

Mapping Mechanism-Focused Digital Impulse Buying Research: A Bibliometric Analysis of Scopus-Indexed Literature, 2009–2026

Henti Nikimawati*, Retno Widowati, and Nuryakin

Master of Management Program, Faculty of Economics and Business, Universitas Muhammadiyah Yogyakarta, Special Region of Yogyakarta 55183, Indonesia

ABSTRACT

Purpose – This study maps the development and conceptual structure of a defined, mechanism-focused stream of digital impulse buying research associated with electronic word of mouth, online reviews, hedonic motivation, emotional responses, and influencer-related social influence. It examines publication patterns, intellectual and conceptual structures, and emerging research directions within this deliberately delimited literature

Design/methodology/approach – A dataset of 196 English-language journal articles indexed in Scopus (Business, Management and Accounting; Social Sciences; Decision Sciences; and Psychology subject areas) was identified; following manual topical screening to isolate studies substantively situated in a digital purchasing context, a final analytical corpus of 155 articles (2009–2026) was analyzed using bibliometric performance and science-mapping techniques. The analysis examines publication trends, author productivity, source concentration, country and institutional contributions, funding patterns, citation impact, co-citation, bibliographic coupling, and keyword co-occurrence networks.

Findings/Results – Research within this defined stream has expanded substantially since 2020, with China and other Asian countries strongly represented. Prominent research themes include social commerce, hedonic motivation, trust, live-streaming commerce, and influencer marketing, and recent scholarship increasingly emphasizes socially interactive and platform-mediated forms of digital consumption. Overall conceptual connectivity is stable when core impulse-buying variants are harmonized, whereas precise cluster boundaries are partly terminology-sensitive.

Originality/Value – This study provides a longitudinal bibliometric mapping of a deliberately defined, mechanism-focused stream of Scopus-indexed digital impulse buying research. Rather than claiming exhaustive coverage of the broader digital impulse-buying field, it identifies publication structures, conceptual patterns, geographical concentrations, and emerging directions within the specified informational, hedonic, emotional, and social-influence mechanisms.

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*Corresponding Author at:

Department of Management, Faculty of Economics and Business, Universitas Muhammadiyah Yogyakarta, Jalan Brawijaya, Tamantirto, Kasihan, Bantul, Special Region of Yogyakarta 55183, Indonesia.

E-mail address: h.nikimawati.psc25@umy.ac.id (Henti Nikimawati)

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1. Introduction

Digital commerce has fundamentally changed how consumers encounter information, evaluate products, and make purchasing decisions. The expansion of e-commerce, mobile commerce, social commerce, and live-stream shopping has transformed purchasing from a predominantly transactional activity into an increasingly interactive, socially embedded, and experience-driven process. Digital consumers are continuously exposed to product recommendations, online reviews, promotional content, social interactions, and emotionally engaging platform features that can shorten deliberation and accelerate purchase decisions. These developments have created a particularly favorable environment for spontaneous consumption and have increased scholarly attention to impulse buying in digitally mediated settings.

Digital impulse buying refers to spontaneous and relatively unplanned purchasing that occurs within online or technology-mediated environments. Compared with conventional store-based impulse buying, digital environments can intensify spontaneous purchasing through continuous accessibility, convenient transactions, interactive content, social influence, and increasingly personalized shopping experiences. Early research demonstrated that website characteristics can stimulate consumers' urge to buy impulsively (Parboteeah et al., 2009), while subsequent studies extended the phenomenon to social commerce through parasocial interaction (Xiang et al., 2016), online reviews and browsing behavior (Zhang et al., 2018), and mobile commerce through hedonic and utilitarian browsing (Zheng et al., 2019). More recent research has examined live-stream shopping (Huo et al., 2023; Zhang et al., 2023; Cuong, 2026), social presence (Li et al., 2023), influencer marketing (Trivedi, 2021; Chen, 2025; Koay & Lim, 2025), and digital payment mechanisms (Lee et al., 2023), indicating that impulse buying is increasingly embedded within complex platform-mediated consumption environments.

Prior literature also shows that digital impulse buying is associated with multiple informational, psychological, emotional, and social mechanisms. Online reviews can reduce uncertainty and influence browsing-related impulse decisions, while hedonic motivation reflects the pleasure-seeking dimension of digital shopping (Ozen & Engizek, 2014). Trust, emotional arousal, social presence, influencer credibility, and parasocial interaction further illustrate how social and affective mechanisms shape spontaneous purchasing in contemporary digital environments. Recent studies have expanded these mechanisms into short-video commerce, live-stream shopping, mobile-site shopping (Karahan, 2024), and alternative payment systems such as e-wallets and Pay Later. The diversity of these topics indicates that digital impulse buying has developed from a relatively narrow concern with website-based shopping into a multidisciplinary area spanning consumer behavior, digital marketing, information systems, and technology-mediated consumption.

Despite this development, the literature remains fragmented across platforms, theoretical perspectives, and research mechanisms. Studies frequently investigate particular antecedents within specific contexts, making it difficult to determine how scholarly attention has developed across the broader body of literature. Terminological variation—including impulse buying, impulsive buying, online impulse buying, and impulsive buying behavior—further fragments the representation of the field. In addition, publication productivity, geographical

concentration, citation visibility, and relationships among recurring research concepts are not readily observable from individual empirical studies. A structured bibliometric perspective is therefore useful for identifying how this body of research has developed, where scholarly activity is concentrated, and which conceptual themes have received sustained or comparatively recent attention.

Previous reviews provide an important foundation but address different analytical purposes. Chan et al. (2017), for example, systematically synthesized online impulse-buying research and organized its antecedents using the Stimulus–Organism–Response framework. More recent systematic reviews have examined specific perspectives, including cultural influences on impulse buying (Bashar et al., 2023). These studies provide valuable conceptual synthesis, but systematic reviews and bibliometric mapping answer different questions. Reviews primarily synthesize theoretical and empirical findings, whereas bibliometric analysis can reveal publication patterns, influential contributions, geographical distributions, citation visibility, and relationships among research topics over time.

Accordingly, the present study is positioned as a bibliometric mapping of a mechanism-focused stream of Scopus-indexed digital impulse buying research associated with key informational, hedonic, emotional, and social-influence mechanisms. This positioning deliberately avoids claiming to represent every possible determinant of digital impulse buying. Instead, it examines the research landscape captured at the intersection of impulse-buying behavior and mechanisms such as electronic word of mouth, online reviews, hedonic motivation, emotional responses, and influencer-related social influence. The 155 analyzed articles, together with the clusters, country rankings, and thematic trends derived from them, should therefore be read as a map of this defined stream rather than as a census of the entire digital impulse-buying literature. Within this defined scope, the study analyzes longitudinal publication activity, leading scholarly contributors, citation patterns, and keyword co-occurrence relationships to provide a structured view of how this stream of literature has developed.

The study contributes in two ways. Academically, it complements prior systematic reviews by integrating performance analysis with citation-based and keyword-based mapping, thereby showing not only what factors have been studied but also how research activity, scholarly visibility, and conceptual associations are distributed within the literature. It also distinguishes bibliometric prominence from causal importance; frequently occurring or highly cited constructs are interpreted as indicators of scholarly attention rather than evidence that they exert stronger behavioral effects. In addition, it reports how sensitive the resulting maps are to query specification and keyword harmonization. Practically, the mapping provides researchers and digital-market stakeholders with an overview of established and comparatively recent areas of scholarly attention while highlighting opportunities for further research on emerging platform mechanisms and responsible digital-consumption issues.

Accordingly, this study addresses four research questions:

RQ1. How has research on digital impulse buying within the defined literature developed in terms of publication trends and citation activity?

RQ2. How are scholarly contributions distributed across authors, publication sources, institutions, countries, and funding sponsors?

RQ3. What intellectual foundations, contemporary research fronts, and conceptual themes emerge from co-citation, bibliographic coupling, and keyword co-occurrence analyses?

RQ4. How has scholarly attention shifted over time, and what comparatively recent themes and future research opportunities can be identified?

2. Literature Review & Hypothesis Development

2.1 Digital Impulse Buying in Digital Commerce

Impulse buying generally refers to an unplanned purchasing decision characterized by spontaneity, immediacy, and a relatively limited degree of deliberate evaluation. In digital environments, these characteristics are reinforced by technological affordances that reduce the temporal and cognitive distance between exposure to a stimulus and the completion of a transaction. Continuous access to products, personalized recommendations, simplified checkout procedures, digital payment systems, and real-time promotional cues allow consumers to move rapidly from product exposure to purchase. Consequently, digital impulse buying can be understood as spontaneous purchasing behavior occurring within technology-mediated consumption environments, including e-commerce, mobile commerce, social commerce, and live-stream commerce (Anoop & Rahman, 2024; Moghddam et al., 2024; Shamim & Azam, 2024).

Digital environments also differ from conventional retail because purchasing decisions increasingly occur within interconnected informational, social, technological, and experiential systems. Consumers may simultaneously encounter product information, online reviews, recommendations, social interactions, promotional cues, entertainment content, and payment facilities within a single platform. These characteristics make digital impulse buying a multidimensional phenomenon rather than a direct extension of conventional in-store impulse purchasing. Digital platforms can facilitate spontaneous purchases through convenience and transaction efficiency while also intensifying affective and social processes through interactive content, social presence, influencer communication, and platform-mediated engagement (Li et al., 2022; Moghddam et al., 2024; Wongkitrungrueng & Assarut, 2020).

The literature therefore identifies a wide range of factors associated with impulse buying in digital settings. These include website and platform characteristics, hedonic shopping motivation, perceived enjoyment, electronic word of mouth, online reviews, trust, social presence, sales promotion, influencer communication, emotional responses, and consumer characteristics (Abdelsalam et al., 2020; Ngo et al., 2024; Shamim & Azam, 2024; Sun et al., 2024). More recent research has broadened this landscape further by examining fear of missing out (FOMO), digital payment mechanisms, short-video commerce, algorithmically mediated recommendations, and increasingly immersive forms of social commerce. Importantly, these constructs should not be treated as a predetermined set of defining variables for the field. Rather, they represent different streams of scholarly attention that have emerged as digital commerce has evolved.

Terminological diversity further characterizes the field. Terms such as *online impulse buying*, *online impulsive buying*, *digital impulse buying*, and *impulsive buying behavior in digital environments* are frequently used across related studies. Although these expressions may reflect differences in platform context or theoretical emphasis, they broadly address spontaneous purchasing behavior mediated by digital technologies. For bibliometric purposes, recognizing this terminological variation is important because overly restrictive terminology may exclude relevant segments of the literature and produce a fragmented representation of the research domain. Accordingly, the present study adopts digital impulse buying as an umbrella term while retaining relevant terminology encountered across the Scopus-indexed literature, and it tests the consequences of this choice through a keyword-harmonization sensitivity analysis (Section 3.9).

2.2 Evolution of Digital Impulse Buying Research

The development of digital impulse buying research has closely followed changes in the digital commerce ecosystem. Early online research primarily examined how website characteristics and electronic shopping environments could stimulate consumers' urge to purchase impulsively. The work of Parboteeah et al. (2009), for example, provided an important foundation for understanding how website characteristics can influence the urge to buy impulsively. At the same time, theoretical perspectives such as the Stimulus–Organism–Response framework offered a basis for explaining how environmental stimuli can influence consumers' internal states and subsequent purchasing responses (Chang et al., 2011).

As digital commerce became increasingly interactive, research expanded beyond conventional website-based transactions. Social commerce introduced new mechanisms through which consumer decisions could be influenced by interpersonal interaction, social presence, user-generated information, and digitally mediated relationships. Xiang et al. (2016), for instance, extended the study of impulse buying to social commerce through parasocial interaction, illustrating how socially embedded digital environments may influence spontaneous purchasing behavior. Chan et al. (2017) subsequently synthesized the growing online impulse-buying literature, demonstrating that the phenomenon involved multiple technological, psychological, and situational antecedents rather than a single explanatory mechanism.

The expansion of mobile commerce further altered the research landscape by enabling shopping activities to occur continuously and with fewer spatial or temporal constraints. Mobile accessibility, convenience, browsing experience, and platform engagement became increasingly relevant to understanding spontaneous consumption (Zheng et al., 2019). Subsequent developments in social media and social commerce further integrated entertainment, interpersonal communication, and commercial activity. Research has consequently examined how social influence, trust, influencer communication, hedonic experiences, and emotional mechanisms are associated with consumers' urge to purchase impulsively (Shamim & Islam, 2022; Shamim & Azam, 2024).

More recently, live-stream commerce and short-video-based commerce have intensified the convergence of entertainment, social interaction, and immediate purchasing opportunities. These environments combine product demonstrations, seller interaction, real-time audience

participation, promotional urgency, and embedded purchasing mechanisms, enabling consumers to move rapidly from engagement to transaction (Li et al., 2022; Wongkitrungrueng & Assarut, 2020). Platform-specific studies further indicate that consumer experience, emotional response, social presence, and influencer-related mechanisms are becoming increasingly relevant in explaining impulse buying within contemporary digital ecosystems (Li et al., 2024; Ngo et al., 2024). This development reflects a broader shift toward more interactive, socially mediated, and platform-specific forms of digital consumption, particularly within live-streaming, short-video, and influencer-driven commerce.

The evolution of the field therefore reflects a broader transition from relatively static online shopping environments toward increasingly platform-mediated, socially interactive, experience-driven, and data-intensive forms of digital consumption. Nevertheless, this trajectory should not be interpreted as evidence that newer themes have replaced earlier theoretical perspectives or that frequently studied constructs have stronger causal effects. Rather, it indicates changes in the distribution of scholarly attention as digital technologies, consumer practices, and commercial platforms have developed. A bibliometric approach is therefore useful for examining how these areas of attention are distributed and interconnected across the literature.

2.3 Previous Reviews and Positioning of the Present Study

Several previous reviews have established important foundations for understanding impulse buying in digital environments. Chan et al. (2017) synthesized the antecedents of online impulse buying and organized a theoretically diverse body of literature. Abdelsalam et al. (2020) subsequently reviewed online impulse buying in social commerce, highlighting technological, social, and consumer-related mechanisms within digitally mediated purchasing environments. More recently, Anoop and Rahman (2024) examined approximately 25 years of online impulse-buying research through systematic review and meta-regression, providing a broader synthesis of empirical relationships and research developments. Collectively, these studies have advanced understanding of the determinants, theoretical mechanisms, and empirical relationships underlying digital impulse buying.

Bibliometric approaches have also contributed to this literature. Gong et al. (2024), for example, conducted a knowledge-mapping analysis of impulsive buying behavior using CiteSpace and demonstrated how bibliometric techniques can reveal publication patterns, influential contributions, and thematic structures. These studies show that impulse buying has already been examined through both systematic-review and science-mapping approaches. Accordingly, the contribution of the present study does not depend on claiming to be the first review or bibliometric analysis of impulse buying.

The present study is instead positioned as a longitudinal bibliometric examination of a defined stream of Scopus-indexed digital impulse buying research associated with informational, hedonic, emotional, and social-influence mechanisms. Its contribution lies in integrating several complementary dimensions within a single transparently screened dataset. Performance analysis is used to examine publication growth, scholarly contributors, geographical distribution, funding patterns, and citation visibility. Co-citation analysis is used to identify the intellectual foundations of the literature, while bibliographic coupling is used to examine contemporary research fronts. Keyword co-occurrence analysis further maps the

conceptual structure of the field, and overlay and density visualizations indicate comparatively established and recent areas of scholarly attention.

This positioning differs from previous systematic reviews, which have primarily synthesized antecedents, theoretical relationships, and empirical findings, and from broader bibliometric studies that examine impulsive buying across multiple contexts. The present study focuses specifically on digitally mediated purchasing environments, including e-commerce, mobile commerce, social commerce, live-stream commerce, and related platform-mediated settings. At the same time, the study does not claim to represent every possible determinant of digital impulse buying because its search strategy deliberately captures a defined literature associated with the mechanisms specified above.

This distinction is important because digital impulse buying research is increasingly distributed across marketing, consumer behavior, information systems, psychology, and digital-commerce scholarship. Integrating performance, citation-based, and keyword-based analyses therefore provides a more multidimensional view of how this defined literature has developed, where scholarly activity is concentrated, which intellectual foundations are repeatedly cited, and how contemporary research themes are interconnected. These bibliometric indicators are interpreted as measures of scholarly structure, visibility, and conceptual association rather than evidence of theoretical superiority or causal effectiveness.

Table 1. Positioning of the Present Study Relative to Previous Reviews

Study	Review focus	Main approach	Main contribution	Distinction from present study
Chan et al. (2017)	Online impulse buying	Systematic literature review	Synthesizes antecedents and theoretical mechanisms of online impulse buying	Emphasizes conceptual synthesis rather than longitudinal bibliometric performance, citation structure, and science mapping
Abdelsalam et al. (2020)	Online impulse buying in social commerce	Systematic literature review	Organizes technological, social, and consumer-related factors influencing impulse buying in social commerce	Focuses on a specific digital-commerce context and does not integrate broader bibliometric performance and citation-based mapping
Anoop & Rahman (2024)	Online impulse buying over an extended period	Systematic review and meta-regression	Synthesizes empirical relationships and long-term developments in online impulse buying	Primarily relationship-focused rather than mapping publication structure, intellectual foundations, and research fronts
Gong et al. (2024)	Impulsive buying behavior broadly	Bibliometric knowledge mapping	Maps publication patterns and thematic development within the broader impulse-buying domain	Examines impulsive buying more broadly rather than a transparently screened digital-commerce-specific literature

Study	Review focus	Main approach	Main contribution	Distinction from present study
Present study	Defined, mechanism-focused stream of digital impulse buying research	Bibliometric performance analysis, co-citation, bibliographic coupling, keyword-based science mapping, and sensitivity analyses	Integrates publication growth, contributors, geographical distribution, funding, citation structure, intellectual foundations, contemporary research fronts, and conceptual patterns	Provides a manually screened, longitudinal Scopus-based analysis of digitally mediated impulse buying associated with informational, hedonic, emotional, and social-influence mechanisms; does not claim coverage of the full field

Source: Authors' analysis.

3. Methodology

3.1 Research Design

This study employed a bibliometric approach to map the development and conceptual patterns of digital impulse buying research. Bibliometric analysis enables the systematic evaluation of scientific literature through publication performance and relationships among bibliographic elements (Donthu et al., 2021).

The analysis covered annual publication trends, author productivity, publication sources, country and institutional contributions, funding patterns, citation impact, co-citation relationships, bibliographic coupling, and keyword co-occurrence. Publication and citation indicators were interpreted as measures of scholarly activity and visibility rather than evidence of theoretical superiority or causal importance.

The analytical procedure consisted of four main stages: (1) bibliographic data retrieval and eligibility screening, (2) data cleaning and metadata verification, (3) bibliometric performance analysis, and (4) citation-based and keyword-based science mapping, followed by (5) search-and keyword-sensitivity checks. Scopus Analyze Search Results and the exported Scopus metadata were used to examine publication trends, authors, sources, countries, institutions, funding, and citation performance, while VOSviewer version 1.6.20 was used for keyword co-occurrence, network, overlay, and density visualizations.

3.2 Data Source and Search Strategy

The search strategy was designed to capture a defined stream of digital impulse buying research associated with informational, hedonic, emotional, and social-influence mechanisms. Specifically, impulse-buying terms were combined with keywords related to electronic word of mouth, online reviews, hedonic motivation, emotional responses, and influencer-related social influence. This delimitation was applied to align the bibliometric scope with the specific research stream examined in this study rather than to represent every possible determinant of digital impulse buying. The title of the article accordingly refers to "mechanism-focused" digital impulse buying research.

The search was applied to the Scopus title, abstract, and keyword fields using the TITLE-ABS-KEY function. No publication-year restriction was applied at the query stage; the resulting 2006–2026 window at the identification stage therefore reflects the natural temporal range of

records satisfying the search and subject-area criteria rather than an explicit date filter. The search was additionally restricted to the Business, Management and Accounting; Social Sciences; Decision Sciences; and Psychology subject areas, English-language journal articles, and records at the final publication stage. The search retrieved 196 records as of the refreshed extraction on 4 September 2026. Following topical eligibility screening (Sections 3.3–3.4), the final analytical corpus consisted of 155 Scopus-indexed journal articles published between 2009 and 2026.

For reproducibility, the search parameters are reported below exactly as used during data retrieval (Scopus extraction date: 11 May 2026, initial; refreshed 4 September 2026):

```
TITLE-ABS-KEY((
  "online impulse buying" OR "online impulsive buying" OR
  "online impulse purchase" OR "online impulsive purchase" OR
  "impulse buying behavior" OR "impulsive buying behavior"
) AND (
  "electronic word of mouth" OR eWOM OR "online review" OR
  "consumer review" OR "hedonic motivation" OR
  "hedonic shopping motivation" OR "emotional response" OR affect OR
  "social media influencer" OR "influencer marketing"
))
AND (LIMIT-TO (SUBJAREA,"BUSI") OR LIMIT-TO (SUBJAREA,"SOCI")
  OR LIMIT-TO (SUBJAREA,"DECI") OR LIMIT-TO (SUBJAREA,"PSYC"))
AND (LIMIT-TO (DOCTYPE,"ar")) AND (LIMIT-TO (LANGUAGE,"English"))
AND (LIMIT-TO (SRCTYPE,"j")) AND (LIMIT-TO (PUBSTAGE,"final"))
```

Because the dataset includes publications indexed during 2026, the 2026 publication count represents a partial publication year. Consequently, the 2026 value is reported descriptively in Section 4.1 and is not interpreted as evidence of either declining or increasing research activity relative to completed publication years.

3.3 Eligibility and Data Screening

Eligibility criteria were applied at two levels. Document type (article), language (English), subject area, source type (journal), and publication stage (final) were enforced directly at the database level through Scopus LIMIT-TO filters (Section 3.2). Topical relevance, by contrast, could not be operationalized as a Scopus-level filter, because the search phrases used (e.g., "impulse buying behavior") return records regardless of whether the purchasing context is digital or conventional offline retail. Topical eligibility was therefore assessed manually through title and abstract screening of all 196 identified records.

Topical relevance was defined as research examining impulse buying, impulsive purchasing, or closely related spontaneous purchasing behavior within a digitally mediated environment including online shopping, e-commerce, mobile commerce, social commerce, live-stream commerce, social-media commerce, and other platform-mediated purchasing environments. Studies focusing exclusively on conventional offline or store-based impulse buying (e.g., physical store environments, in-store promotions, restaurant dining settings) were excluded unless the study also explicitly examined a digital purchasing context. Records unrelated to impulse buying as a substantive research phenomenon (e.g., editorial introductions, or studies on unrelated marketing outcomes that merely share keyword overlap) were also excluded.

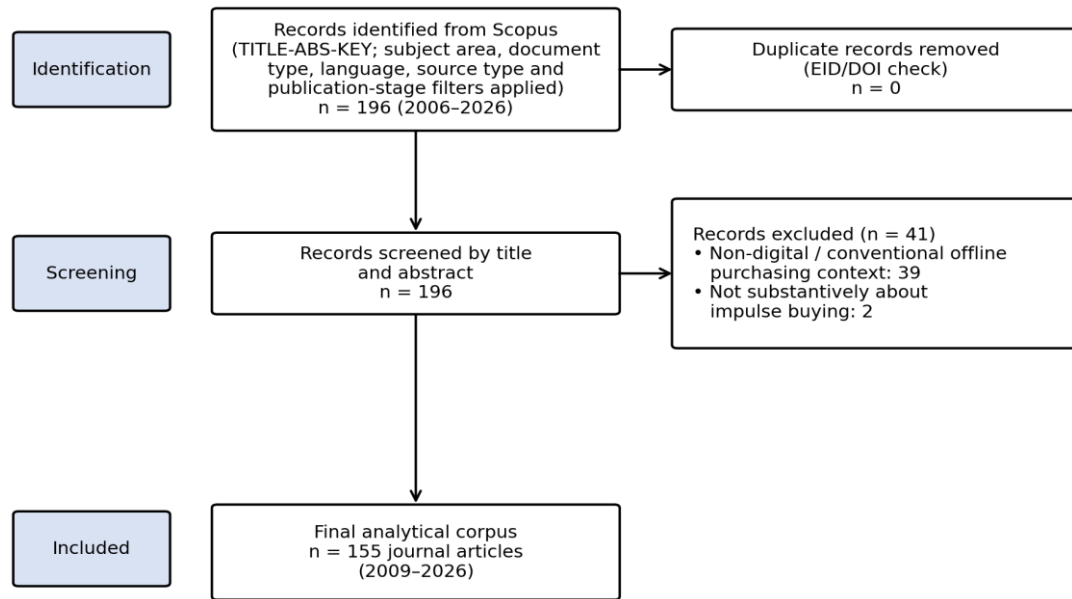
Table 2. Inclusion and Exclusion Criteria

Aspect	Inclusion criteria	Exclusion criteria	How applied
Research phenomenon	Impulse buying, impulsive purchasing, or closely related spontaneous purchasing behavior	Research not substantively about impulse buying	Manual title/abstract screening
Research context	Online shopping, e-commerce, mobile commerce, social commerce, live-stream commerce, social-media commerce, and related digital environments	Studies exclusively situated in conventional offline or physical retail environments	Manual title/abstract screening
Document type	Journal articles	Conference papers, reviews, book chapters, books, editorials, notes, and other non-article documents	Scopus LIMIT-TO(DOCTYPE,"ar")
Subject area	Business, Management and Accounting; Social Sciences; Decision Sciences; Psychology	Records classified exclusively under other Scopus subject areas	Scopus LIMIT-TO(SUBJAREA,...)
Language	English	Non-English publications	Scopus LIMIT-TO(LANGUAGE,"English")
Publication stage	Final publications	Articles in press or incomplete publication records	Scopus LIMIT-TO(PUBSTAGE,"final")
Publication period	No explicit year filter (identification n = 196 spans 2006–2026); final screened corpus (n = 155) spans 2009–2026	2006 and 2008 records excluded on topical, not date, grounds	N/A
Database	Scopus	Records retrieved exclusively from other bibliographic databases	Search platform

Source: Authors' analysis based on the Scopus database.

3.4 PRISMA-Based Dataset Construction

The Scopus search (Section 3.2) identified 196 records satisfying the document-type, language, subject-area, source-type, and publication-stage filters. Because these database-level filters cannot distinguish digital from conventional offline purchasing contexts, all 196 records were manually screened by title and abstract against the topical eligibility criteria in Table 2. This screening excluded 41 records (20.9%), yielding a final analytical corpus of 155 records (Figure 1).

Figure 1. PRISMA Flow Diagram of Study Selection for Digital Impulse Buying Literature

Source: Authors' analysis based on the Scopus database (identification window 2006–2026; final corpus 2009–2026).

Table 3. Reasons for exclusion at the screening stage (n = 41)

Reason	n
Non-digital / conventional offline purchasing context (e.g., physical store environment, in-store promotion, restaurant, cruise, market-stall settings)	39
Not substantively about impulse buying (off-topic; e.g., an editorial introduction, a study on unrelated marketing performance outcomes)	2
Total excluded	41

Note: The document-level screening log (title, EID, and assigned reason for each excluded record) is provided as Supplementary Material S2.

3.5 Data Cleaning and Duplicate Handling

Duplicate checking based on Scopus EIDs and DOIs identified no duplicate records, indicating the Scopus export was already de-duplicated. Author name and affiliation fields were retained in their native Scopus-disambiguated form (Author IDs present for all records), which was used as the basis for author productivity counting rather than raw name-string matching, reducing the risk of author-name homonym error. Following topical screening (Section 3.4), the final analytical corpus (n = 155) inherits this duplicate-free status.

3.6 Metadata Screening

All 45 Scopus metadata fields were screened for completeness. Among the 196 identified records, DOI was absent for 12 (6.1%) and Author Keywords were absent for 4 (2.0%). Within the final 155-record analytical corpus, DOI is absent for 8 records (5.2%) and Author Keywords are absent for 4 records (2.6%); all other fields used in this analysis (Authors, Year, Source title, Cited by, Affiliations, References) are fully populated. No records were excluded on the basis of missing DOI or keywords, as these fields are supplementary rather than screening-relevant.

3.7 Analytical Approach and Tools

The bibliometric analysis combined performance analysis, citation-based science mapping, and keyword-based conceptual mapping. Performance indicators were derived from Scopus

Analyze Search Results and verified against the exported metadata of the 155-document corpus. VOSviewer version 1.6.20 was used to analyze author-keyword co-occurrence and to generate network, overlay, and density visualizations.

Counting and normalization. Full counting was applied to all performance indicators and to the keyword co-occurrence analysis. For author productivity, each publication was credited to every contributing author (identified by Scopus Author ID). For country and institutional productivity, each publication was credited once to every country or institution represented in its author affiliations; affiliation strings referring to sub-units of the same university (e.g., a business school and a department of the same university) were consolidated at university level. Funding organizations were counted analogously, at document level, when reported in the Scopus Funding Details field; because a single document may acknowledge several grants from the same sponsor, grant-level mentions are reported separately from document counts. Consequently, country, institution, and funding counts are non-mutually exclusive and do not sum to the corpus total: the 155 documents generate 205 country credits, and 35 documents (22.6%) involve authors from more than one country. A country percentage therefore denotes the proportion of corpus documents involving at least one affiliation from that country rather than an exclusive national share. Raw publication and citation frequencies are reported without age normalization in the primary tables; an age-normalized (citations-per-year) sensitivity ranking is reported in Section 4.6. For the keyword co-occurrence network, association-strength normalization was applied to represent the relative strength of relationships among keywords.

Threshold selection. A minimum occurrence threshold of three documents per author keyword was applied in VOSviewer. This threshold was selected to reduce noise from infrequently occurring terms while retaining sufficient thematic diversity for interpretation.

Keyword cleaning and thesaurus development. Author keywords were standardized before analysis by converting them to lowercase, removing unnecessary whitespace, and harmonizing spelling, singular/plural forms, and selected lexical variants using a documented thesaurus file. The thesaurus contained 23 mapped variant pairs, including "consumer behaviour" → "consumer behavior" and "online review" → "online reviews". In the primary analysis, terms such as "impulse buying," "impulsive buying," and "impulse buying behavior" were retained separately to preserve the terminology used by the original authors. Because this choice may fragment the network, a second thesaurus merging these core variants was used in a sensitivity analysis (Section 3.9). Both thesaurus files are provided as Supplementary Material S3.

Clustering configuration. The VOSviewer keyword co-occurrence network was analyzed using association-strength normalization, a clustering resolution of 1.00, and a minimum cluster size of 1. The default option to merge small clusters was retained. Under these settings, VOSviewer identified seven thematic clusters comprising 48 connected keyword items, 174 links, and a total link strength of 199.

Co-citation and reference normalization. Co-citation analysis was used to examine the intellectual foundations of the literature by identifying references frequently cited together by corpus documents. Reference strings in the Scopus References field of the 155 documents were parsed to identify cited works. The primary matching procedure used first-author surname

and publication year, supplemented by manual inspection of the highly co-cited references (those cited by at least ten corpus documents) to separate evident same-author/same-year collisions and to merge bibliographic variants of the same work (e.g., differences in initials, spelling, or incomplete citations). This procedure reduces, but does not eliminate, the possibility of reference-level matching errors arising from incomplete citations, spelling variations, editions, or missing identifiers, particularly among less frequently cited works. Accordingly, the co-citation results are interpreted as an approximate representation of shared intellectual foundations rather than an error-free census of cited works, and future replications should employ DOI- and title-assisted reference normalization where complete identifiers are available. In interpreting the results, methodological references (e.g., measurement-validation procedures) were distinguished from substantive theoretical foundations.

Bibliographic coupling procedure. Bibliographic coupling was conducted using VOSviewer version 1.6.20 to identify contemporary research fronts based on shared-reference relationships among documents in the final 155-document corpus. Documents were used as the unit of analysis, and a minimum citation threshold of zero was applied so that all 155 documents were retained. Bibliographic-coupling relationships were normalized using association-strength normalization. Clustering was performed using the VOSviewer clustering procedure with a resolution parameter of 1.00 and a minimum cluster size of one, while the default option to merge small clusters was retained. Default layout parameters were maintained. Under these settings, the bibliographic-coupling network comprised 155 items, five clusters, 6,991 links, and a total link strength of 18,290. Cluster interpretation was based on the titles, abstracts, and recurring author keywords of documents within each cluster. The resulting thematic labels were therefore assigned interpretively and should not be understood as automatically generated classifications.

Network, overlay, and density visualization. Network visualization was used to examine relationships among author keywords and identify thematic clusters. Overlay visualization was used to assess the relative temporal position of research topics based on average publication year, while density visualization was used to identify areas of comparatively higher and lower keyword concentration. These visualizations were interpreted as representations of conceptual structure and scholarly attention rather than evidence of causal importance.

3.8 Search Sensitivity Check

To assess whether the reported publication trends, geographical patterns, and thematic emphases are specific to the determinant-filtered query (Section 3.2), a broader query variant was run on 4 September 2026, replacing the second AND-clause (specific mechanisms: eWOM, online reviews, hedonic motivation, emotional response, influencer marketing) with a general digital-context requirement (online, digital, e-commerce, social commerce, mobile commerce, live-stream*), while retaining identical subject-area, document-type, language, source-type, and publication-stage filters. This broader query identified 353 records (2002–2027), compared with 196 for the narrower, determinant-filtered query—a difference that itself indicates that the determinant clause meaningfully restricts the identified pool. The two record sets are not strictly nested: 135 records overlap, 61 records are unique to the narrower

query, and 218 records are unique to the broader query. The two datasets are therefore not simply broad and narrow versions of the same corpus but partly different operationalizations of digital impulse buying.

The broader search retrieved one record assigned to publication year 2027 at the September 2026 extraction date, despite the final-publication-stage filter. Because this reflects Scopus year-assignment practice for issues dated ahead of their online release rather than a completed annual observation, the record was retained for identification transparency but excluded from the temporal comparison below; its exclusion does not change the reported percentage.

Three comparisons were conducted at the identification stage, prior to topical screening, to isolate the effect of query design:

Geographical ranking. The top-country ranking is similar across both queries: China ranks first in both (24.0% of the narrow identification pool vs. 22.1% of the broad pool), followed by Indonesia, Malaysia, and India in both, with only minor reordering among mid-ranked countries (e.g., Pakistan and Viet Nam swap relative positions). This indicates that the preliminary geographical distribution is relatively similar across the two identification pools. Because the broader pool was not subjected to the manual topical screening used to construct the final 155-document corpus, the comparison does not demonstrate full robustness of the final country-level findings.

Temporal growth pattern. The post-2020 concentration is observable in both pools: 79.1% of the narrow identification pool was published in 2020–2026, compared with 84.1% of the broader pool. This provides descriptive evidence that the post-2020 concentration is not unique to the determinant-filtered search. However, it indicates relative similarity in preliminary temporal distributions rather than robustness of the final bibliometric results.

Thematic emphasis. Author-keyword frequency comparison shows moderate but incomplete overlap: 7 of the top 12 substantive keywords are shared between both queries (e.g., *online shopping, social commerce, trust, sales promotion, consumer behavior*), while the narrower query additionally emphasizes hedonic-motivation- and influencer-related terms (by construction, since these are part of the determinant clause), and the broader query additionally surfaces *e-commerce, generation Z, social media, and urge to buy impulsively*. This partial divergence confirms that the determinant-filtered scope shapes which mechanisms receive thematic emphasis in Sections 4.8–4.12.

Overall, the sensitivity check demonstrates relative similarity in the preliminary geographical and temporal distributions generated by the two query specifications, while thematic emphasis differs more noticeably. These comparisons are conducted at the identification stage and therefore do not constitute a full robustness test of the final 155-document corpus. A stronger robustness assessment would require applying identical topical screening and analytical procedures to the broader retrieval set and comparing the resulting final corpora. Accordingly, the present check is interpreted as evidence about query-design sensitivity rather than as confirmation that the bibliometric findings are invariant to search specification.

3.9 Keyword-Harmonization Sensitivity Analysis

A second sensitivity analysis evaluated whether the conceptual structure was affected by lexical fragmentation among closely related impulse-buying terms. The analysis retained the same final corpus of 155 documents, author-keyword unit of analysis, full-counting method,

association-strength normalization, clustering resolution (1.00), and minimum occurrence threshold of three documents used in the primary network. Core lexical variants—including "impulsive buying," "impulse buying behavior/behaviour," "impulsive buying behavior/behaviour," "online impulse buying," "online impulsive buying," and the corresponding online behavior/behaviour variants were harmonized to the common label "impulse buying" through a second VOSviewer thesaurus.

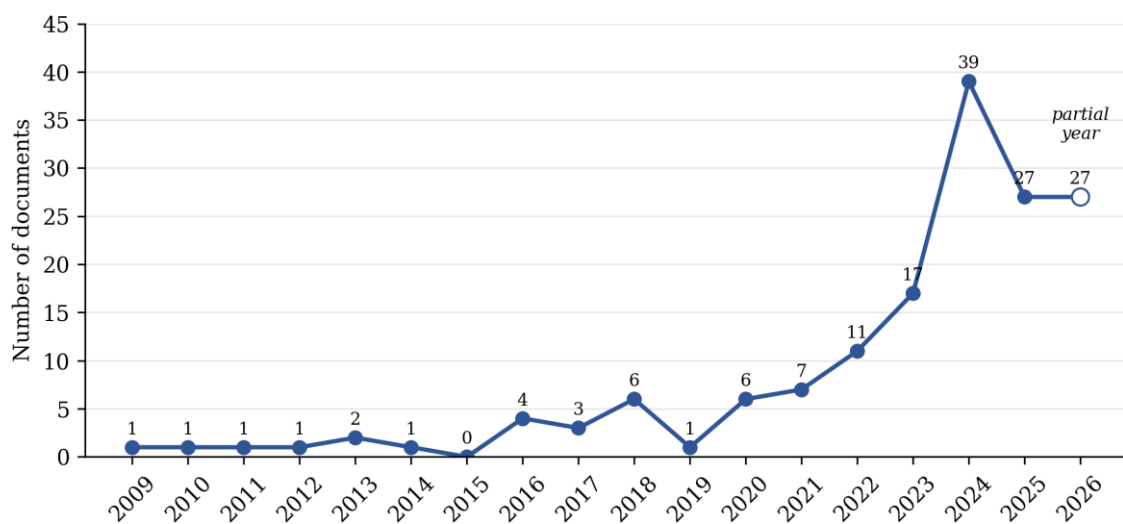
The harmonized network contained 40 connected items, nine clusters, 109 links, and a total link strength of 198, compared with 48 connected items, seven clusters, 174 links, and a total link strength of 199 in the primary specification (Table 12 and Figure 9, Section 4.9). Total link strength therefore remained nearly unchanged, whereas the number and composition of clusters were reorganized. This indicates that the overall connectivity of the conceptual network is comparatively stable, but that the precise cluster partition is partly sensitive to terminology harmonization. The seven-cluster solution reported in the primary analysis is therefore interpreted as one empirically derived representation of the corpus rather than as an invariant taxonomy of the field.

4. Results and Discussion

4.1 Publication Trend

The final analytical corpus ($n = 155$) spans 2009–2026, with a distinctly nonlinear growth pattern (Figure 2). Output remained marginal through 2015 (no more than two articles per year), rose modestly in 2016–2018 (three to six articles per year), and returned to a single article in 2019, before an early moderate phase in 2020–2021 (six and seven articles, respectively). A sharp inflection occurs from 2022 onward: 11 (2022) → 17 (2023) → 39 (2024) → 27 (2025) → 27 (2026, partial year). Cumulatively, 82.6% of the corpus (128 of 155 articles) was published in the last six years (2021–2026), and 2024 alone accounts for 25.2% of all output.

Figure 2. Annual Publication Trend of Digital Impulse Buying Research (2009–2026)



Source: Authors' analysis based on the Scopus database (final corpus, $n = 155$; 2026 is a partial year at the 4 September 2026 extraction).

This trajectory coincides with the post-2020 acceleration of e-commerce adoption, mobile-first shopping, and live-streaming commerce, which introduced a wider range of digitally mediated contexts for impulsive purchasing than the desktop-website context that dominated

the field's first decade (cf. Parboteeah et al., 2009). Because the 2026 count reflects a partial publication year at the point of extraction (Section 3.2), the apparent plateau between 2025 and 2026 (27 vs. 27) is not interpreted as a slowdown in scholarly interest. Consistent with the eligibility criteria in Table 2, the entire final corpus ($n = 155$) consists of journal articles (100.0%).

4.2 Most Productive Authors

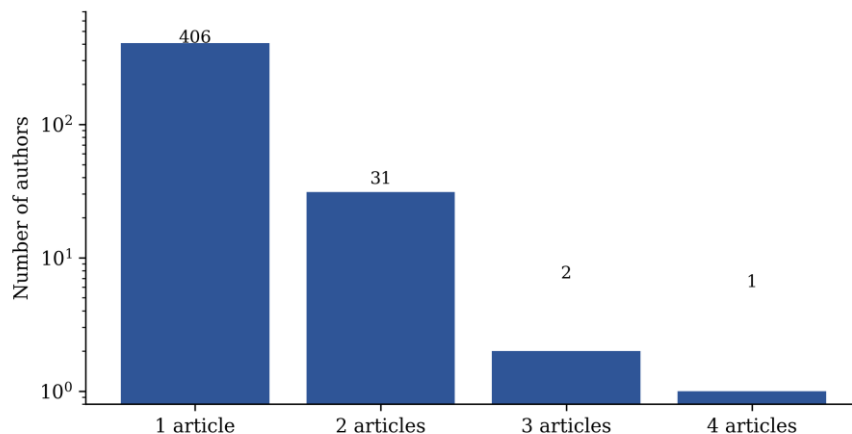
Author productivity is diffuse rather than concentrated. Under full counting by Scopus Author ID, the corpus involves 440 unique authors, and no individual contributes more than four articles (Table 3). Of these authors, 406 (92.3%) contributed a single article, 31 contributed two articles, two contributed three, and one contributed four (Figure 3).

Table 3. Most Productive Authors

Author	Articles
Hasim, M.A.	4
Zheng, X.	3
Shamsudin, M.F.	3
31 authors, including Lee, Y.Y.; Liew, T.W.; Gan, C.L.; Zhao, A.; Li, L.; Feng, Y.; Pradana, M.; Men, J.; Yang, F.; Shamim, K.; Koay, K.Y.; Karahan, M.O.	2 each

Source: Authors' analysis based on the Scopus database (full counting by Scopus Author ID).

Figure 3. Distribution of Author Productivity ($n = 440$ authors)



Source: Authors' analysis based on the Scopus database. Logarithmic vertical axis.

Only 11 of 155 articles (7.1%) are single-authored, and the mean team size is 3.08 authors per document. The field is predominantly collaborative, typically involving three to four co-authors per paper. This pattern indicates a dispersed authorship structure, with research contributions distributed across a broad community rather than concentrated among a small number of highly prolific authors.

4.3 Most Influential Sources

Table 4. Most Influential Sources

Source	Docs	Total citations	Mean citations
International Journal of Information Management	5	1,631	326.2
Journal of Retailing and Consumer Services	5	561	112.2

Source	Docs	Total citations	Mean citations
Asia Pacific Journal of Marketing and Logistics	5	347	69.4
Journal of Marketing Analytics	4	114	28.5
Sustainability (Switzerland)	4	114	28.5
Frontiers in Psychology	4	79	19.8
Information and Management	3	741	247.0
Young Consumers	3	107	35.7

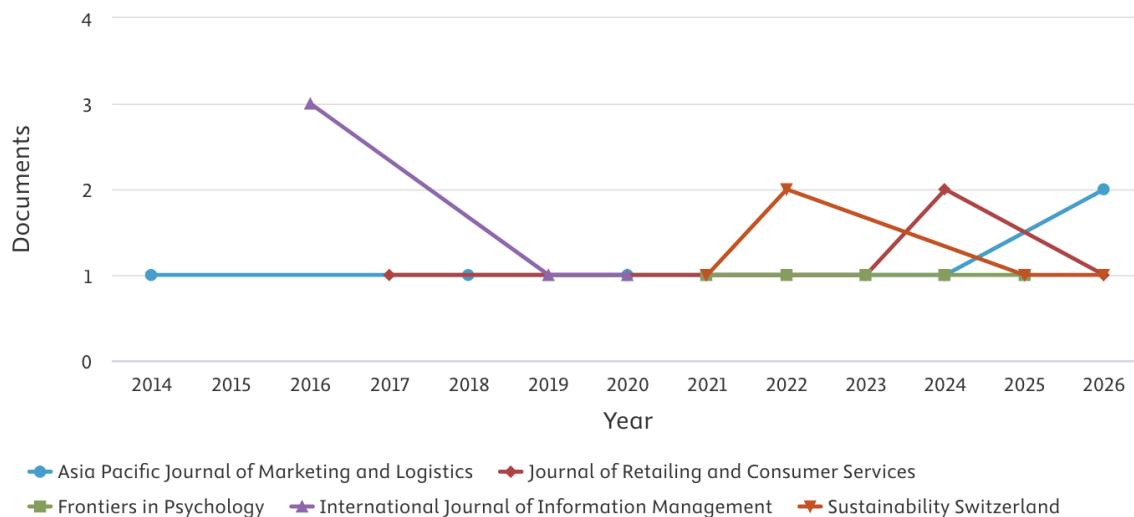
Source: Authors' analysis based on the Scopus database. Sources ordered by document count, then total citations.

Figure 4. Documents per Year by Source (Top 5)

Documents per year by source

Compare the document counts for up to 10 sources.

[Compare sources and view CiteScore, SJR, and SNIP data](#)



Source: Authors' analysis based on the Scopus database.

The 155 articles are distributed across 103 unique sources, with no single journal contributing more than five articles. This distribution indicates that research on digital impulse buying within the present corpus is published across diverse outlets spanning marketing, information systems, psychology, and general business. Source dispersion is reported here as a characteristic of the publication structure and should not, by itself, be interpreted as evidence of the developmental maturity of the research area. *International Journal of Information Management* combines a relatively modest publication volume (five articles) with the highest citation count (1,631) and mean citation rate (326.2 citations per article). *Frontiers in Psychology* shows a comparable publication volume but a substantially lower mean citation rate (19.8). These differences should be interpreted cautiously because raw citation counts are influenced by publication age, journal visibility, and citation exposure time. Accordingly, source-level citation patterns in Table 4 describe the distribution and accumulated citation visibility of the

corpus rather than the relative theoretical importance or maturity of individual publication outlets.

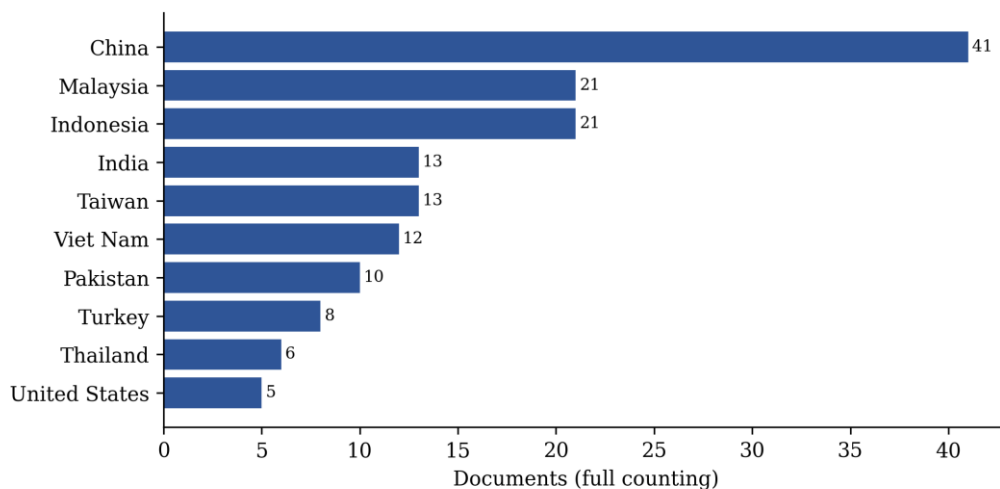
4.4 Most Productive Countries

Table 5. Most Productive Countries

Country	Docs	% of corpus documents	Total citations	Mean citations
China	41	26.5	3,766	91.9
Malaysia	21	13.5	357	17.0
Indonesia	21	13.5	97	4.6
Taiwan	13	8.4	1,260	96.9
India	13	8.4	109	8.4
Viet Nam	12	7.7	59	4.9
Pakistan	10	6.5	289	28.9
Turkey	8	5.2	167	20.9
Thailand	6	3.9	33	5.5
United States	5	3.2	947	189.4

Source: Authors' analysis based on the Scopus database. Full counting: a document is credited once to each country represented in its affiliations; percentages are therefore not mutually exclusive and do not sum to 100% (155 documents generate 205 country credits).

Figure 5. Documents by Country/Territory (Top 10)



Source: Authors' analysis based on the Scopus database (full counting).

China is represented in 41 documents, equivalent to 26.5% of the 155-document corpus. Under the full-counting procedure, this percentage denotes documents involving at least one Chinese affiliation and should not be interpreted as a mutually exclusive national share. China also accounts for the largest absolute citation total. The United States, despite modest volume (five documents), shows the highest mean citation rate (189.4), reflecting its role in the earlier literature (e.g., Parboteeah et al., 2009). By contrast, Indonesia (21 documents) and Viet Nam (12 documents) combine substantial volume with very low mean citations (4.6 and 4.9, respectively) a pattern that may partly reflect the recency of these countries' contributions,

since citation counts are strongly time-dependent and both countries' contributions cluster heavily in 2023–2026.

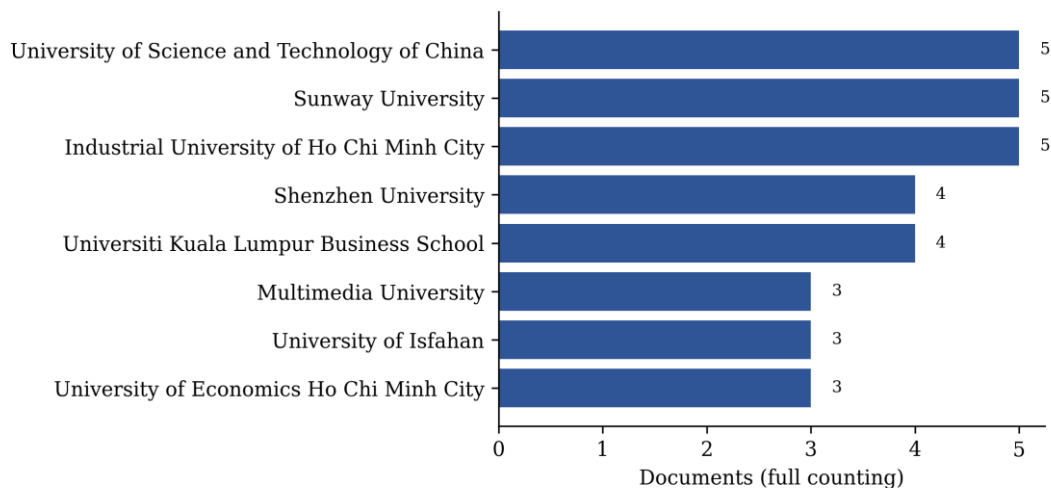
4.5 Institutional Contributions

Table 6. Most Productive Institutions

Institution	Docs
University of Science and Technology of China	5
Industrial University of Ho Chi Minh City	5
Sunway University	5
Shenzhen University	4
Universiti Kuala Lumpur Business School	4
Multimedia University	3
University of Isfahan	3
University of Economics Ho Chi Minh City	3

Source: Authors' analysis based on the Scopus database. Full counting at document level; affiliation variants of the same university were consolidated (Section 3.7), which raises Sunway University from four to five documents relative to affiliation-level Scopus Analyze output.

Figure 6. Documents by Affiliation (Top 8)



Source: Authors' analysis based on the Scopus database (full counting).

Institutional productivity is likewise dispersed, with the most productive institutions contributing only five of 155 documents. This mirrors the author-level findings: no single research center anchors this literature, and Southeast Asian universities (Viet Nam, Malaysia) already rank among the most active institutions despite their countries' comparatively low mean-citation profiles noted in Section 4.4 consistent with their being comparatively recent, rapidly growing contributors.

4.6 Citation Analysis

Total citations across the corpus reach 7,365, with a mean of 47.5 per document, but this mean is strongly influenced by a small number of highly cited papers, as the distribution is right-skewed (Table 7).

Table 7. Most Cited Publications (Raw Citations)

Rank	Authors	Year	Citations
1	Parboteeah, Valacich & Wells	2009	770
2	Chan, Cheung & Lee	2017	576
3	Xiang, Zheng, Lee & Zhao	2016	545
4	Liu, Li & Hu	2013	459
5	Zheng, Men, Yang & Gong	2019	404
6	Wu, Chiu & Chen	2020	344

Source: Authors' analysis based on the Scopus database (citation counts as of 4 September 2026).

These six publications account for 3,098 citations, or 42.1% of total citations in the corpus, from 3.9% of its documents. The concentration indicates that a relatively small set of earlier publications has accumulated substantial citation visibility. However, raw citation counts are strongly affected by publication age, journal visibility, and citation exposure time, and the ranking should therefore not be interpreted as demonstrating theoretical superiority or greater contemporary influence. The 2011 Chang, Eckman and Yan paper on physical retail-environment S-O-R dynamics is not part of this ranking, as it was excluded during topical screening (Section 3.4) for its exclusively offline retail context; it remains cited in Section 2 as background literature on the S-O-R framework.

To reduce the age bias of raw counts, an age-normalized sensitivity ranking was computed as total citations divided by the number of years since publication, inclusive of the publication year ($2026 - \text{publication year} + 1$) (Table 8).

Table 8. Age-Normalized Citation Ranking (Citations per Year)

Rank	Authors	Year	Citations	Citations/year	Raw rank
1	Li, Chen & Zhu	2024	180	60.0	—
2	Chan, Cheung & Lee	2017	576	57.6	2
3	Zheng, Men, Yang & Gong	2019	404	50.5	5
4	Xiang, Zheng, Lee & Zhao	2016	545	49.5	3
5	Wu, Chiu & Chen	2020	344	49.1	6
6	Parboteeah, Valacich & Wells	2009	770	42.8	1
7	Zhang, Cheng & Huang	2023	142	35.5	—
8	Chen & Yao	2018	319	35.4	—
9	Yang, Tang, Men & Zheng	2021	210	35.0	—
10	Liu, Li & Hu	2013	459	32.8	4

Source: Authors' analysis based on the Scopus database. Citations per year = citations $\div$ ($2026 - \text{year} + 1$). "—" = not among the six most-cited publications by raw count.

The age-normalized ranking changes the picture in an informative way. The most-cited paper by raw count (Parboteeah et al., 2009) drops to sixth place, while two recent live-streaming studies Li et al. (2024) on e-commerce anchors' characteristics and Zhang et al. (2023) on impulse buying in live-streaming commerce—enter the top ten, with Li et al. (2024) ranking first. Koay and Lim (2025) on influencer-marketing congruence follows just outside the top

ten (31.5 citations per year). This indicates that part of the recent live-streaming and influencer literature is accumulating citations at rates comparable to, or higher than, the earlier website- and mobile-commerce studies. Because citation rates for very recent papers are volatile, this ranking is reported as a sensitivity check rather than a definitive measure of influence.

4.7 Co-citation and Bibliographic Coupling Analysis

To complement the conceptual-structure mapping in Section 4.9 with a citation-based view of intellectual structure, the fully populated References field was parsed for all 155 corpus documents (average 74.4 parsed citations per document), following the normalization procedure described in Section 3.7.

Co-citation analysis. Of 6,273 uniquely identified cited works, 135 are cited by at least ten corpus documents. The most locally cited work is Rook's (1987) foundational "The Buying Impulse" (cited by 59 of 155 documents), followed by Beatty and Ferrell (1998), Fornell and Larcker (1981), Verhagen and Van Dolen (2011), and Stern (1962) (Table 9).

Table 9. Most Co-Cited Works Within the Digital Impulse Buying Corpus

Rank	Work	Type	Local citations
1	Rook, D.W. (1987). The buying impulse. <i>Journal of Consumer Research</i> , 14(2), 189–199.	Substantive	59
2	Beatty, S.E., & Ferrell, M.E. (1998). Impulse buying: Modeling its precursors. <i>Journal of Retailing</i> , 74(2), 169–191.	Substantive	56
3	Fornell, C., & Larcker, D.F. (1981). Evaluating structural equation models with unobservable variables and measurement error. <i>Journal of Marketing Research</i> , 18(1), 39–50.	Methodological	55
4	Verhagen, T., & Van Dolen, W. (2011). The influence of online store beliefs on consumer online impulse buying. <i>Information & Management</i> , 48(8), 320–327.	Substantive	53
5	Stern, H. (1962). The significance of impulse buying today. <i>Journal of Marketing</i> , 26(2), 59–62.	Substantive	47
6	Mehrabian, A., & Russell, J.A. (1974). <i>An Approach to Environmental Psychology</i> . MIT Press.	Substantive (S-O-R)	46
7	Rook, D.W., & Fisher, R.J. (1995). Normative influences on impulsive buying behavior. <i>Journal of Consumer Research</i> , 22(3), 305–313.	Substantive	45
8	Parboteeah, D.V., Valacich, J.S., & Wells, J.D. (2009). The influence of website characteristics on a consumer's urge to buy impulsively. <i>Information Systems Research</i> , 20(1), 60–78.	Substantive	44
9	Chan, T.K.H., Cheung, C.M.K., & Lee, Z.W.Y. (2017). The state of online impulse-buying research. <i>Information & Management</i> , 54(2), 204–217.	Substantive (review)	43
10	Wells, J.D., Parboteeah, V., & Valacich, J.S. (2011). Online impulse buying. <i>Journal of the Association for Information Systems</i> , 12(1), 32–56.	Substantive	35

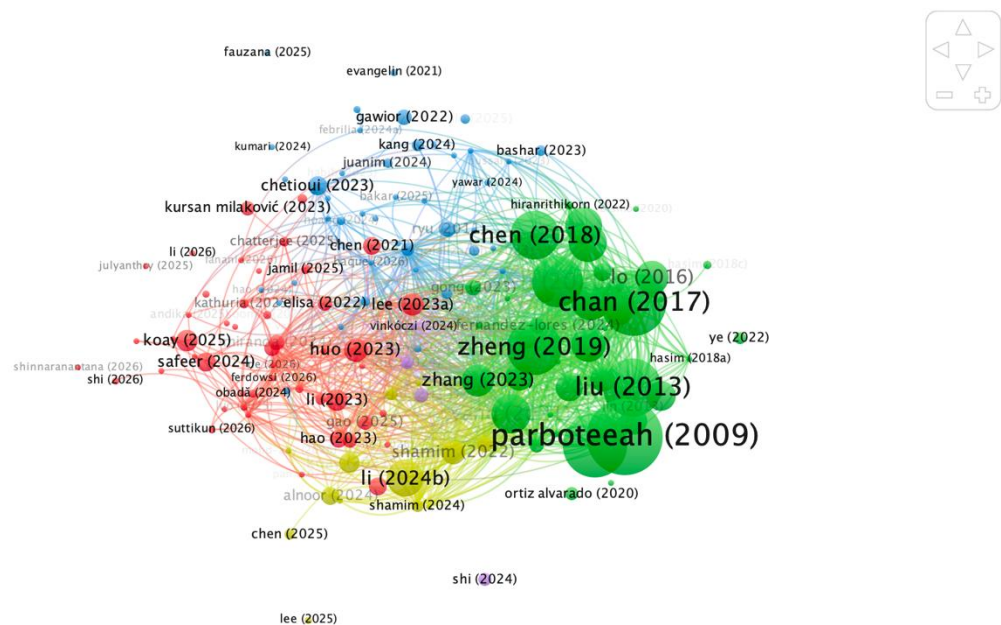
Source: Authors' analysis based on parsed reference data from the 155-document corpus.

Methodological references were distinguished from substantive intellectual foundations during interpretation. The high local co-citation frequency of Fornell and Larcker (1981) primarily reflects the widespread reliance of corpus studies on structural-equation-model

validity procedures (PLS-SEM/CB-SEM discriminant validity) and should not be interpreted as evidence that this work constitutes a theoretical foundation of digital impulse buying. Among the substantive works, the strongest co-cited pair is Beatty and Ferrell (1998) with Rook (1987) (co-cited by 37 documents), followed by Beatty and Ferrell (1998) with Verhagen and Van Dolen (2011) (32) and Rook (1987) with Stern (1962) (32). This suggests that the intellectual core of this literature rests on a small set of psychology-of-impulse and online-store/website papers that are repeatedly cited together, consistent with—but methodologically independent from the S-O-R and affective themes identified through keyword co-occurrence (Section 4.9).

Bibliographic coupling analysis. Bibliographic coupling was conducted to complement the co-citation analysis by identifying groups of documents that draw on overlapping reference bases. Using the settings described in Section 3.7, all 155 documents were retained in the analysis. The resulting network comprised 6,991 links and a total link strength of 18,290 and was organized into five clusters. The dense network indicates extensive shared-reference relationships across the analyzed documents, while the five-cluster solution identifies groups of publications with comparatively stronger bibliographic proximity.

Figure 7. Bibliographic-Coupling Network of the 155-Document Analytical Corpus



Source: Authors' analysis using VOSviewer 1.6.20. Unit of analysis: documents; association-strength normalization; minimum citations = 0; clustering resolution = 1.00.

Figure 7. presents the bibliographic-coupling network. Node size represents document weight according to the selected visualization attribute, links represent bibliographic-coupling relationships between documents, and cluster colors distinguish the five groups identified by VOSviewer. The clusters are interpreted as groups of bibliographically related publications rather than as fixed or mutually isolated research domains. Because bibliographic coupling captures similarity in reference use, the analysis provides a complementary perspective on contemporary research relationships within the corpus, whereas the co-citation analysis reflects shared intellectual foundations.

The five-cluster structure should not be interpreted as evidence that the literature consists of exactly five substantive research themes. Cluster membership is generated from shared-reference relationships, and substantive labels require examination of the documents contained within each cluster. Accordingly, thematic interpretation was based on titles, abstracts, and recurring author keywords, while the network statistics themselves are reported as structural characteristics of the bibliographic-coupling solution.

Table 10. Bibliographic-Coupling Network Configuration and Results

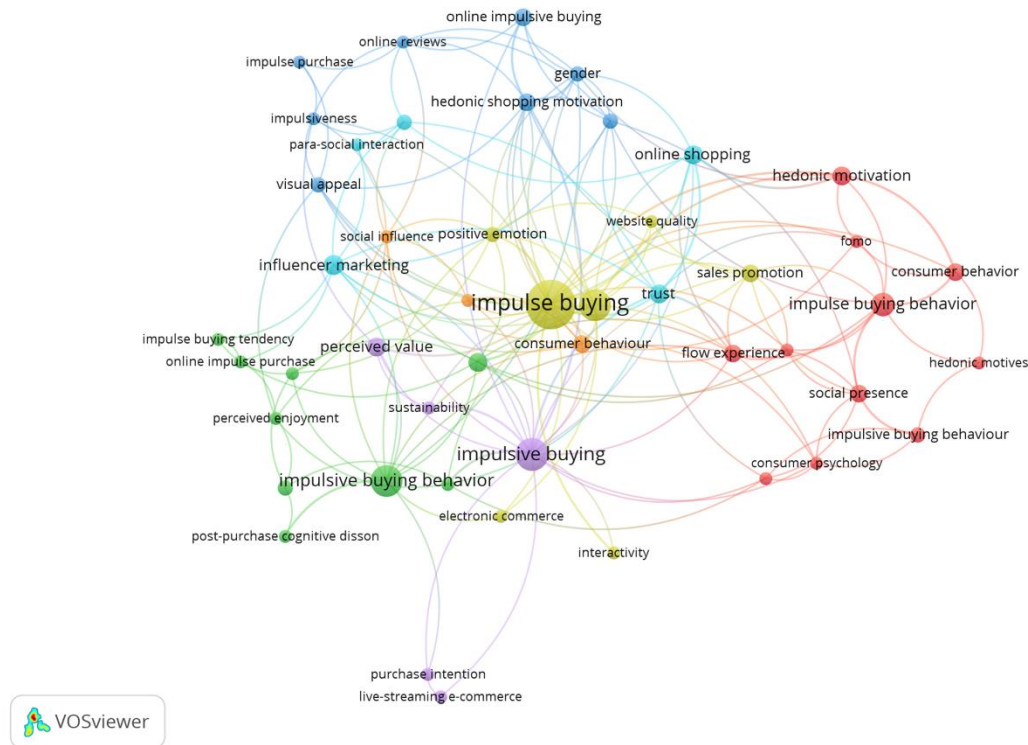
Indicator	Bibliographic-coupling result
Analytical corpus	155 documents
Unit of analysis	Documents
Minimum citations per document	0
Documents retained	155
Normalization	Association strength
Clustering resolution	1.00
Minimum cluster size	1
Merge small clusters	Enabled
Number of clusters	5
Links	6,991
Total link strength	18,290

Source: Authors' analysis using VOSviewer 1.6.20.

4.8 Keyword Co-occurrence Analysis

Of 530 unique author keywords identified after keyword cleaning and thesaurus harmonization (Section 3.7), 49 met the minimum occurrence threshold of three documents. Of these, 48 formed the connected keyword co-occurrence network visualized in VOSviewer (Figure 8). Beyond the expected prominence of impulse-buying terminology, the most frequently occurring substantive keywords included consumer behavior (10 occurrences), hedonic motivation (8), influencer marketing (7), trust (6), online shopping (6), perceived value (6), social commerce (6), social presence (5), hedonic shopping motivation (5), positive emotion (5), live-streaming commerce (5), flow experience (5), and sales promotion (5). These keywords indicate that scholarly attention spans psychological, social, technological, and platform-related dimensions of digital impulse buying.

Figure 8. Keyword Co-occurrence Network of Digital Impulse Buying Research (Primary Specification, n = 155)



Source: Authors' analysis, generated in VOSviewer 1.6.20 using the thesaurus-harmonized author-keyword dataset, full counting, association-strength normalization, and a minimum occurrence threshold of three documents. Node size represents keyword occurrence, links indicate co-occurrence relationships, and colors represent cluster membership.

The network visualization shows that impulse-buying terminology occupies a central position and is connected to a broad range of substantive themes, including hedonic motivation, consumer behavior, trust, positive emotion, social commerce, influencer marketing, online shopping, and live-streaming commerce. The presence of multiple interconnected themes suggests that this literature is not organized around a single explanatory mechanism but reflects a combination of affective, motivational, social, and platform-related perspectives.

At the same time, many substantive keywords are connected through relatively limited co-occurrence relationships, indicating that scholarly attention is distributed across a diverse range of conceptual combinations rather than concentrated around only a few recurring relationships. More established concepts related to online shopping, website experience, hedonic motivation, and consumer behavior coexist with comparatively newer themes such as social presence, influencer marketing, FOMO, parasocial interaction, and live-streaming commerce. The network structure provides the basis for the thematic clusters discussed in Section 4.9, while temporal differences are examined through the overlay visualization in Section 4.10.

4.9 Conceptual Structure

The primary keyword co-occurrence network consisted of 48 items, 174 links, and a total link strength of 199. Using association-strength normalization and a clustering resolution of 1.00, VOSviewer identified seven thematic clusters (Table 11). These clusters represent distinct but interconnected areas of scholarly attention within the analyzed literature.

Table 11. Thematic Clusters from Keyword Co-occurrence Analysis (Primary Specification)

Cluster	Proposed thematic label	Representative keywords
Cluster 1 (11 items)	Consumer Psychology, Hedonic Motivation, and Live-Commerce Response	consumer behavior, consumer psychology, flow experience, FOMO, hedonic motivation, hedonic motives, impulse-buying variants, live-streaming commerce, S-O-R model, social presence
Cluster 2 (9 items)	eWOM, Social Commerce, and Post-Purchase Response	electronic word-of-mouth, impulse buying tendency, online impulse purchase, online impulsive buying behavior, parasocial interaction, perceived enjoyment, post-purchase cognitive dissonance, social commerce
Cluster 3 (8 items)	Demographic Differences, Hedonic Shopping, and Online Reviews	gender, Generation Z, hedonic shopping motivation, impulse purchase, impulsiveness, online impulsive buying, online reviews, visual appeal
Cluster 4 (7 items)	Core Digital Impulse Buying and Website Experience	electronic commerce, impulse buying, interactivity, online impulse buying, positive emotion, sales promotion, website quality
Cluster 5 (5 items)	Perceived Value and Purchase Intention in Digital Commerce	impulsive buying, live-streaming e-commerce, perceived value, purchase intention, sustainability
Cluster 6 (5 items)	Influencer Marketing, Online Shopping, and Trust	impulse buying behaviour, influencer marketing, online shopping, para-social interaction, trust
Cluster 7 (3 items)	Celebrity Endorsement and Social Influence	celebrity endorsement, consumer behaviour, social influence

Source: Authors' analysis based on the Scopus database.

Cluster 1 centers on consumer psychology, hedonic motivation, and socially mediated live-commerce responses. Cluster 2 emphasizes electronic word-of-mouth, social commerce, perceived enjoyment, and post-purchase responses, while Cluster 3 highlights demographic characteristics, hedonic shopping motivation, online reviews, and impulsiveness. Cluster 4 captures the core digital-shopping environment through electronic commerce, website quality, interactivity, positive emotion, and sales promotion. Cluster 5 links impulsive buying with perceived value, purchase intention, sustainability, and live-streaming e-commerce. Cluster 6 concentrates on influencer marketing, online shopping, parasocial interaction, and trust, whereas Cluster 7 represents a smaller social-influence stream centered on celebrity endorsement. Several clusters contain a different impulse-buying lexical variant (e.g., "impulsive buying" in Cluster 5 and "impulse buying behaviour" in Cluster 6), which motivated the harmonization sensitivity analysis reported at the end of this section. The clusters generate several implications for the development of this research stream.

Cluster 1: Consumer Psychology, Hedonic Motivation, and Live-Commerce Response

This cluster indicates that psychological and affective mechanisms remain central to the study of digital impulse buying, particularly in increasingly interactive environments such as live-streaming commerce. The coexistence of hedonic motivation, flow experience, FOMO, social

presence, and the S-O-R model suggests that future studies could further integrate emotional, motivational, and socially mediated responses rather than examining them as isolated predictors, and test whether these mechanisms operate consistently across different forms of digital commerce.

Cluster 2: eWOM, Social Commerce, and Post-Purchase Response

This cluster suggests that research could move beyond pre-purchase persuasion and examine what happens after impulsive transactions occur. The combination of electronic word-of-mouth, social commerce, perceived enjoyment, parasocial interaction, and post-purchase cognitive dissonance (e.g., Chetoui & El Bouzidi, 2023) indicates an opportunity to connect social-influence mechanisms with post-purchase outcomes such as regret, satisfaction, dissonance, and subsequent word-of-mouth behavior.

Cluster 3: Demographic Differences, Hedonic Shopping, and Online Reviews

The presence of gender, Generation Z, impulsiveness, hedonic shopping motivation, online reviews, and visual appeal points to the importance of consumer heterogeneity. Comparative research across generations, genders, and cultural settings may help clarify the boundary conditions under which online reviews and hedonic shopping experiences are associated with impulsive purchasing.

Cluster 4: Core Digital Impulse Buying and Website Experience

This cluster represents a comparatively established stream centered on electronic commerce, website quality, interactivity, positive emotion, sales promotion, and online impulse buying. Its implication is that website-related mechanisms remain part of the conceptual structure even as research shifts toward newer platforms, and future studies could examine how website quality, interactivity, and promotional cues operate within live-streaming and social-commerce environments.

Cluster 5: Perceived Value and Purchase Intention in Digital Commerce

The combination of impulsive buying, perceived value, purchase intention, sustainability, and live-streaming e-commerce suggests an intersection between immediate purchasing responses and broader consumer evaluations. This cluster also highlights the need to distinguish between purchase intention and actual impulsive buying behavior, since these outcomes may reflect different levels of deliberation.

Cluster 6: Influencer Marketing, Online Shopping, and Trust

This cluster emphasizes influencer-related persuasion and trust. The presence of influencer marketing, para-social interaction, online shopping, and trust indicates that future studies could examine how credibility, trust formation, and perceived relational closeness are associated with impulsive purchasing in influencer-mediated environments, including comparisons across influencer types, platforms, and product categories.

Cluster 7: Celebrity Endorsement and Social Influence

Although small, this cluster indicates that celebrity endorsement and social influence remain connected to the literature. Future research could compare celebrity-based, influencer-based, and peer-based influence to determine how different forms of social persuasion are positioned within digital purchasing environments.

Taken together, the seven clusters suggest that this research stream is developing through the interaction of established psychological and website-related themes with newer socially

mediated and platform-specific themes. These clusters should be interpreted as patterns of scholarly attention and conceptual association rather than evidence that one mechanism has greater causal importance than another.

Keyword-harmonization sensitivity

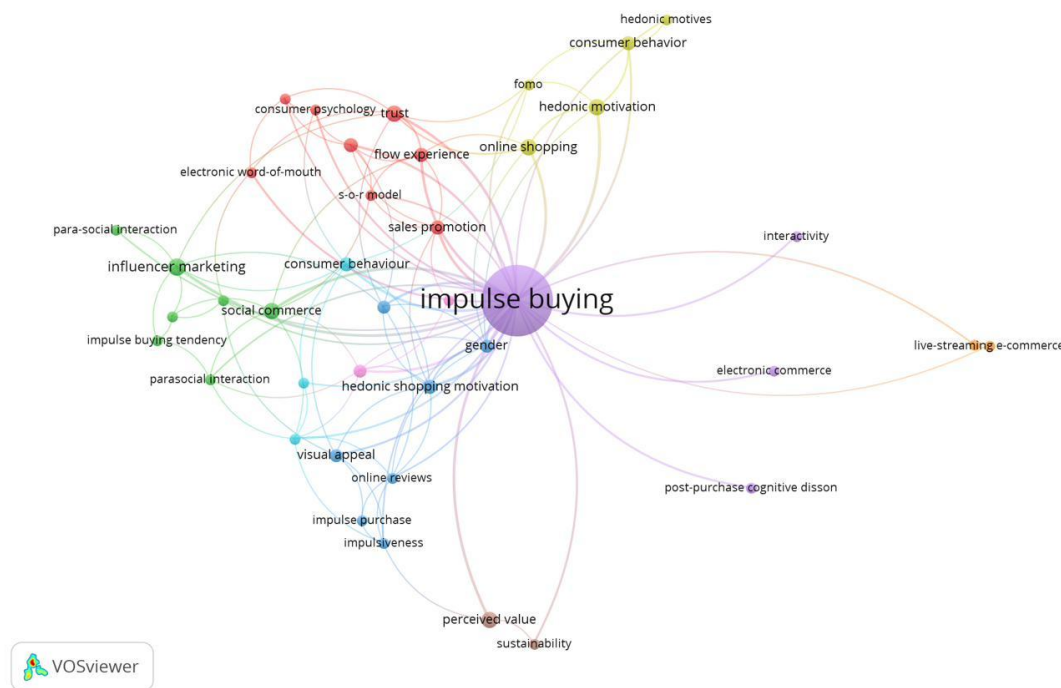
The seven-cluster configuration should not be interpreted as a fixed taxonomy. When core impulse-buying variants were merged into a single "impulse buying" node (Section 3.9), the same 155-document network was reorganized into nine clusters with an almost identical total link strength (198 versus 199; Table 12, Figure 9).

Table 12. Primary versus Keyword-Harmonized Co-occurrence Network

Specification	Connected items	Clusters	Links	Total link strength
Primary (impulse-buying variants retained)	48	7	174	199
Sensitivity (core variants harmonized)	40	9	109	198

Source: Authors' analysis using VOSviewer 1.6.20; $n = 155$; full counting; association strength; resolution 1.00; minimum occurrence = 3.

Figure 9. Keyword-Harmonization Sensitivity Network of Digital Impulse Buying Research ($n = 155$)



Source: Authors' analysis using VOSviewer 1.6.20. Core impulse-buying lexical variants were harmonized through a thesaurus; full counting; association-strength normalization; minimum occurrence threshold = 3.

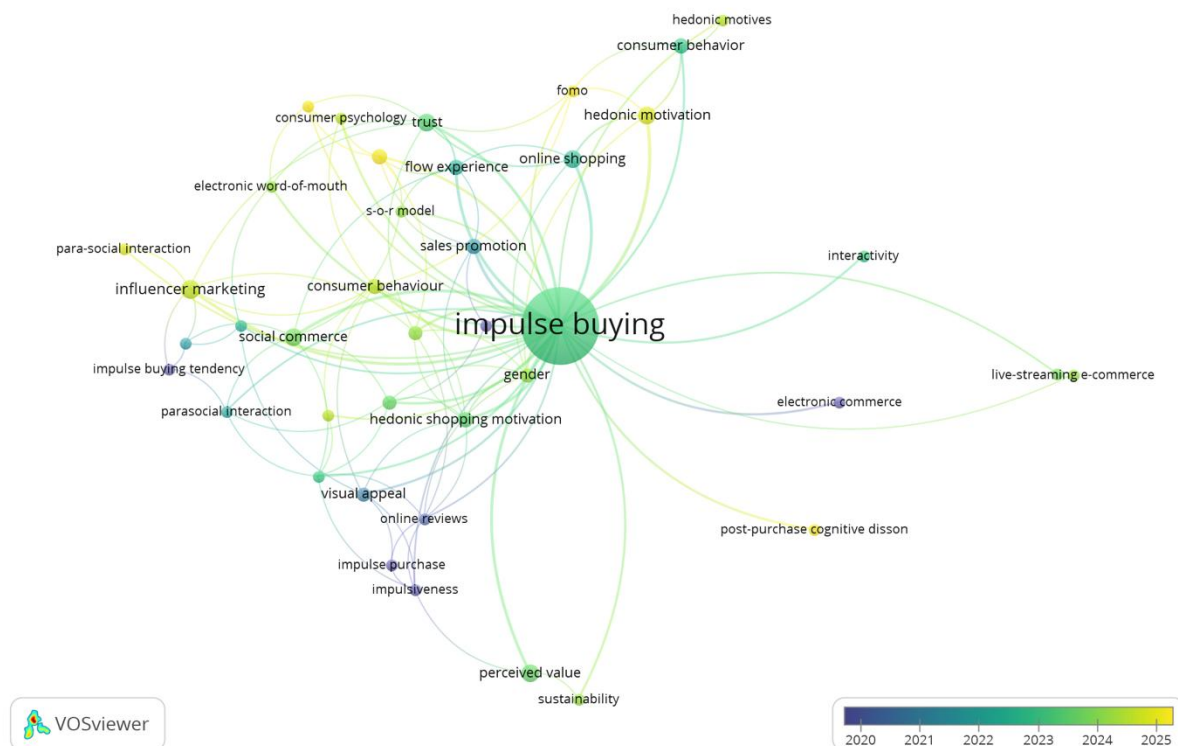
The drop in links (174 to 109) largely reflects the merging of several variant nodes, each of which previously carried its own links to substantive keywords, into one node. The reorganization indicates that part of the primary cluster structure is terminology-driven: in the harmonized map, "impulse buying" sits at the center of the network, and substantive themes regroup around it for example, influencer marketing, social commerce, para-social and parasocial interaction, and impulse buying tendency form one group; trust, flow experience, sales promotion, electronic word-of-mouth, consumer psychology, and the S-O-R model form another; and online reviews, visual appeal, impulsiveness, and impulse purchase

form a third. At the same time, the substantive thematic groupings discussed above— affective/S-O-R mechanisms, influencer and parasocial commerce, reviews and consumer heterogeneity, hedonic motivation, and perceived value—remain recognizable. Accordingly, substantive interpretation in this study emphasizes recurring conceptual relationships across the network rather than treating individual cluster membership as definitive.

4.10 Overlay Visualization (Temporal)

Figure 10 presents the VOSviewer overlay (temporal) map of the primary network, in which node color reflects each keyword's average publication year (blue $\approx$ 2020, yellow $\approx$ 2025).

Figure 10. VOSviewer Overlay (Temporal) Visualization of Digital Impulse Buying Keywords



Source: Authors' analysis, generated in VOSviewer 1.6.20. Color scale indicates average publication year per keyword (2020–2025). Average publication years are computed from the final corpus (2009–2026).

Oldest core (average year $\leq$ 2020.5): electronic commerce (2016.0), impulsiveness (2018.0), impulse purchase (2019.0), impulse buying tendency (2019.3), website quality (2020.0), and online reviews (2020.5).

Newest frontier (average year $\geq$ 2024.7): para-social interaction (2024.7), social presence (2025.0), post-purchase cognitive dissonance (2025.0), online impulsive buying behavior (2025.0), live-streaming commerce (2025.4), and FOMO (2025.7).

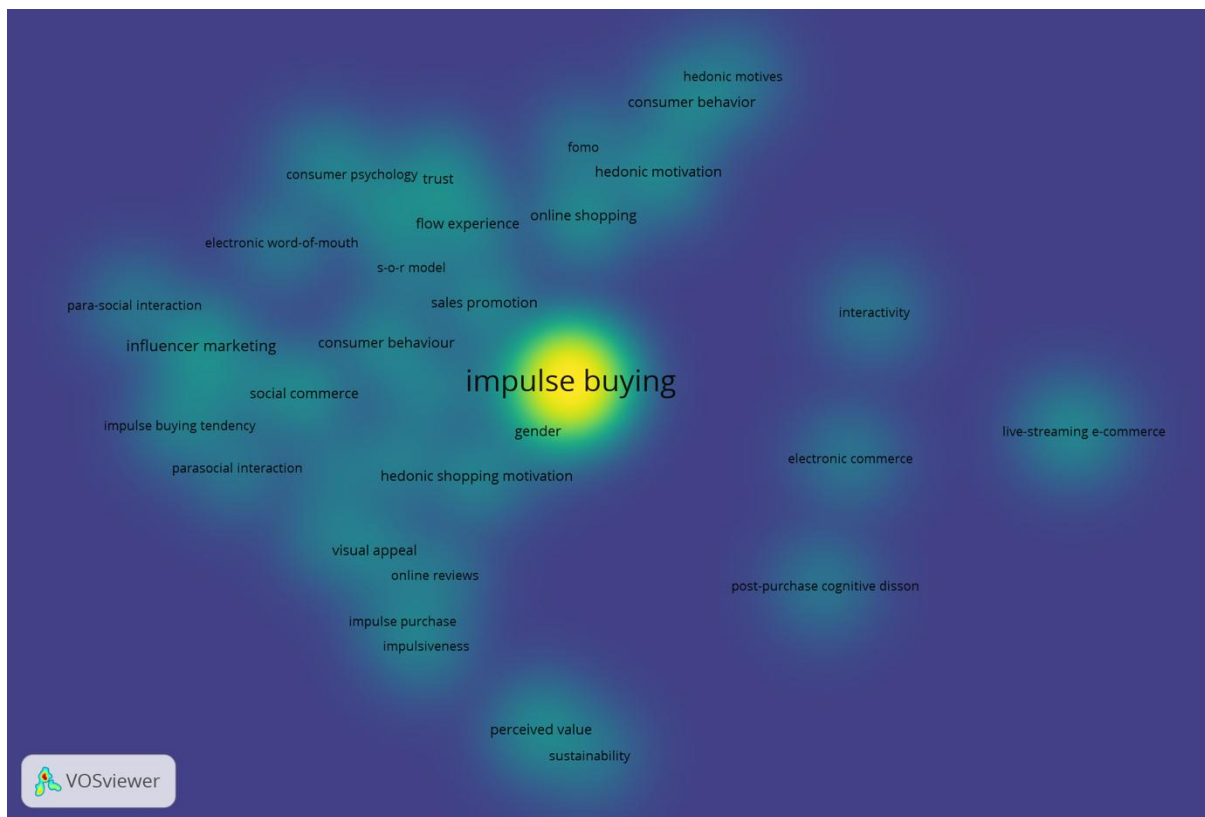
The temporal gradient indicates a shift from comparatively established themes related to electronic commerce, impulsiveness, website quality, and online reviews toward more recent areas of scholarly attention involving social presence, FOMO, post-purchase cognitive dissonance, para-social interaction, and live-streaming commerce. Rather than indicating the replacement of earlier perspectives, this pattern suggests that newer platform-specific and

socially mediated themes are being added to an existing foundation of online-shopping and consumer-behavior research. The same temporal gradient is visible in the harmonized sensitivity map (Supplementary Material S4). Because the more recent themes remain comparatively new within the analyzed literature, they warrant further empirical examination across platforms, consumer groups, and cultural settings, and could be connected more explicitly with established perspectives such as the S-O-R framework and website-related mechanisms.

4.11 Density Visualization

Figure 11 presents the VOSviewer density map, in which brighter (yellow) regions indicate higher local keyword density areas where terms occur frequently and in close proximity within the co-occurrence network.

Figure 11. VOSviewer Density Visualization of Digital Impulse Buying Keywords



Source: Authors' analysis, generated in VOSviewer 1.6.20. Brighter (yellow) areas indicate higher keyword density; darker (blue/purple) areas indicate lower density.

The density visualization shows a dominant concentration around "impulse buying," with secondary peaks associated with "impulsive buying" and "impulsive buying behavior." In the harmonized sensitivity map (Supplementary Material S4), these secondary peaks disappear and a single dominant peak remains, which indicates that they are produced by lexical variants of the same core construct rather than by distinct thematic concentrations. Beyond the core terms, keyword density decreases across the network, indicating that the literature is organized around a small conceptual core alongside a broader set of less frequently occurring, more specialized topics.

In both maps, the live-streaming, influencer, and post-purchase themes appear as low-density areas at the periphery of the network rather than as a separate high-density hub. In

bibliometric terms, this means that these themes are not yet associated with a shared, frequently recurring vocabulary within the corpus. One possible interpretation is that operationalizations of constructs such as "social presence," "parasocial interaction," and "live-streaming commerce" vary across studies; this interpretation is offered as a direction for future conceptual work rather than a conclusion established by the density map itself.

4.12 Thematic Evolution

Comparing the pre-2020 period (n = 21 documents) with 2020–2026 (n = 134 documents) (Table 13):

Table 13. Top Keywords by Period

Period	Top keywords (occurrences)
Pre-2020 (2009–2019)	impulse buying (8), online impulse buying (5), impulsiveness (2), normative evaluation (2), shopping environment (2), shopping behavior (2), website quality (2), sales promotion (2)
2020–2026	impulse buying (32), impulsive buying behavior (20), impulsive buying (18), impulse buying behavior (12), online impulse buying (12), consumer behavior (9), hedonic motivation (8), influencer marketing (7), perceived value (6), social commerce (6)

Source: Authors' analysis based on the Scopus database.

The evolution is visible less in outright topic replacement than in elaboration and specification: generic "website quality" and "shopping environment" framing in the pre-2020 period gives way to "social commerce," "influencer marketing," and "consumer behavior" after 2020, while terms with negligible pre-2020 presence—live-streaming commerce, FOMO, parasocial interaction, and post-purchase cognitive dissonance—appear only in the most recent years (Section 4.10). This suggests that the analyzed stream has diversified from a generic, website-based framing toward increasingly platform- and persuasion-specific constructs. The pre-2020 period contains only 21 documents, so its keyword frequencies are small and should be read descriptively.

4.13 Future Research Agenda

Grounded in the patterns identified above, three priorities emerge. Each is framed in relation to the present 155-article corpus; claims about the broader digital impulse-buying field would require a broader search designed for that purpose.

Financial-vulnerability and regulatory constructs. Topics such as Buy Now Pay Later (BNPL), dark patterns, compulsive purchasing, and problematic spending were underrepresented within the present corpus and did not reach the minimum author-keyword occurrence threshold. This observation should not be interpreted as demonstrating that these topics are underresearched across the broader digital impulse-buying literature, because these themes were not part of the query and their low frequency may partly reflect the determinant-filtered search strategy. A bibliographic search specifically designed around consumer vulnerability, digital payment, and problematic consumption would be required to establish field-level research gaps.

Live-streaming and influencer-driven mechanisms. These themes are among the most recent in the overlay analysis (Section 4.10) and appear in low-density, comparatively loosely connected parts of the keyword network (Sections 4.9 and 4.11), even though some recent live-streaming studies are already accumulating citations rapidly (Table 8). Further conceptual

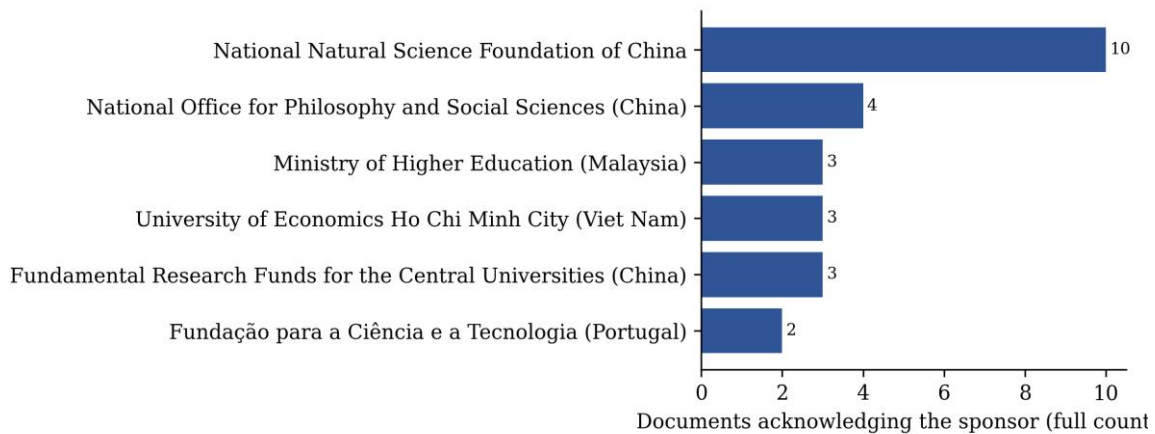
integration of these themes with established frameworks such as S-O-R, and greater consistency in how their core constructs are operationalized, could support cumulative knowledge development.

Geographic differences in citation visibility. Indonesia and Viet Nam already rival Malaysia in publication volume but lag substantially in citation counts (Section 4.4). Future research could examine whether this reflects recency alone or broader differences in international visibility, collaboration networks, or journal positioning for Southeast Asian digital-commerce research.

4.14 Funding Landscape

Funding information was reported for 45 of 155 articles (29.0%); the remaining 71.0% did not disclose a funding source, which is common in survey-based consumer-behavior research and should not be interpreted as an absence of funding. Among the disclosed records, 61 unique sponsors were identified.

Figure 12. Documents by Funding Sponsor (Sponsors Acknowledged in ≥ 2 Documents)



Source: Authors' analysis based on the Scopus database. Document-level full counting; figures reflect only the 45 records (29.0%) that disclosed funding information and should not be read as a complete funding census of the field.

The National Natural Science Foundation of China is the most frequently acknowledged sponsor, appearing in 10 documents (20 grant-level mentions, since several documents acknowledge more than one NSFC grant). The National Office for Philosophy and Social Sciences (China; 4 documents, 7 grant mentions) and Malaysia's Ministry of Higher Education (3 documents, 5 grant mentions) follow, together with the University of Economics Ho Chi Minh City and China's Fundamental Research Funds for the Central Universities (3 documents each). This is consistent with China's leading publication volume (Section 4.4) and suggests that part of the country's productivity is supported by national research funding. The remaining sponsors are widely dispersed across national and institutional funders in Viet Nam, Portugal, South Korea, and other contributing countries, mirroring the geographically distributed pattern observed at the author, institution, and country levels (Sections 4.2, 4.4, 4.5).

5. Conclusion and Suggestions

5.1 Conclusion

This bibliometric analysis of 155 Scopus-indexed articles (2009–2026, identified from a 196-record search spanning 2006–2026) shows that the mechanism-focused stream of digital

impulse buying research examined here has grown from an occasionally studied topic into a rapidly expanding body of work, with 82.6% of total output published in the last six years and 2024 alone contributing roughly a quarter of the corpus. The conceptual structure is not monolithic: keyword co-occurrence identified several interconnected thematic groups, ranging from a Stimulus–Organism–Response and affective-response core to comparatively recent and loosely connected themes centered on live-streaming commerce, influencer marketing, and fear of missing out. Productivity whether measured by author, institution, or country is broadly distributed rather than concentrated. Raw citation impact is concentrated in a handful of earlier, highly cited publications, although an age-normalized ranking shows that some recent live-streaming studies are accumulating citations at comparable or higher annual rates.

Taken together, the findings characterize a defined, mechanism-focused stream of digital impulse buying research rather than the entirety of the broader field. The study identifies substantial post-2020 publication growth, strong Asian representation, and increasing scholarly attention to socially interactive and platform-mediated consumption. At the same time, the search- and keyword-sensitivity analyses demonstrate that bibliometric interpretations depend partly on query specification and lexical harmonization. The principal contribution of this study is therefore not a definitive taxonomy of digital impulse buying research, but a transparent and reproducible mapping of the publication, citation, and conceptual structures observable within an explicitly delimited Scopus corpus.

5.2 Theoretical and Practical Implications

Theoretically, the conceptual patterns suggest opportunities for greater integration across streams of research concerned with hedonic and affective mechanisms, social commerce, influencer-mediated interaction, and emerging live-streaming environments. The bibliometric evidence demonstrates that these themes increasingly coexist within the scholarly literature; it does not establish the magnitude or causal direction of their effects on consumer behavior. From a practical perspective, the growing bibliometric prominence of social presence, influencer marketing, hedonic motivation, and platform-mediated shopping indicates that these mechanisms are receiving increasing scholarly attention in digital-commerce research. Managers and platform designers may therefore regard these areas as relevant topics for further empirical evaluation. The present bibliometric analysis, however, does not estimate effect sizes and cannot establish that any particular mechanism increases conversion, engagement, or purchasing behavior; such conclusions require meta-analytic or experimental evidence.

5.3 Ethical Implications

Within the analyzed corpus, consumer-protection-oriented themes are present but comparatively marginal relative to persuasion- and purchase-oriented themes: no keyword related to BNPL, dark patterns, or compulsive or problematic spending reached the three-occurrence threshold (Sections 4.8–4.9). As discussed in Section 4.13, this reflects the composition of the present corpus and may partly result from the search design.

The corpus nonetheless provides a basis for considering consumer-welfare questions alongside persuasion-oriented research. Drawing on adjacent consumer-protection literature rather than on the bibliometric results themselves, some platform mechanisms discussed in

digital-commerce scholarship such as urgency cues, social proof, frictionless payment, and highly interactive promotional environments may warrant examination from both managerial and consumer-protection perspectives. The present bibliometric analysis does not establish that these features override consumer judgment; rather, their ethical consequences represent an important question for future empirical and interdisciplinary research. This is particularly relevant for young or financially inexperienced consumers, given that Generation Z appears as a recurring keyword in the corpus (Section 4.9; e.g., Chetoui & El Bouzidi, 2023; Lee et al., 2023).

5.4 Suggestions

For researchers, three directions emerge from the findings. First, because consumer-vulnerability outcomes over-indebtedness, post-purchase regret, compulsive repurchasing, and problematic spending, particularly in BNPL, e-wallet, and other frictionless-payment contexts are underrepresented in the present corpus, a dedicated bibliographic search and subsequent empirical work are needed to establish whether they are also underresearched in the broader field.

Second, future studies could further develop the live-streaming- and influencer-related themes identified in Section 4.9. Cluster 1 highlights live-commerce responses through constructs such as social presence, FOMO, and hedonic motivation, while Cluster 6 emphasizes influencer marketing, parasocial interaction, online shopping, and trust. The overlay analysis (Section 4.10) indicates that several of these themes represent comparatively recent areas of attention. Greater theoretical integration between these platform-specific themes and established perspectives such as the S-O-R framework may strengthen cumulative knowledge development.

Third, future research could examine the citation differences observed across countries. Indonesia and Viet Nam contribute a considerable volume of publications, yet their mean citation levels remain lower than those of several earlier-contributing countries. Further research could investigate whether this pattern primarily reflects publication recency, international visibility, collaboration networks, or differences in journal positioning and indexing.

For journal editors and practitioners, the findings support a balanced approach to digital impulse buying research. Studies emphasizing commercial outcomes such as engagement, conversion, and spontaneous purchasing could increasingly consider consumer-welfare implications alongside managerial ones.

6. Limitations and Future Research

6.1 Limitations

Single-database limitation. This study relies exclusively on Scopus. Consequently, the publication, citation, geographical, institutional, and funding patterns reported in Sections 4.1–4.6 and 4.14 should be interpreted as patterns within the Scopus-indexed literature rather than as a complete representation of all research on digital impulse buying.

Query-design sensitivity. The search strategy requires both an impulse-buying term and at least one specified informational, hedonic, emotional, or social-influence mechanism. The resulting corpus therefore represents a deliberately defined mechanism-focused stream rather

than the complete determinant space of digital impulse buying. The broader-query sensitivity check shows relative similarity in preliminary geographical and temporal distributions, but because the broader retrieval set was not subjected to the same topical screening used for the final 155-document corpus, it should not be interpreted as demonstrating full robustness of the final bibliometric findings.

Manual-screening subjectivity. Topical eligibility was assessed through title and abstract screening conducted by a single analyst. Although explicit inclusion and exclusion criteria were applied and the screening log is provided (Supplementary Material S2), the absence of independent dual-reviewer screening means that some degree of judgment may have influenced eligibility decisions.

Time-sensitive snapshot. Scopus is continuously updated, and the refreshed extraction on 4 September 2026 produced a larger record set than the initial extraction on 11 May 2026. The final corpus should therefore be understood as a time-specific snapshot of the literature.

Keyword and terminology dependency. The conceptual-structure analysis relies on author keywords and is therefore sensitive to terminology choices. The primary analysis retained several closely related impulse-buying expressions separately. The harmonization sensitivity analysis, which merged core lexical variants, produced 40 connected items, nine clusters, 109 links, and a total link strength of 198, compared with 48 items, seven clusters, 174 links, and a total link strength of 199 in the primary network. The near-identical total link strength alongside the reorganized cluster configuration indicates that overall conceptual connectivity is relatively stable while precise cluster boundaries are partly terminology-dependent.

Reference normalization. Co-citation and bibliographic coupling rely on parsing reference strings with a first-author-surname/year key supplemented by manual checks of highly cited works. Residual matching errors among less frequently cited references cannot be excluded, so the co-citation counts and coupling clusters should be regarded as approximate.

Citation-age bias. Raw citation counts favor older publications. An age-normalized ranking was therefore reported (Table 8), but citations-per-year values for very recent papers remain volatile.

Complementary but non-identical methods. Co-citation and bibliographic coupling were used to examine intellectual foundations and research fronts, while keyword co-occurrence was used to examine conceptual structure. These approaches capture complementary but non-identical dimensions of the literature and should be interpreted together rather than as interchangeable representations.

No causal inference. The findings are descriptive and relational. Patterns involving publication growth, citation visibility, geographical concentration, thematic clustering, or keyword relationships indicate structures of scholarly activity and association, but they do not establish causal relationships among the underlying consumer-behavior mechanisms.

6.2 Directions for Future Methodological Research

Beyond the content-focused agenda in Sections 4.13 and 5.4, four methodological extensions follow from the limitations above: (1) triangulating this Scopus-based corpus against Web of Science and/or Google Scholar to test the robustness of the productivity and citation patterns reported here; (2) applying identical topical screening and analytical procedures to a broader, non-determinant-filtered retrieval set to provide a full robustness test of the findings; (3)

extending the co-citation and bibliographic-coupling analysis with DOI- and title-assisted reference normalization, author co-citation, and journal co-citation mapping; and (4) extending the age-normalized citation analysis (Section 4.6) with fixed citation windows or field-normalized indicators to allow fairer comparison between the post-2022 literature and earlier works.

Data Availability and Supplementary Materials

The following materials are provided as supplementary files to support reproducibility: S1, the complete bibliography of the 155-document analytical corpus (with Scopus EIDs and DOIs where available); S2, the document-level screening log for the 196 identified records, including the reason for each of the 41 exclusions; S3, the two VOSviewer thesaurus files (primary and harmonized); and S4, the overlay and density visualizations of the keyword-harmonized sensitivity network. The References section below lists only works cited in the text; corpus studies not individually discussed are listed in S1.

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