagement and perceived service quality (Blümel et al., 2024). Moreover, digital marketing strategies increasingly rely on data-driven insights to tailor experiences and strengthen customer relationships. This cluster highlights the shift from transactional marketing toward interactive and engagement-driven approaches, where customer participation and co-creation become central.

Cluster 4: Consumer Behavior & Loyalty

This cluster examines the behavioral outcomes of DCX, particularly how digital interactions influence customer loyalty, repurchase intentions, and brand relationships. Empirical studies indicate that positive digital experiences significantly enhance customer satisfaction and loyalty, with emotional and experiential factors playing a key role in shaping consumer behavior (Melero et al., 2016; Gibson et al., 2022). In retail contexts, incorporating hedonic elements into digital and physical experiences has been shown to increase revisit intentions and strengthen brand attachment (Gibson et al., 2022). Similarly, in financial services, customer experience has been identified as a critical driver of performance through its impact on customer retention and word-of-mouth behavior (Nguyen et al., 2022). This cluster emphasizes that DCX directly shapes consumer decision-making and long-term relational outcomes.

Cluster 5: Omnichannel & Customer Journey

This cluster highlights the importance of managing customer journeys across multiple digital and physical touchpoints. Research shows that modern customer experiences are increasingly omnichannel in nature, requiring seamless integration between online and offline interactions (Parise et al., 2016). The concept of phygital experience further extends this perspective by emphasizing the convergence of digital and physical environments into a unified experience continuum (Batat, 2024). Studies also demonstrate that optimizing the customer journey through adaptive interfaces and personalized touchpoints enhances user satisfaction and engagement (Märting et al., 2023). This cluster underscores the need for a holistic approach to DCX that considers the entire customer journey rather than isolated interactions.

Cluster 6: Service & Business Performance

This cluster focuses on the organizational outcomes of DCX, particularly its impact on service effectiveness, innovation, and firm performance. Evidence suggests that firms with strong DCX capabilities achieve superior performance outcomes, as DCX acts as a key differentiator in competitive markets (Masoud & Basahel, 2023). In service industries, such as hospitality and banking, digital experience design has been shown to enhance service delivery, operational efficiency, and customer satisfaction (Bonfanti et al., 2021; Mbama et al., 2018). Additionally, innovation in digital services and customer interaction models contributes to long-term business growth and resilience. This cluster highlights that DCX is not only a customer-facing construct but also a strategic driver of organizational success.

Overlay visualization of keywords over time

Figure 7 illustrates the temporal evolution of DCX research through an overlay of keyword co-occurrence, where colors represent the average publication year of each topic.

Central concepts such as *customer experience* and *digital transformation* appear as stable and foundational themes, consistently present across the timeline. Earlier research, represented by darker blue tones, is associated with topics such as basic digital systems, service quality, and initial forms of online interaction, indicating a focus on foundational digitalization and customer management concepts.

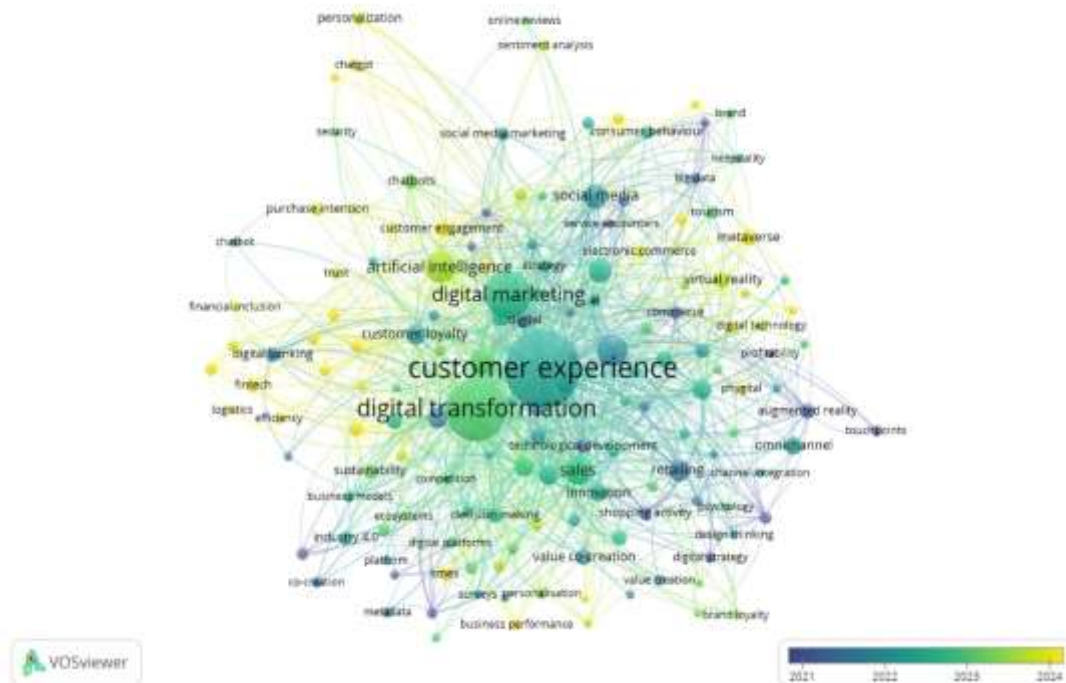


Figure 7. Overlay visualization of keywords over time

As the field progresses, mid-phase themes shown in green reflect a shift toward integration and strategic alignment, including topics such as customer engagement, omnichannel strategies, and value creation. More recent research, highlighted in yellow, emphasizes emerging and rapidly developing areas such as artificial intelligence, personalization, social media marketing, and advanced analytics. These newer themes indicate a growing focus on data-driven and technology-enabled customer experiences. Overall, the figure demonstrates a clear transition from foundational digital adoption toward more sophisticated, integrated, and innovation-driven approaches, suggesting that DCX research continues to evolve toward increasingly complex and technology-intensive domains.

4. Discussion and Direction for Future Research

Building on the keyword co-occurrence and temporal evolution analyses, the intellectual landscape of DCX reveals a field that is both rapidly expanding and increasingly complex, with core themes such as digital transformation, customer experience, and digital marketing forming its foundation, while newer topics such as personalization, artificial intelligence, and advanced analytics continue to emerge. Despite this progress, the field remains fragmented across theoretical perspectives, contexts, and methodological approaches, indicating the need for a more structured synthesis of future research directions. To address this gap, the present study adopts the Theory–Context–Characteristics–Methodology (TCCM) framework, which provides a systematic lens to identify key research opportunities and guide the advancement of DCX scholarship.

4.1. Theory

Future research in DCX should move toward stronger theoretical integration across currently fragmented perspectives. The keyword and density visualizations indicate that DCX is anchored in core concepts such as digital transformation, customer experience, and digital marketing, yet lacks a unified theoretical foundation. Existing studies often rely on isolated frameworks such as technology adoption or service perspectives, with limited cross-theoretical synthesis. Future studies should integrate perspectives from Service-Dominant Logic, customer journey theory, and dynamic capabilities to explain how value is co-created across complex digital ecosystems. In addition, emerging themes such as artificial intelligence, personalization, and social media suggest the need to extend existing theories to better capture real-time, data-driven, and adaptive customer interactions. Developing integrative frameworks that connect technology, behavior, and strategic outcomes will be essential for advancing DCX theory.

4.2. Context

The visualizations highlight that DCX research is widely applied across sectors such as retail, banking, and e-commerce, yet remains concentrated in a limited number of contexts. Future research should expand into underexplored industries, including healthcare, education, public services, and smart tourism, where digital interactions are rapidly increasing but remain insufficiently studied. Additionally, most existing studies focus on developed markets, suggesting the need for more research in emerging economies to capture differences in digital infrastructure, cultural expectations, and customer behavior. The growing prominence of omnichannel and phygital experiences also indicates the importance of studying cross-channel interactions and hybrid environments. Future studies should further examine how contextual factors such as culture, industry characteristics, and technological maturity influence the design and effectiveness of DCX.

4.3. Characteristics

From a characteristics perspective, the figures reveal a shift toward more complex and technology-driven experience elements, including personalization, artificial intelligence, and customer engagement. However, many studies still emphasize functional and cognitive aspects of experience, with less attention to holistic and dynamic characteristics. Future research should explore multi-dimensional aspects of DCX, including emotional, sensory, and social components, as well as real-time and adaptive experience design. The increasing relevance of technologies such as AI and advanced analytics also calls for deeper investigation into how these tools enable hyper-personalization, predictive interactions, and continuous experience optimization. Moreover, there is a need to better understand customer heterogeneity, including generational differences, digital literacy, and behavioral patterns, to design more inclusive and responsive digital experiences.

4.4. Methodology

Methodologically, prior DCX research has been dominated by qualitative and conceptual approaches, with growing but still limited use of advanced quantitative techniques. The complexity of emerging themes identified in the visualizations suggests the need for more sophisticated and diverse methodologies. Future research should incorporate mixed-method designs, combining qualitative insights with quantitative validation to enhance robustness. Experimental and longitudinal studies are particularly needed to capture causal relationships and the evolution of customer experiences over time. In addition, the increasing availability of big data and digital trace data presents opportunities to advanced analytics, machine learning, and real-time data analysis to better understand customer behavior. Network analysis and bibliometric techniques should also continue to be used to map the evolving intellectual

structure of DCX research. Overall, methodological innovation will be crucial to capturing the dynamic and technology-driven nature of DCX.

5. Conclusion

This study provides a comprehensive synthesis of the DCX literature through a systematic review and bibliometric analysis. The findings reveal a rapidly growing research domain, particularly after 2020, driven by accelerated digital transformation and evolving customer expectations. The intellectual structure of DCX is anchored in core themes such as customer experience, digital transformation, and digital marketing, while emerging topics such as personalization, artificial intelligence, and omnichannel integration indicate a shift toward more advanced and data-driven approaches. Methodologically, the field is dominated by qualitative and conceptual studies, with increasing use of quantitative techniques such as SEM. Theoretically, DCX research draws from diverse perspectives including technology adoption, service logic, and strategic management, yet remains fragmented. The cluster and co-occurrence analyses further highlight key research streams related to value creation, technology, engagement, consumer behavior, customer journey, and firm performance, confirming the multidisciplinary and evolving nature of the field.

From a theoretical perspective, this study contributes by consolidating fragmented knowledge and providing an integrated overview of DCX research using a structured SLR and TCCM framework. It advances understanding by identifying dominant theories, methodological trends, and emerging themes, thereby offering a foundation for future theory development and integration. Practically, the findings offer valuable insights for managers and practitioners by emphasizing the strategic importance of designing seamless, personalized, and integrated digital experiences. Organizations can leverage these insights to enhance customer satisfaction, engagement, and loyalty, while aligning digital transformation initiatives with customer-centric strategies. The study also highlights the importance of integrating multiple digital touchpoints and leveraging data-driven insights to create meaningful and competitive customer experiences.

Despite its contributions, this study has several limitations. First, the analysis is limited to articles indexed in the Scopus database, which may exclude relevant studies from other databases. Second, the focus on English-language publications may introduce language bias and limit global representation. Third, the use of bibliometric and content analysis methods, while systematic, may not fully capture the depth and contextual nuances of individual studies. Future research can address these limitations by incorporating multiple databases, expanding language inclusion, and applying complementary qualitative approaches to enrich the understanding of DCX.

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