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Mapping Integration Mechanisms and Enablers in Omnichannel and Multichannel Retailing: Bibliometric Evidence

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Abstract

Integration-oriented omnichannel and multichannel retailing has gained prominence as retailers seek to deliver seamless customer journeys while coordinating store operations, inventory, and fulfillment across channels. Yet, prior studies remain dispersed across customer-centric research that emphasizes perceived integration quality and experiential outcomes and operations-centric work that models coordination decisions under cost and profitability objectives. This study aims to map the thematic structure and coverage gaps of integration-oriented omnichannel and multichannel retailing using bibliometric analysis focused on integration mechanisms and enabling conditions. Using Scopus-indexed English journal articles and reviews, records were screened to retain B2C retail or retail-like studies in which channel integration is the primary analytical focus. Performance analysis was conducted with Biblioshiny (bibliometrix) to produce standard, reproducible performance indicators, whereas science mapping employed VOSviewer to construct and cluster author keyword co-occurrence networks that reveal the domain's thematic structure, using a lean cleaning strategy (minimal thesaurus and lean stopwords). The results reveal two partially connected regimes bridged most consistently by customer-facing operational mechanisms around omnichannel retailing, including BOPIS/click-and-collect, pickups, ship-from-store, and emerging cross-channel returns. In contrast, systems-level digital backbone and governance-related constructs appear weakly consolidated, indicating limited thematic development of integration enablers. The findings suggest that advancing the field requires moving beyond broad omnichannel labels toward auditable, mechanism-linked integration designs that connect customer outcomes, operational execution, and enabling capabilities.

KEYWORDS

bibliometric analysis; channel integration; fulfillment mechanisms; omnichannel retailing; multichannel retailing.

Introduction

Retailing has moved beyond an "online versus store" choice into a system design and coordination challenge: how multiple channels can be integrated so customers experience continuity and firms can execute reliably at scale. As shoppers move across touchpoints within a single journey, retailers increasingly rely on integration practices such as consistent information and promotions, buy-online-pick-up-in-store (BOPIS) and related pickup models, ship-from-store, and cross-channel returns. This shift reflects a broader transformation in retail channel configurations, where value creation depends on the degree and design of

integration rather than channel presence alone (Beck & Rygl, 2015; Piotrowicz & Cuthbertson, 2014; Saghiri et al., 2017; Sharma & Dutta, 2023). In this view, omnichannel retailing is better understood as a continuum of integration choices and trade-offs that connect customer experience promises with operational execution (Neslin, 2022).

The urgency to map integration-oriented omnichannel and multichannel retailing research stems from a growing mismatch between managerial integration demands and the way the academic literature is organized. In practice, integration is implemented through concrete mechanisms and policies that cut across customer experience, fulfillment operations, and post-purchase service. Yet many studies are commonly analyzed within broad omnichannel or multichannel frameworks while addressing adjacent phenomena such as channel choice, substitution, or competition, where integration mechanisms are often not treated as the focal analytical object. As publication volume expands and terminology proliferates (e.g., channel integration, cross-channel integration, channel integration quality, O2O, click-and-collect/BOPIS, ship-from-store), it becomes increasingly difficult to determine which integration mechanisms dominate the evidence base, which concepts bridge customer-centric and operations-centric streams, and which enabling conditions remain peripheral or weakly connected. Without an explicit integration-oriented mapping, claims about "gaps" can be shaped by selective visibility rather than by the field's underlying conceptual structure.

This challenge is amplified because "integration" is not a single construct. Experiential integration refers to perceived seamlessness and consistency across touchpoints, typically operationalized through channel integration quality and related constructs in customer-centric research (Hossain et al., 2019; Shen et al., 2018). Operational integration refers to the design and execution of cross-channel processes, particularly fulfillment configuration and inventory visibility, that enable coordinated service delivery across online and offline channels (Gallino et al., 2017; Hübner et al., 2016). Such studies often link experiential integration to experience and relationship outcomes and to downstream behavioral responses in omnichannel settings (Hossain et al., 2019; Y. Li et al., 2018; Shen et al., 2018). Related work connects integration quality to engagement-oriented outcomes, reflecting the role of integrated experience design in shaping customer responses (Lee et al., 2019). Consistent with this, customer journey research underscores that omnichannel outcomes unfold across linked episodes rather than isolated encounters, implying that integration should be examined end-to-end (Herhausen et al., 2019; Shi et al., 2020).

Operations and supply-chain research frequently formalizes integration through fulfillment and inventory policies, including BOPIS design and ship-from-store execution, foregrounding cost and profitability trade-offs (Bayram & Cesaret, 2021; Gallino et al., 2017; He et al., 2021; Hübner et al., 2016; Jin et al., 2018). Post-purchase integration, particularly cross-channel returns and return policies, remains a minority topic in the Scopus-indexed corpus (n = 16; 3.08% of N = 520, based on author keywords) and shows recent concentration, with 13 of the 16 records published between 2022 and 2024. Prior research indicates that returns management and return policy design can materially affect customer value and cost-to-serve and form an important component of omnichannel system performance (Bernon et al., 2016; Radhi & Zhang, 2019). A sizeable analytical tradition also examines coordination, competition, and profitability in multi- and dual-channel structures, often formalized through pricing, contracting, and game-theoretic mechanisms (Hajdas et al., 2025; Wang, 2025; Ziaei et al., 2024). Earlier coordination models are retained as baseline references for this coordination-focused tradition (R. Yan, 2011), because their emphasis on coordination logics can blur the boundary with integration-oriented work when integration mechanisms and enabling conditions are not specified explicitly.

Recent bibliometric reviews have begun to address this fragmentation at the broader omnichannel level. In particular, Sharma & Dutta (2023) synthesize omnichannel retailing research and propose future research directions across multiple subdomains. Their work underscores that the omnichannel knowledge base is dispersed and that structured synthesis is increasingly necessary to guide domain development. Building on this insight, the present study narrows the analytic lens to a specific subset of the domain: integration-oriented omnichannel and multichannel retailing in B2C retail and retail-like settings. This focus is important because many omnichannel studies treat integration as a contextual feature rather than a focal mechanism, which complicates attempts to infer what is known about integration mechanisms themselves and the enabling conditions required to deliver them. Accordingly, our objective is not to re-map omnichannel broadly, but to diagnose the conceptual structure of integration-oriented research by focusing on integration mechanisms and enablers.

This study addresses the following research question: What themes and coverage gaps characterize prior research on integration-oriented omnichannel and multichannel retailing, as revealed by bibliometric mapping of integration mechanisms and enablers? The question reflects the problem's complexity: integration is simultaneously experiential (seamless journeys and consistency), operational (fulfilment, inventory, returns), and capability-based (the coordination and execution logic required to make mechanisms work as a system). Accordingly, the objective of this study is to (1) profile the publication and citation landscape of integration-oriented omnichannel and multichannel retailing and (2) map the field's thematic structure to identify dominant integration mechanisms, enabling conditions, and coverage gaps.

Methodologically, the paper adopts a bibliometric approach using a curated Scopus dataset of peer-reviewed journal publications in which channel integration is positioned as the primary analytical focus within B2C retail or retail-like settings. The workflow combines performance analysis with science mapping. For science mapping, VOSviewer is used to conduct author-keyword co-occurrence analysis. To improve interpretability, author keywords are cleaned using a minimal thesaurus that merges only unambiguous variants, while methodological artefacts are removed via lean stopwords so that the resulting maps reflect substantive integration constructs rather than research techniques.

The findings indicate that integration-oriented research concentrates around two major emphases, customer-facing integration constructs and operational integration mechanisms, while bridging concepts connecting these streams remain less consistently developed across the corpus. The maps also suggest comparatively weaker consolidation around post-purchase integration and certain enabling foundations, motivating a focused future research agenda for integration-oriented retailing. In doing so, this paper complements broader omnichannel bibliometric reviews by offering a targeted, integration-first diagnosis without claiming to replace broader-domain syntheses.

Methods

This study employs bibliometric analysis as an objective and quantitative approach that reduces subjectivity often associated with purely interpretive reviews. Bibliometric analysis is a domain-based systematic literature review (SLR) format that combines quantitative performance indicators with science mapping to address mapping-oriented research questions (Paul et al., 2021). Conceptually, bibliometrics enables systematic and replicable mapping of research trends, knowledge structures, and conceptual linkages through techniques such as keyword co-occurrence and co-citation analysis (Donthu et al., 2021).

Bibliometric reviews are particularly suitable when the objective is domain mapping, namely to reveal the thematic organization and conceptual structure of a large and heterogeneous literature through bibliographic indicators and network-based mapping (Donthu et al., 2021). In contrast, narrative SLRs emphasize interpretive, context-rich synthesis, whereas meta-analyses require sufficiently comparable quantitative studies to aggregate effect sizes and test specific relationships (Paul et al., 2021). Given this study's focus on integration mechanisms and enabling conditions, bibliometrics offers a scalable and auditable way to identify dominant mechanisms, bridge concepts, and peripheral enablers while enabling transparent parameter reporting for replication (Donthu et al., 2021; Paul et al., 2021).

Method reporting follows transparency and replicability principles by explicitly documenting procedures, parameters, and data curation decisions and by adopting a systematic search and screening logic to ensure that the corpus remains aligned with an integration-oriented focus (Page et al., 2021; Paul et al., 2021). This bibliometric analysis follows the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) protocol to ensure rigorous and transparent reporting of the review process (Moher et al., 2016). In this bibliometric context, PRISMA was applied as a transparent record-selection workflow rather than as clinical evidence appraisal. Identification consisted of the Scopus TITLE-ABS-KEY query and predefined filters. Screening comprised duplicate removal, metadata completeness checks, and relevance screening at the title, abstract, and author-keyword levels using the integration-oriented eligibility rubric. Inclusion refers to the finalized corpus retained for performance analysis and science mapping after documenting exclusions by reason codes.

Operationally, performance analysis is conducted using bibliometrix via Biblioshiny (Aria & Cuccurullo, 2017), whereas science mapping relies on VOSviewer for author-keyword co-occurrence mapping; van Eck & Waltman (2010) is retained as the canonical software reference for VOSviewer-based bibliometric mapping (Donthu et al., 2021; Lim et al., 2024). The following section details the search strategy and screening logic used to construct the final corpus.

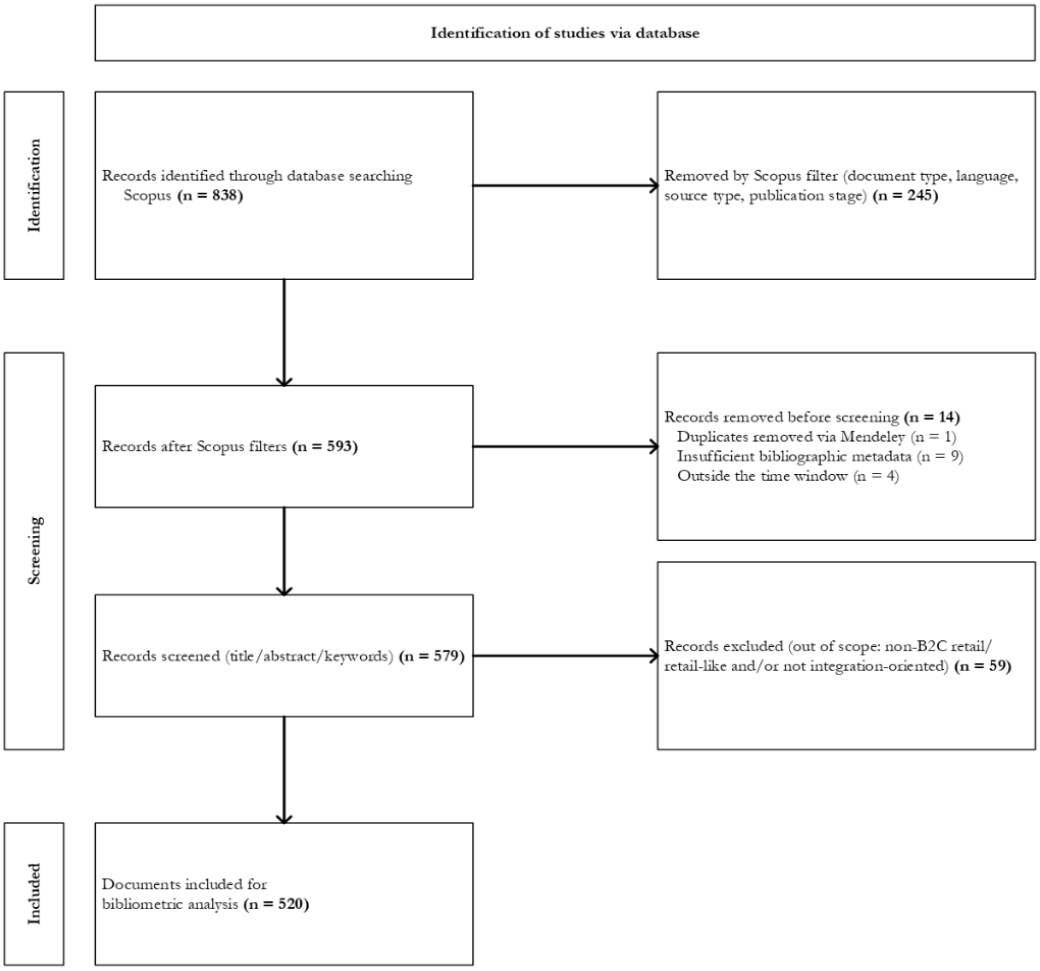

Figure 1. PRISMA Flow

Search Strategy

The search was conducted in November 2025 and the identification process begins with a systematic search in the Scopus database, recognized for its comprehensive multidisciplinary scope (V. K. Singh et al., 2021). Owing to its broad coverage and reliability, Scopus provides a solid basis for constructing a reproducible bibliometric corpus; however, single-source sampling can introduce coverage bias and underrepresent non-indexed or domain-specific outlets, so findings should be interpreted as Scopus-indexed evidence rather than exhaustive coverage (Mongeon & Paul-Hus, 2016; Visser et al., 2019). A Title-Abstract-Keyword strategy was applied to capture omnichannel and multichannel retailing literature while focusing the corpus on integration mechanisms and enabling conditions. Boolean operators ("AND", "OR") were used to combine keywords. A thorough search for articles was performed using keywords with an asterisk (*) placed at the end of each term to ensure comprehensive inclusion of various lexical forms across the articles (Lestari et al., 2025). No year restriction was imposed at the query stage; however, because data extraction occurred in November 2025, the dataset is interpreted as covering publications up to the data-collection year, 2025.

To ensure corpus consistency and publication quality, the following filters were applied: source type = journal, publication stage = final, document type = article or review, and language = English. The "final" publication stage was selected and early access records were systematically excluded to ensure stable metadata and year assignment for reproducible mapping, since early access labeling can be inconsistent and change across bibliographic databases and citation-impact signals for very recent publication years are unstable due to short citation windows (Bornmann, 2013; Zhu, 2025). The search string was:

TITLE-ABS-KEY (("omnichannel" OR "omni-channel" OR "omni channel" OR "multichannel" OR "multi-channel" OR "multi channel" OR "cross-channel" OR "cross channel" OR "dual channel" OR "hybrid channel") AND ("channel integration" OR "multi-channel integration" OR "multichannel integration" OR "cross-channel integration" OR "omnichannel integration" OR "integrated channel" OR "unified commerce" OR "unified retail" OR "channel synchronization" OR "channel consistency" OR "seamless experience" OR "seamless customer experience" OR "channel orchestration" OR "channel alignment" OR "channel coordination" OR "inventory visibility" OR "unified inventory" OR "integrated inventory" OR "single customer view" OR "customer data integration" OR "online offline" OR "online-to-offline" OR O2O OR "click and collect" OR "click & collect" OR "click-and-collect" OR BOPIS OR "buy online pick up in store" OR "buy online pick-up in store" OR "ship from store" OR "ship-from-store" OR "cross-channel returns" OR "returns management" OR "endless aisle") AND (retail* OR store* OR "brick and mortar" OR shopping OR shopper* OR consumer* OR customer*)) AND (LIMIT-TO (SRCTYPE , "j")) AND (LIMIT-TO (PUBSTAGE , "final")) AND (LIMIT-TO (DOCTYPE , "ar") OR LIMIT-TO (DOCTYPE , "re")) AND (LIMIT-TO (LANGUAGE , "English"))).

Eligibility Criteria

The corpus was constructed from the Scopus search results and validated using substantive eligibility rules and metadata checks. Substantive eligibility ensured that included studies: (i) were situated in B2C retail or strongly retail-like settings, and (ii) were integration-oriented, meaning that channel integration was positioned as the primary analytical object (as a mechanism and/or enabler), rather than serving merely as background context for omnichannel or multichannel retailing. Studies not aligned with a retail/retail-like setting or not treating integration as the focal object were excluded.

Metadata validation included duplicate removal and verification of the availability of core bibliographic fields required for bibliometric analysis and mapping (e.g., identifier/DOI and keyword information). For science mapping, keyword terms were standardized using a minimal thesaurus and lean stopwords. The minimal thesaurus unified only unambiguous variants (e.g., spelling variants, plural forms, and clearly equivalent acronyms), while lean stopwords removed methodological and analytical artifacts so that the map captured integration mechanisms and enablers rather than research-technique labels (Lim et al., 2024).

Data Selection Procedure

The initial Scopus search identified 838 records (no year restriction). After applying the filters (journal source type; final publication stage; document types article and review; English language), 593 records remained. Because the dataset was extracted in November 2025, four records labeled as 2026 appeared in the metadata (e.g., early assignment to a journal issue or indexing date conventions). To preserve coverage up to the data-collection year, these four records were excluded, resulting in 589 records.

All records were then imported into Mendeley for duplicate checking, and one duplicate record was removed. Next, nine documents were excluded due to insufficient metadata for analysis (e.g., missing DOI/identifier and/or unavailable author information), yielding 579 records for relevance screening. Relevance screening was performed at the title, abstract, and keyword level using the predefined eligibility criteria (B2C retail/retail-like setting and integration as the primary analytical object); a second author independently validated a subset of records and all borderline cases, and disagreements were resolved through consensus. At this stage, 59 records were excluded because integration was not the primary analytical focus. The final bibliometric corpus comprised 520 documents, and the selection flow is summarized in a PRISMA diagram (Figure 1).

Data Analysis

Analyses were conducted using Biblioshiny (*bibliometrix*; version 2024.09.1+394) for performance analysis and VOSviewer (version 1.6.20) for science mapping (Aria & Cuccurullo, 2017; van Eck & Waltman, 2010). Conceptually, performance analysis describes the contributions of research constituents (e.g., documents, sources, authors, citations), whereas science mapping visualizes relational structures among constituents to reveal thematic organization and conceptual linkages (Donthu et al., 2021).

Performance analysis profiled the publication and citation landscape of the corpus, including: (i) annual scientific production trends, (ii) the most influential sources/journals and documents, and (iii) author and other unit contributions as provided by *bibliometrix*. Science mapping was conducted via keyword co-occurrence analysis based on author keywords. Author keywords were used as primary conceptual signals because they reflect author-intended construct labeling. However, because keyword assignment is not standardized across outlets and disciplines, emerging constructs may be inconsistently tagged and therefore underrepresented in co-occurrence maps; to mitigate this, we applied a minimal thesaurus that merged only unambiguous variants prior to mapping (Lim et al., 2024).

Mapping parameters followed the "lean" configuration: full counting and a minimum occurrence threshold of 6, yielding 82 keywords in the final network and five clusters. Full counting was applied to represent the presence of a term across documents in a transparent, document-level manner (Lim et al., 2024; Perianes-Rodriguez et al., 2016). The minimum occurrence threshold was set to six to balance map interpretability with construct coverage; lowering the threshold would increase network density and noise, whereas raising it would remove weaker or emerging terms and may alter cluster composition (Lim et al., 2024). Cluster interpretation was guided by: (i) dominant and central keywords (e.g., occurrences and total link strength), (ii) semantic coherence among terms within each cluster, and (iii) the role of bridge terms connecting clusters. Coverage gaps were derived from network structure, particularly peripheral themes, weak inter-cluster connectivity, and enabling concepts that did not consolidate strongly in the network. This approach supports theme and gap identification without implying causal evaluation or empirical evidence synthesis at the individual-study level (Donthu et al., 2021).

Result and Discussion

Across 520 documents published between 2003 and 2025 and distributed across 222 sources, the field shows rapid expansion, with an annual growth rate of 19.13%. The collection is heavily weighted toward recent contributions, as reflected by a document average age of 4.49 years. Together, these indicators suggest a fast-moving knowledge base in which new integration mechanisms and enabling conditions continue to emerge and diversify.

Performance Analysis

Publication growth

This review analyzed 520 documents published between 2003 and 2025 across 222 sources. The corpus comprises 502 articles and 18 review papers. Figure 2 shows a pronounced upward trajectory in annual scientific production, indicating rapidly intensifying research interest in integration-oriented omnichannel and multichannel retailing.

Output remains low and sporadic through 2015 (generally fewer than 10 documents per year), accelerates markedly in 2016–2019 (rising from 14–15 documents in 2016–2017 to 27 in 2018 and 37 in 2019), and reaches its most productive phase in 2020–2024 (49 in 2020, 55 in 2021, peaking at 81 in 2022, and remaining high in 2023–2024 with 71 and 72 documents). The lower count in 2025 (47) should be interpreted cautiously due to potential indexing delays and early-access assignment at the time of data extraction. Overall, the pattern is consistent with a fast-moving knowledge base, reflected in the annual growth rate (19.13%) and a young document profile (average age = 4.49 years). These characteristics reinforce the need for systematic mapping of dominant integration themes, mechanisms, enablers, and coverage gaps.

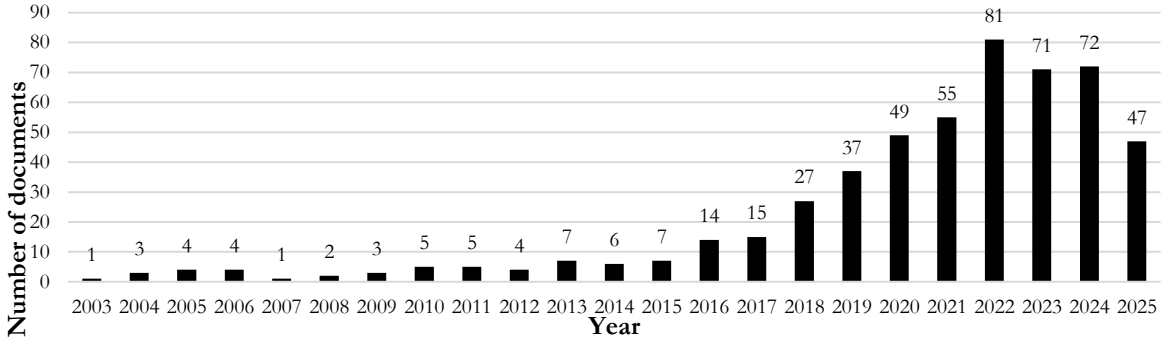

Figure 2. Publication Growth
Source: Authors' calculation using Biblioshiny (2025)

Table 1. Author Performances

Ranking by total articles			Ranking by total citations		
Author	Article(s)		Author	Citation(s)	
	n	%		n	%
Li, Y.	14	2.69%	Payne, A.	1306	5.74%
Sarkar, B.	12	2.31%	Li, B.	527	2.32%
Yan, R.	11	2.12%	Piotrowicz, W.	520	2.29%
Liu, Y.	10	1.92%	Herhausen, D.	513	2.25%
Wang, J.	9	1.73%	Beck, N.	483	2.12%
Dey, B.K.	8	1.54%	Cao, L.	448	1.97%
Liu, H.	7	1.35%	Xu, G.	348	1.53%
Chen, X.	6	1.15%	Saghiri, S.	324	1.42%
He, Y.	6	1.15%	Yan, Y.	321	1.41%
Li, Z.	6	1.15%	Zhang, M.	312	1.37%

Source: Authors' calculation using Biblioshiny (2025)

Table 2. Country Performances

Top countries by publications		Top countries by total citations	
Country	Article(s)	Country	Citation(s)
	n		n
China	367	China	6,834
Usa	157	Usa	2,338
India	96	Germany	1,539
South Korea	65	United Kingdom	1,514
Uk	56	France	1,053
Germany	46	India	827
France	32	Korea	676
Australia	29	Switzerland	600
Spain	28	Spain	574
Canada	16	Italy	359

Source: Authors' calculation using Biblioshiny (2025)

Notes: Country counts are based on authors' affiliations (full counting), so a single document can be attributed to multiple countries.

Table 3. Top 10 Sources by Documents Production

Sources	Articles
Journal of Retailing and Consumer Services	41
International Journal of Retail and Distribution Management	26
Sustainability (Switzerland)	23
International Journal of Production Economics	13
Journal of Theoretical and Applied Electronic Commerce Research	13
European Journal of Operational Research	12
Computers and Industrial Engineering	10
International Review of Retail, Distribution and Consumer Research	9
Asia Pacific Journal of Marketing and Logistics	8
International Journal of Physical Distribution and Logistics Management	8

Source: Authors' calculation using Biblioshiny (2025)

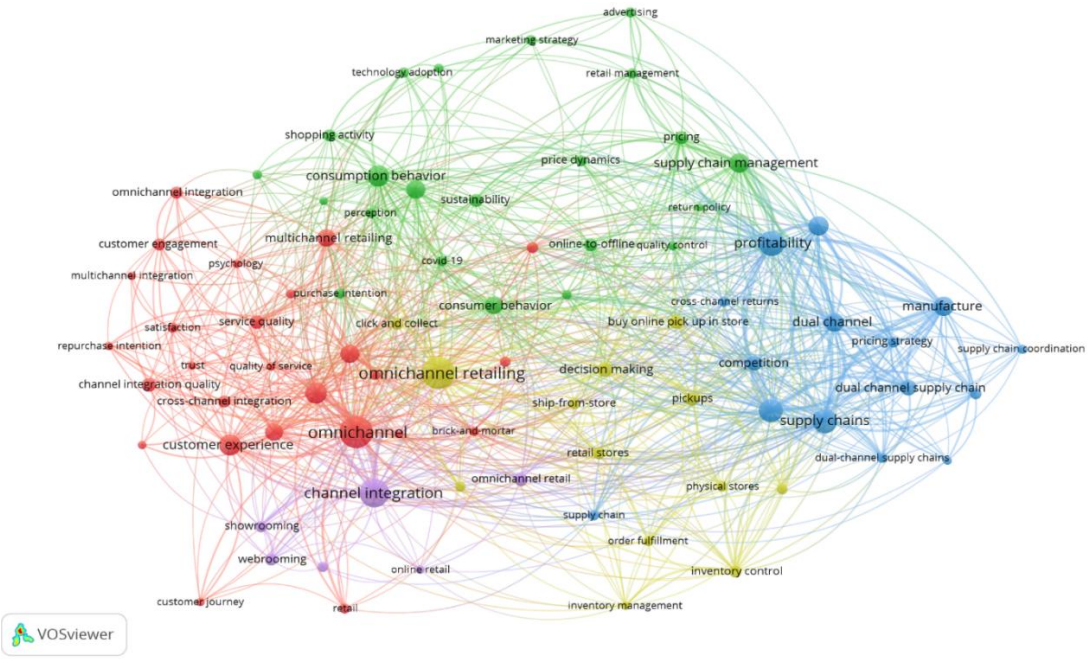

Figure 3. Network Visualization of Co-occurrence Analysis
Source: VOSviewer output (2025)
Table 4.Coverage Gaps Diagnosed from the Keyword Network and Research Implications.

Gap theme	Map diagnostic	Research implication
Digital backbone / IS architecture	No consolidation around unified commerce/platform, single customer view, customer data integration, identity resolution, interoperability, or data quality (incl. inventory visibility as system enabler).	Test how digital-backbone capabilities mediate/moderate links between mechanisms (BOPIS/SFS) and outcomes (CX, service performance, cost-to-serve).
Governance and orchestration capability	"Coordination" appears mainly as OR/SCM economic coordination; orchestration as cross-functional retail capability is not a mainstream cluster.	Distinguish coordination vs orchestration and develop firm-level governance constructs (decision rights, incentives, cross-channel SOPs, integrated KPIs, data stewardship, store governance).
Post-purchase integration (returns)	Returns/return policy appear but remain peripheral relative to fulfillment mechanisms (BOPIS/SFS).	Extend integration mechanisms to reverse logistics and service recovery; evaluate return-policy designs and their effects on trust, operational load, and profitability.
Auditable consistency dimensions	Perceptual integration dominates; concrete consistency domains (info, price/promo, inventory availability, order-status visibility, service-policy consistency) are not consolidated.	Decompose integration into observable consistency dimensions; test trade-offs (local flexibility vs global consistency) and identify the most costly inconsistencies (returns/churn).

Author Performance

Table 1 reports author performance using two complementary indicators: productivity (total articles) and scholarly impact (total citations). The productivity ranking highlights a small set of recurrent contributors (e.g., Li, Y.; Sarkar, B.; Yan, R.; Liu, Y.; Wang, J.) who collectively account for a modest share of the corpus, suggesting that the field is broad-based rather than dominated by a single author group. In contrast, the citation-based ranking is led by Payne, A., followed by Li, B., Piotrowicz, W., Herhausen, D., Beck, N., and Cao, L., indicating that the intellectual structure of integration-oriented omnichannel and multichannel retailing is shaped by a limited number of highly influential contributions that anchor subsequent work on integration capabilities (e.g., CRM), online–offline integration outcomes, and operational coordination in dual-channel supply chains. Together, these patterns suggest a stream characterized by distributed productivity but concentrated intellectual influence; citation-based results should be interpreted with the usual caution regarding age effects and potential name ambiguity for common surnames.

Country performance

Table 2 summarizes country performance using affiliation-based productivity (number of documents) and impact (total citations). China dominates both output and influence in the corpus (367 documents; 6,834 citations), followed by the USA (157; 2,338). Beyond the top two, the rankings diverge across indicators: India is the third most productive contributor (96 documents) but shows lower citation impact (827), whereas Germany and the United Kingdom exhibit comparatively higher influence (1,539 and 1,514 citations, respectively) relative to their publication volumes. Overall, the pattern indicates concentrated geographic leadership with differentiated impact profiles across countries, suggesting opportunities to broaden empirical contexts and strengthen cross-country collaboration in future research on integration mechanisms and enabling capabilities.

Sources Performance

The distribution of publications across outlets indicates a concentrated but multidisciplinary knowledge base. The Journal of Retailing and Consumer Services emerges as the primary publication venue (41 articles), followed by the International Journal of Retail and Distribution Management (26) and Sustainability (Switzerland) (23). Beyond these core retail and marketing journals, the presence of operations and supply chain outlets such as the International Journal of Production Economics (13) and the European Journal of Operational Research (12) highlights the field's dual character: integration is studied not only as an experiential and customer-facing challenge, but also as an operational problem involving fulfilment, inventory, and logistics coordination. (See Table 3).

This outlet mix aligns with the review's focus on integration mechanisms and enabling conditions spanning customer experience, channel governance, and operational capabilities.

Science Mapping

The keyword co-occurrence analysis yielded five distinct yet interconnected clusters that organize the field's thematic structure around integration mechanisms and enabling conditions. Co-occurrence mapping is appropriate because keyword co-mention patterns reveal the literature's conceptual structure, allowing clusters and bridge terms to surface mechanisms and enabling conditions (Donthu et al., 2021; van Eck & Waltman, 2010). Each cluster represents a coherent set of research emphases anchored by high-frequency keywords and characterized by specific conceptual orientations. Together, these clusters map how integration-oriented omnichannel and multichannel retailing research has developed and where different disciplinary traditions intersect. The following sections describe each cluster's composition and conceptual emphasis, and relate the resulting thematic blocks to front-end integration, back-end mechanisms, and enabling conditions.

Cluster 1. Customer-centric integration and perceived integration quality

This cluster represents a stream of research that positions integration as a customer-experienced phenomenon and evaluates it through experience-related outcomes. The prominence of omnichannel (81), customer experience (35), customer satisfaction (26), service quality (15), and channel integration quality (15) indicates that integration is commonly operationalized as perceived cross-channel quality, typically framed in terms of seamlessness and consistency, and then linked to customer responses. The presence of cross-channel integration (12) and omnichannel integration (12) also signals a semantic shift toward more explicit conceptualization: rather than treating omnichannel merely as context, studies increasingly model integration as a focal and measurable construct. Substantively, this cluster anchors the review's front-end integration pillar, yet it tends to remain at the level of

perceptions and outcome variables, with limited attention to the underlying systems design or governance required to deliver integration consistently. In this respect, omnichannel often functions as an umbrella descriptor tied to customer-side constructs, whereas omnichannel retailing more frequently denotes the retail domain and operational setting in which specific integration mechanisms are examined, helping explain why the two high-frequency terms emerge as distinct hubs across clusters.

Cluster 2. Consumer behavior context, retail strategy, and adoption-oriented themes

This cluster serves as a contextual space that links integration-oriented research to broader retailing and marketing discourse. Terms such as consumption behavior (35), consumer behavior (25), marketing (26), and perception (9) suggest the dominance of behavioral and consumer-psychology lenses in explaining cross-channel phenomena. At the same time, the co-occurrence of supply chain management (30), pricing (14), price dynamics (10), and online-to-offline (14) indicates that integration is frequently discussed alongside strategic decisions (e.g., pricing and market dynamics) and the context of channel migration from online to offline. Analytically, this cluster functions as a contextual bridge connecting integration-oriented studies to broader retail and marketing discourse and points to likely boundary conditions and potential enablers. Interpretation should remain cautious, because many studies invoke omnichannel or multichannel settings without operationalizing integration as the primary analytical object. (Figure 3).

Cluster 3. Dual-channel supply chains, coordination, and a profitability-centered logic

This cluster constitutes the most consistent operations research and supply chain management block, characterized by strong emphasis on profitability (46), costs (42), supply chains (43), dual channel (27), dual channel supply chain (19), and channel coordination (29), along with contractual artifacts such as revenue sharing contracts (10). The structure suggests that a substantial share of multichannel research is anchored in economic coordination across channels to optimize profit and manage costs. From an integration-oriented lens, this cluster provides a useful disciplinary contrast, clarifying why multichannel coordination studies are not automatically aligned with customer-facing omnichannel integration. It can be leveraged to sharpen conceptual boundaries, distinguishing integration as a cross-channel capability from supply-chain coordination approaches that are primarily driven by contracting, competition, and efficiency-based logics.

Cluster 4. Fulfillment integration mechanisms surrounding the omnichannel retailing core

This cluster provides the clearest anchor for back-end integration mechanisms as defined in the inclusion criteria. The dominance of omnichannel retailing (81) is accompanied by explicit mechanism-related nodes such as buy online pick up in store (16), pickups (16), ship-from-store (10), and click and collect (12), as well as operational terms including inventory control (11) and retail stores (11). This configuration indicates that integration research extends beyond measuring seamless experience and increasingly examines operational mechanisms that connect online channels with store networks. This cluster offers the strongest empirical grounding for back-end integration mechanisms, because integration can be traced as a policy and process design problem spanning fulfillment, inventory, and the role of stores as network nodes. This also provides a basis for linking operational mechanisms to customer outcomes and performance, while underscoring that integration requires auditable execution rather than purely perceptual assessments.

Cluster 5. The conceptual core of channel integration and cross-channel search behaviors

Although smaller, this cluster is strategically important because it positions channel integration (62) as a conceptual hub directly associated with cross-channel behaviors such as webrooming (12) and showrooming (10), alongside bridging terms including cross-channel (9) and omnichannel retail (14). Conceptually, it supports the interpretation that webrooming and showrooming are not merely instances of channel choice, but are frequently used to examine how integration quality facilitates customer transitions across touchpoints along the search and purchase path. This cluster is well suited to linking front-end integration to behavioral consequences, because webrooming and showrooming are frequently examined as outcomes of integration quality that facilitate customer transitions across touchpoints. At the same time, it highlights a persistent limitation: enabler-oriented vocabulary (e.g., data backbone and orchestration) does not yet appear as a distinct and consolidated thematic area. Having characterized the five individual clusters, the analysis now turns to how these clusters interconnect and where the field's practical convergence points emerge.

Cross-cluster bridges

Beyond the internal characteristics of individual clusters, the network structure reveals critical bridging patterns that explain how customer-centric and operations-centric research streams interact. The lean co-occurrence map suggests that integration-oriented omnichannel and multichannel retailing research is organized around two partially connected regimes that remain epistemically distinct. On the one hand, a customer-centric regime conceptualizes integration as perceived cross-channel quality and seamless experience, reflected in constructs such as customer experience, channel integration quality, and service quality, and linked to outcomes such as satisfaction and engagement. On the other hand, an operations-centric regime is rooted in dual-channel supply chain traditions that emphasize profitability, costs, competition, and channel coordination as decision logics.

Importantly, these regimes do not evolve in parallel. The network indicates that the field most consistently “meets” at customer-facing operational mechanisms clustered around the omnichannel retailing core, particularly buy online pick up in store, click and collect, pickups, and ship-from-store, as well as post-purchase practices such as cross-channel returns and return policy. These mechanisms function as bridging nodes that connect customer experience discussions with the design of fulfillment and inventory processes. The position of channel integration as a hub directly linked to behaviors such as webrooming and showrooming further suggests that cross-channel search–purchase paths are frequently used as contexts to test integration quality rather than as simple channel substitution phenomena. At the same time, the bridge structure highlights a consistent limitation: design-level enablers, including data backbone capabilities and cross-functional governance and orchestration, do not emerge as consolidated themes, leaving the link between experience, operational mechanisms, and enabling capabilities only partially specified.

Coverage gaps

The analysis of cluster structures and cross-cluster bridges reveals four substantive coverage gaps that represent important opportunities for future research. These gaps reflect not the absence of research activity, but rather limited thematic consolidation in the keyword network, indicating areas where integration mechanisms and enablers remain conceptually underdeveloped or insufficiently connected to broader streams. Table 4 summarizes these four gaps, and the discussion that follows elaborates each gap and provides example research questions that could advance the field.

The following subsections elaborate each gap in Table 4 and propose example research questions.

Gap Theme 1. Digital backbone and information-systems integration remain weakly consolidated

The lean map foregrounds fulfillment mechanisms and experience constructs, but it does not show thematic consolidation around systems-level enablers such as unified commerce/platform, single customer view, customer data integration, or inventory visibility. This pattern suggests that integration is often discussed as an experience construct or as operational policy, rather than as a data and systems architecture that aligns cross-channel processes. Future research should examine how digital-backbone capabilities mediate the relationship between integration mechanisms (e.g., BOPIS and ship-from-store) and outcomes (CX, service performance, cost-to-serve), including data quality, platform interoperability, and cross-channel customer identity resolution.

Example derived question: How do inventory visibility and a single customer view alter the impact of BOPIS on satisfaction, returns, and profitability?

Gap Theme 2. Governance and orchestration capability do not appear as a mainstream thematic area

While coordination-related vocabulary is present, the dominant form is OR/SCM-style channel coordination rather than omnichannel orchestration as a cross-functional organizational capability. The absence of a strong governance-focused cluster indicates a conceptual and empirical gap regarding how retailers design decision rights, incentives, and alignment mechanisms across channels, including the roles of headquarters and stores in ensuring consistent integration execution. Future research should explicitly distinguish contractual/economic coordination from orchestration capability at the retail-firm level, including construct development and implementation mechanisms such as cross-channel SOPs, integrated KPIs, data stewardship, and store-operations governance.

Example derived question: Which governance arrangements are most effective in reducing cross-channel friction (e.g., online versus store target conflict) and improving perceived integration quality?

Gap Theme 3. Post-purchase integration and cross-channel returns remain underexplored relative to fulfillment

The lean map includes cross-channel returns and return policy, yet these topics do not form a central thematic area comparable to BOPIS and ship-from-store. This suggests that the literature remains stronger on pre-purchase integration and fulfillment execution, while post-purchase integration (returns, exchanges, refunds, warranties, and cross-channel service recovery) has not matured into a robust cluster. Research should expand toward reverse logistics and service recovery as integration mechanisms, examining their effects on trust, repeat purchase, operational load, and profitability, and developing evidence on optimal and fair cross-channel return policies.

Example derived question: How does cross-channel return policy design affect customer lifetime value and reverse-logistics cost in omnichannel retailing?

Gap Theme 4. Integration as “auditable consistency” remains underspecified

Although constructs such as channel integration quality and seamless experience appear, the map does not show consolidation around more concrete forms of consistency, including product-information consistency, price and promotion consistency, inventory availability consistency, order-status visibility, and cross-channel service-policy consistency. This indicates that integration is still frequently measured as a general perception rather than as an observable configuration of practices. Future research should decompose integration into more operationally specific consistency dimensions, test trade-offs (e.g., local flexibility versus global consistency), and evaluate which forms of inconsistency generate the greatest customer-journey friction and downstream outcomes such as returns or churn.

Example derived question: Which type of cross-channel inconsistency is most costly to retailers (price, information, inventory, or policy), and when might full consistency reduce performance?

The science mapping results provide a structured view of how integration-oriented omnichannel and multichannel retailing has been examined and where thematic consolidation remains incomplete. Beyond describing clusters, the map reveals how the field organizes knowledge around partially connected regimes and where integration mechanisms act as bridges. This section interprets the key patterns emerging from the co-occurrence structure, positions them relative to prior work, and outlines limitations and a future research agenda aligned with integration mechanisms and enabling capabilities.

Interpretation of Key Findings

The bibliometric mapping indicates that integration-oriented omnichannel and multichannel retailing research is organized around two epistemically distinct, yet partially connected regimes. A customer-centric regime conceptualizes integration primarily as perceived cross-channel quality and seamless experience, evidenced by the prominence of constructs such as customer experience, service quality, and channel integration quality, and linked to outcomes such as satisfaction, engagement, and behavioral responses (Cao & Li, 2015; Herhausen et al., 2015; Y. Li et al., 2018; Shen et al., 2018; Shi et al., 2020). In parallel, an operations-centric regime continues to frame multichannel settings through decision logics related to profitability, costs, competition, and channel coordination, reflecting a strong analytical and supply-chain tradition (B. Li et al., 2016; Sarkar, Amankou, et al., 2024; Xu et al., 2014; Y. Yan et al., 2018).

The most consequential insight is that the field does not converge at abstract concepts alone, but rather at customer-facing operational mechanisms that are implementable and observable. Fulfillment mechanisms clustered around the omnichannel retailing core, such as buy online pick up in store, click and collect, pickups, and ship-from-store, act as consistent bridging nodes between the customer-experience discourse and operations-focused decision models, and are increasingly discussed as part of omnichannel logistics and channel execution (Gallino et al., 2017; Hübner et al., 2016; Wollenburg et al., 2018). Post-purchase practices, particularly cross-channel returns and

return policy, further indicate that integration is increasingly examined beyond pre-purchase and transaction stages, although these themes remain less consolidated than fulfillment-focused mechanisms.

At the same time, the thematic structure suggests that enabling capabilities remain underdeveloped as a coherent stream. While prior work has emphasized that IT-enabled integration and multichannel integration capabilities are central to omnichannel retailing and performance, systems-level enablers (e.g., unified commerce/platform architectures, single customer view, customer data integration, and inventory visibility) do not emerge as central or consolidated themes in the keyword network (Chen et al., 2024; Oh et al., 2012; Payne & Frow, 2004; Piotrowicz & Cuthbertson, 2014; Riaz et al., 2024; V. Singh & Yadav, 2025). Similarly, governance and orchestration appear implicitly, but not as a dominant thematic cluster distinct from OR/SCM-style coordination. Taken together, the map suggests that the literature has become more mechanism-driven and operationally concrete, but it still lacks a tightly integrated understanding of how experience outcomes, operational mechanisms, and enabling capabilities jointly produce end-to-end integration (Saghiri et al., 2017; von Briel, 2018).

Comparison with Previous Studies

The patterns identified in this bibliometric mapping can be contextualized within existing omnichannel and multichannel literature, revealing both continuities and novel insights. The observed separation between customer-centric and operations-centric regimes is consistent with long-standing dual trajectories in omnichannel and multichannel research. Prior conceptualizations of omnichannel integration frequently emphasize seamless journeys, cross-channel consistency, and experiential outcomes, which aligns with the prominence of customer experience and perceived integration quality in the mapping (Cao & Li, 2015; Herhausen et al., 2015; Saghiri et al., 2017; Shen et al., 2018). Conversely, a large body of dual-channel and multichannel operations research has historically modeled coordination and competition under profitability and cost objectives, which is consistent with the persistence of supply-chain coordination and decision-oriented vocabulary in the network (B. Li et al., 2016; Sarkar, Dey, et al., 2024; Xu et al., 2014; Y. Yan et al., 2018).

However, the mapping adds nuance by showing that the field's practical convergence occurs most clearly through specific mechanisms rather than broad constructs. In particular, the prominence and bridging position of fulfillment-oriented mechanisms suggest that integration research becomes more cumulative when studies operationalize integration as concrete, customer-facing processes that connect channels and stores, rather than as general channel presence or abstract coordination. This observation complements work that has emphasized the centrality of omnichannel logistics design and execution, and it extends prior integration frameworks by highlighting a mechanism-first pathway through which disparate traditions can be connected, namely by treating operational mechanisms as the interface between experience design and decision models (Gallino et al., 2017; Hübner et al., 2016; Saghiri et al., 2017; Wollenburg et al., 2018).

The relatively peripheral position of digital-backbone and governance constructs also helps reconcile an apparent tension in the broader omnichannel literature. While existing research underscores the importance of IT-enabled channel integration capabilities and integrated customer management for delivering consistent cross-channel experiences, the mapping suggests that empirical and analytical work has not yet consolidated around the specific enablers that would make "one-system" behavior technically and organizationally feasible (Hailey, 2025; Oh et al., 2012; Payne & Frow, 2004; Piotrowicz & Cuthbertson, 2014). This indicates that the field has progressed from describing omnichannel phenomena toward modeling selected mechanisms, but it has not fully shifted toward prescriptive and testable design principles that integrate technology architecture, governance, and operational execution (Saghiri et al., 2017; von Briel, 2018).

Limitations and Cautions

Several limitations should be considered when interpreting these findings. First, the analysis is bounded by the coverage and indexing conventions of the selected bibliographic database and the applied document and language filters. As a result, relevant studies published outside the database scope, in non-indexed outlets, or in other languages may not be captured, which may influence the apparent salience and structure of themes.

Second, the science mapping relies on author keywords as conceptual signals. While author keywords provide useful indications of how authors position constructs and mechanisms, keyword assignment is not standardized and may underrepresent certain enablers when they are discussed in the full text but not explicitly labeled. Accordingly, the absence or peripheral position of specific terms should be interpreted as limited thematic consolidation in keyword signaling rather than definitive evidence that a topic is absent from the literature.

Third, co-occurrence mapping is descriptive and relational. It identifies thematic proximity, clustering, and bridging patterns, but it cannot establish causal relationships or assess the effectiveness of specific integration mechanisms. Network outcomes are also sensitive to modeling choices, including threshold settings, counting methods, and cleaning decisions. Although the lean thesaurus and stopword strategy improves interpretability by reducing noise and unambiguous variant fragmentation, it may still leave residual semantic overlap and generic hubs that shape cluster boundaries.

Recommendations for Future Research

The mapping suggests four research directions that would materially advance integration-oriented omnichannel and multichannel retailing. First, future research should consolidate the digital-backbone stream by explicitly theorizing and measuring how unified commerce architectures, customer identity resolution, data interoperability, and inventory visibility enable integration mechanisms such as BOPIS, ship-from-store, and cross-channel returns. Prior work has already emphasized that IT-enabled integration capabilities and integrated customer management are foundational for cross-channel execution; the next step is to specify which digital-backbone components matter, under what conditions, and through which mechanisms (Oh et al., 2012; Payne & Frow, 2004; Piotrowicz & Cuthbertson, 2014). Empirical designs can test mediation and moderation structures linking digital enablers to both customer outcomes and operational performance, including service performance and cost-to-serve.

Second, governance and orchestration capability should be developed as a distinct thematic area that is analytically separable from OR/SCM-style channel coordination. Omnichannel frameworks have argued for integration as a system-level design challenge, yet governance is often treated implicitly rather than modeled and measured as a capability (Saghiri et al., 2017; von Briel, 2018). Research should therefore specify decision rights, incentive alignment, data stewardship roles, and cross-channel operating

models, including task allocation between headquarters and stores. Construct development and validated measurement instruments would move governance from a managerial narrative to a testable capability model.

Third, post-purchase integration deserves deeper attention as a core mechanism rather than an ancillary policy. While omnichannel logistics research increasingly examines fulfillment execution, post-purchase integration (cross-channel returns, exchanges, refunds, warranty handling, and service recovery across touchpoints) remains comparatively underdeveloped as an integrated design problem (Hübner et al., 2016; Wollenburg et al., 2018). Future studies should integrate reverse logistics design with customer trust, repeat purchase, and profitability outcomes, and evaluate policy trade-offs across heterogeneous customer segments and product categories. Where possible, designs should connect return-policy configurations to both customer-level outcomes and operational load.

Fourth, the field should operationalize integration as auditable consistency. Rather than treating integration as a general perception, research can decompose consistency into observable dimensions such as product-information consistency, price and promotion consistency, inventory availability consistency, order status visibility, and service-policy consistency. This shift would enable sharper theory testing on which inconsistencies generate the greatest journey friction and how retailers can balance local flexibility with global consistency. Related work on channel integration and cross-channel execution provides a platform for moving from perceptual measures toward more practice-based, verifiable integration configurations (Cao & Li, 2015; Gallino et al., 2017; Herhausen et al., 2015).

Methodologically, future work should triangulate bibliometric patterns with complementary evidence, such as structured content analysis of full texts, theory-based coding of mechanisms and enablers, or mixed-method designs that connect managerial practices to customer and operational data. Such designs can translate descriptive thematic structures into prescriptive and testable design principles for integrated channel systems.

Conclusion

This bibliometric study mapped the thematic structure of integration-oriented omnichannel and multichannel retailing research, identifying dominant mechanisms, enabling conditions, and coverage gaps through keyword co-occurrence analysis of 520 peer-reviewed publications. Three main contributions emerge from the analysis.

First, the field is structured around two partially connected research regimes, customer-centric integration (emphasizing perceived quality and seamless experience) and operations-centric coordination (emphasizing profitability, costs, and channel management), that converge most consistently through implementable, customer-facing fulfillment mechanisms such as BOPIS, click-and-collect, and ship-from-store. This convergence suggests that integration research becomes more cumulative when operationalized as concrete mechanisms rather than abstract constructs, and that these mechanisms function as bridging nodes between experiential and operational research traditions.

Second, the analysis reveals four substantive coverage gaps: (1) weak consolidation around digital-backbone enablers (unified commerce platforms, customer data integration, inventory visibility), (2) underdevelopment of governance and orchestration capability as a distinct thematic area, (3) limited attention to post-purchase integration mechanisms relative to fulfillment, and (4) insufficient operationalization of integration as auditable consistency across information, pricing, inventory, and policy dimensions. These gaps indicate that while the field has made progress in documenting integration mechanisms, the enabling conditions required to execute integration reliably at scale remain conceptually and empirically underspecified. Practically, the findings motivate a shift from treating integration mainly as a perceptual experience construct toward auditable integration grounded in observable cross-channel consistency (e.g., unified product and pricing information, inventory visibility, order-status transparency, and harmonized returns/service policies). This framing aligns with the omnichannel continuum view and clarifies the systems and governance foundations required to execute mechanisms such as BOPIS and ship-from-store reliably at scale (Neslin, 2022; Saghiri et al., 2017).

Third, the study contributes methodologically by demonstrating how a lean bibliometric approach, which combines minimal keyword cleaning with integration-oriented corpus curation, can diagnose thematic consolidation and coverage gaps in a focused domain without requiring full-text content analysis. This approach complements broader omnichannel syntheses by offering mechanism-level mapping that can guide construct development and empirical research design.

Managerially, the results suggest that retailers should treat integration as an auditable system-level design challenge that connects customer experience promises with fulfillment execution and enabling capabilities, rather than as a general channel presence or consistency perception. Future research should consolidate systems-level enablers, develop governance and orchestration as measurable capabilities, expand post-purchase integration mechanisms, and decompose integration into operationally specific consistency dimensions. Such advances would support the field's evolution from documenting integration phenomena toward prescriptive, testable design principles for integrated channel systems.

Author contributions

Author 1: conceptualization, writing original draft, data curation, formal analysis, investigation, methodology. Author 2: review, supervision, and validation. Author 3: review, supervision, validation, and editing. Author 4: writing – review and editing.

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Conflict of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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