Article: DOI: 10.70906/20251904044060

Mapping the Conceptual Landscape of Online Impulse Buying: A Bibliometric Analysis with Thematic Insights

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Abstract

Impulse buying behaviour (IBB) has become a prominent topic of study in consumer research, particularly with the development of e-commerce and digital marketing strategies. This study aims to map the knowledge landscape of impulse buying behaviour research and to present a bibliometric analysis of the field based on 458 publications retrieved from Scopus, spanning 1998 to 2024. Utilising VOSviewer and Biblioshiny, the study applies performance and science mapping analyses to identify publication and citation trends, prominent sources, documents, and authors; research trends; trending topics; a thematic map; thematic evolution; and keyword co-occurrence in the IBB literature. A 13.88% annual growth rate was observed in publications. The analysis identifies foundational clusters centred around online impulse buying, cognitive and emotional influences, different platforms, consumers' behavioural mechanisms, psychological aspects, etc. In recent years, the terms 'online impulse buying', 'e-commerce', 'social media', and 'Generation Z' have gained popularity. Findings of the study suggest a conceptual evolution of the field, from foundational behavioural aspects to more recent themes shaped by technological and social media dynamics. The study highlights the multifaceted nature of impulse purchase research. Study findings can greatly benefit researchers and decision-makers who intend to understand the dynamics and trends in the IBB domain.

Keywords: *impulse buying, online impulse buying, bibliometric analysis, consumer behaviour.*

How to Cite: *Chugh, I., & Chandra, A. (2025). Mapping the conceptual landscape of online impulse buying: A bibliometric analysis with thematic insights. Journal of Management and Entrepreneurship, 19(4), 44–60.*

DOI: 10.70906/20251904044060

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1. Introduction

Our modern society is characterised by a prevalence of impulsive purchases. Consumers can now buy on impulse more easily than ever, thanks to developments in marketing in the post-industrial age (Rook, 1987).

Based on their research, Aragoncillo and Orus (2018) found that about 25% of online and nearly 30% of offline consumers identify as impulsive buyers.

Impulse buying, whether offline or online, is important for academics, marketers, researchers, and customers due to its varied consequences. Numerous studies have been conducted in this field, and a search using the keyword 'impulse buying' yields thousands of results. Impulsive behavior significantly influences consumer purchases, making it a key area of study (Bayley & Nancarrow, 1998; Hausman, 2000).

Impulse buying behaviour has emerged as an important research avenue and critical inquiry area in the domain of consumer research, especially in the context of varied digital platforms with the proliferation of the internet. Over the last two decades, there has been rapid conceptual diversification in the field, with dimensions such as psychological antecedents, situational factors, emotional drivers, and technology enablers being studied. This growing literature spans disciplines such as marketing, psychology, and retail studies and requires a holistic approach.

Given this fragmented research area, a comprehensive bibliometric analysis is timely and justified. Bibliometric methods allow the recognition of objective patterns across a large corpus of academic work, revealing influential authors, documents, journals, and keyword clusters. By using quantitative mapping techniques, this approach allows to uncover intellectual structure, conceptual evolution, and recognition of thematic areas within the impulse buying literature.

This bibliometric review explores the extensive academic literature, utilising data to analyse the changing focus of research on impulse buying behaviour. The bibliometric lens is used to uncover emerging themes, key players, and changing dynamics that shape consumers' impulse buying behaviour.

Impulse buying takes on new dynamics as e-commerce, social commerce and live-streaming platforms are being increasingly used. This necessitates a fresh synthesis of how the field is responding to these shifts. This study contributes to the field by providing a comprehensive overview of the research landscape in impulse buying. This bibliometric review presents a consolidated overview for scholars and marketers, leveraging bibliometric tools such as Biblioshiny in RStudio and VOS viewer.

This article is structured as follows. Firstly, the article starts off with an introduction of the study topic, impulse buying behaviour. Afterwards, the literature review, study objectives, and the research methodology adopted to carry out the said objectives are presented. This is followed by the results of bibliometric analysis carried out using various techniques. The conclusion section then presents the study's findings, followed by its limitations.

2. Literature Review

Impulse buying is defined as "a consumer's tendency to buy spontaneously, unreflectively, immediately, and kinetically" (Rook & Fisher, 1995, p. 306). Buying on impulse is commonly understood as making a quick purchase without rational consideration.

Impulse buying has been recognised as a spontaneous, hedonic process, often driven by emotional arousal rather than rational planning by consumers (Rook, 1987). Beatty and Ferrell (1998) conceptualised it as an unplanned purchase triggered by in-store stimuli. Impulsive buying has intensified in the online environment owing to 24/7 availability, attractive design, and algorithmic personalisation. The rise of the internet and digital commerce has warranted a shift in scholarly attention towards online impulse buying behaviour (Verhagen & Van Dolen, 2011). As per Danish Habib and Qayyum (2018), impulse buying has become commonplace in online shopping via social media platforms and websites.

Unexpected stimulation during a shopping trip can lead to unplanned purchases (Lu & Wu, 2019). Unplanned

purchases are purchases made without prior planning and include impulse purchases (Stern, 1962). Also, as shown by Liu et al. (2013), the character of unplanned purchases is similar to that of impulsive purchases, since in both cases, the purchases are made without much forethought. Unplanned and impulsive purchases can be differentiated. Impulse purchases are distinguished from unplanned purchases by how quickly the purchasing choice was made (Hausman, 2000).

An impulse buy possesses three key characteristics: 1) it is unplanned, 2) it arises from exposure to a stimulus, and 3) it is made "on-the-spot" (Piron, 1991). Stern (1962) laid the foundation for categorising purchases as either planned or impulsive.

Iyer (1989) argued that impulse buying is a reality of life, as almost every consumer has made at least one impulse purchase in their lifetime. Marketers purposefully create external stimuli to be appealing to customers' senses (Eroglu et al., 2003). Stimuli that appeal more to the senses of customers are likely to catch more attention, and customers will feel more drawn towards those products. Different marketing triggers, such as products, messaging, store ambience, and price reductions, might cause impulse purchases (Mohan et al., 2013). Iyer et al. (2019) conducted a meta-analysis and consolidated findings across decades, showing that both internal traits (such as impulsiveness) and external stimuli (such as marketing cues) influence impulse buying, which is also moderated by self-control and social norms.

According to Kumar et al. (2020), psychological considerations play a significant role in purchasing decisions, as many consumers question the reasons for making a particular purchase after already making it. Marketing strategies and consumer psychology are associated because understanding the mental triggers that underlie the purchase decision-making process is critical (Ding et al., 2020). These two areas often use the same models for describing consumer behaviour and the factors that result in impulse purchases (Rodrigues et al., 2021).

Understanding the interplay of personal characteristics and environmental cues is essential to comprehending consumer behaviour, especially in the online context. Hertzog and Nesselroade (1987) highlighted the importance of considering the interaction between individual attributes and environmental cues to gain a deeper understanding of online impulse purchasing. When exposed to environmental stimuli, individuals respond differently. Youn and Faber (2000) demonstrated that impulsive consumers are more likely to react strongly to environmental cues, which increases their likelihood of feeling the drive to make an impulsive purchase. Li et al. (2022) also carried out the study in a live-streaming e-commerce context based on the SOR model and observed that customers' arousal and pleasure can forecast impulsive buying in live-streaming e-commerce.

As information technology has improved, online impulse has emerged as a fascinating new phenomenon to investigate. Its origins are connected to the study of human behaviour and its psychological components (Park & Lennon, 2006; Verplanken & Sato, 2011).

Both internal and external variables can influence consumers' propensity to make impulsive purchases (Wansink, 1994). Increased exposure to a particular stimulus makes impulsive purchases more likely (Iyer, 1989), as impulsive purchasing behaviour is prompted by stimuli (Rook & Fisher, 1995). External cues that can cause impulse buying include retail environment atmospheric cues (like scents, sights, and sounds), marketing advances (for instance, credit cards, cash machines, and 24-hour retail), and marketing mix cues (like "point-of-purchase displays, promotions, and advertisements") (Youn & Faber, 2000). Nguyen et al. (2024) observed that users' social media impulsive purchasing behaviour is positively impacted by visual appeal, both directly and indirectly through instant gratification.

Abdelsalam et al. (2020) reviewed studies published between 2005 and 2019 to gain an insight into IBB in the social commerce context and established a causal-chain framework for online impulse buying in social commerce. It was noted that most of the studies used SOR as the theoretical framework. Kathuria and Bakshi (2024) conducted a systematic review of 60 empirical studies, provided a comprehensive framework encompassing a variety of website-related

factors influencing impulsive purchase behaviour, and presented the findings within an integrated research framework of antecedents, moderators, mediators, and outcomes.

Traditional literature review methods include meta-analysis and a structured literature review. A meta-analysis integrates empirical findings from quantitative research studies. SLR offers a thorough examination of the literature and helps comprehend conceptual problems (Zupic & Cater, 2015). A bibliometric study reviews the literature using a methodological approach. It helps comprehend the direction and trend areas of a discipline and analyse different studies in that field (Sreenivasan & Suresh, 2023) (Zupic & Cater, 2015). Though it cannot replace the traditional literature review, it offers insights into the subject of study (Zupic & Cater, 2015). Keeping up with real-time advances in the field, and using bibliometric analysis to scientifically study the evolution of research on impulse buying behaviour, will aid in understanding the future scope of research. Prior research studies found that it aids in evaluating the degree of independence of knowledge in the respective field (Sreenivasan & Suresh, 2023).

This study attempts to achieve the following objectives:

1. To explore the publication and citation trends over time in the impulse buying behaviour research.
2. To identify the most pertinent sources, documents, and authors contributing to the field.
3. To find out the most relevant words and the frequency of words in the field over the years.
4. To explore thematic evolution and identify emerging research trends.
5. To examine the conceptual structure and recognise dominant themes of the field by using keyword co-occurrence analysis.

3. Research Methodology

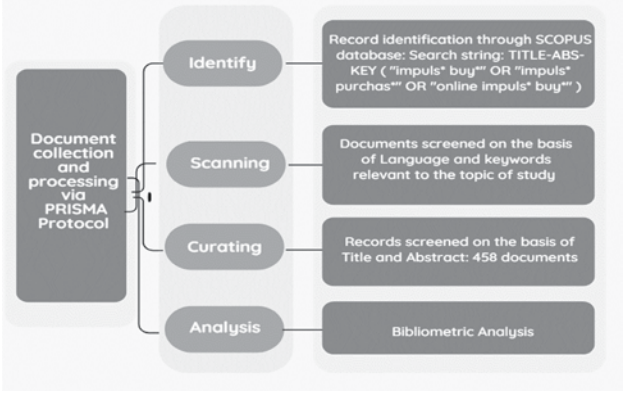
The present study intends to identify the trends by conducting a bibliometric analysis of the field. The study's time frame was from 1998 to 2024. MS Excel was used for data cleaning and identifying relevant papers. The PRISMA protocol (Figure 1) was followed for performing the analysis. VOSviewer software and Biblioshiny in RStudio were selected for analysis because of the ease with which data can be imported and databases can be filtered, and because they have also been used in prior relevant studies.

To identify relevant studies, the following search strategy was employed: the database used for this study was SCOPUS. A search query was made in January 2025 using the advanced search query "TITLE-ABS-KEY". A combination of keywords with Boolean operators AND and OR has been used with the search string: **TITLE-ABS-KEY ("impuls* buy*" OR "impuls* purchas*" OR "online impuls* buy*"**

Study areas that are closely related to the business domain, such as 'business, management and accounting', 'social sciences' and 'psychology', were included to further refine the database. All the significant fields, such as document title, abstracts, keywords, authors' names and affiliations, and references, were obtained.

Figure 1

PRISMA Protocol



Source: Author's representation

The preliminary stage yielded 1258 documents. Keywords such as depression, advertising, mindfulness, and conspicuous consumption were excluded because they were unrelated to the study's goal. After this, documents were singled out and compiled into the study's database. The arrangement of documents was determined by year of publication. To focus on the pertinent studies, the subject was set to English only. The final database that resulted was then exported in .csv format. This

format was chosen because of its compatibility with the statistical package software applications used for analysis.

After using the search string and applying exclusion criteria to keywords, 664 articles were identified and screened based on the titles and abstracts of the studies. 206 such documents unrelated to impulse buying were excluded. Ultimately, 458 publications were included in the study's analysis.

To ensure result accuracy while dealing with keywords using Biblioshiny and performing keyword co-occurrence analysis in VOS viewer, a list of synonyms was loaded by creating a 'thesaurus file.' This file directed the software to replace alternate forms of numerous keywords with standardised ones, such as 'impulse buying', 'impulsive buying, and 'impulse purchase' with 'impulse buying'; 'consumer behaviour' was considered as 'consumer behaviour', etc.

4.Data Analysis

Table 1 summarises the database used for analysis in this study. With 233 sources in total, the yearly growth rate was 13.88%. This section presents the analysis of bibliometric data collected for the study.

Table 1

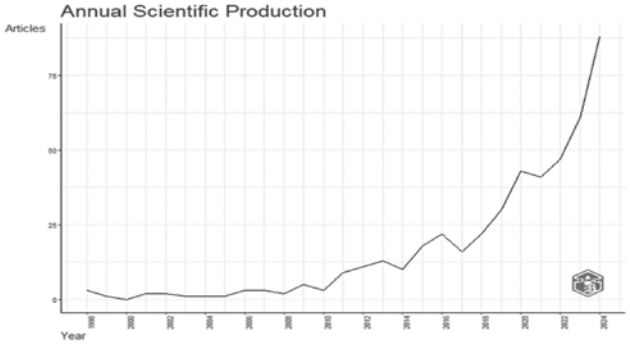
Database Summary

MAIN DATA OVERVIEW	
Timespan	1998:2024
Sources (Journals, Books, etc)	233
Documents	458
Annual Growth Rate %	13.88
Document Average Age	5.76
Average citations per doc	34.88
References	22559
DOCUMENT CONTENTS	
Keywords Plus (ID)	164
Author's Keywords (DE)	1215
AUTHORS	
Authors	1163
Authors of single-authored docs	50
AUTHORS COLLABORATION	
Single-authored docs	51
Co-Authors per Doc	2.93
International co-authorships %	22.93
DOCUMENT TYPES	
Article	394
Book Chapter	45
Conference Paper	19

4.1 Publication and Citation Trends

To achieve the first objective of the study, publication and citation trends were analysed using Biblioshiny in R. Figures 2-4 and Table 2 present these trends for the study's subject. Figure 2 gives an overview of the annual scientific production of papers related to impulse buying behaviour published during 1998-2024. Output began with three papers published in 1998. The publication counts gradually increased to 2-digit numbers starting in 2012. With the growth trend continuing, the number of publications increased significantly in 2016. The maximum number of publications, i.e., 88, occurred in 2024. An ascendant rise in annual academic production, suggesting increased focus on research contributions in this field, is evident.

Figure 2
Annual Scientific Production

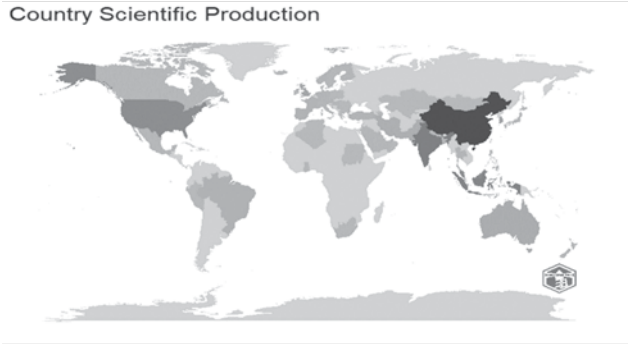


Source: Author's calculation using the software

Figure 3 represents the map of most cited countries. Figure 4, displaying the country-specific production, depicts the work done in the field country-wise over time. Maximum production during the period 1998-2024 was in China, having a frequency of 289 publications, followed by India (154) and Malaysia (139). Between 1991 and 2018, the USA dominated in the frequency of productions in this field of research. Scientific production in China picked up in 2016 and surpassed that in the USA in 2019.

Figure 3

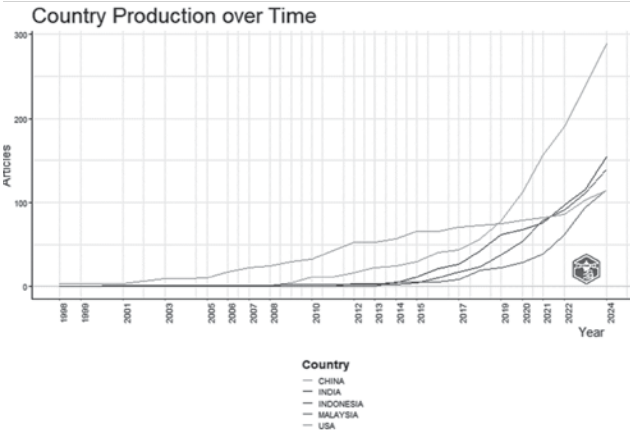
Country Scientific Production Map



Source: Author's calculation using the software

Figure 4

Country production over time



Source: Author's calculation using the software

Table 2, presenting the information about the most cited countries, gives an illustration of the research impact in different geographical regions. Exhibiting strong research impact, the USA was found to be the leader in the field of research with 4597 total citations, having an average of 139 citations per article. China stood second in the list of most cited countries with 2501 total citations and 32.5 average article citations, followed by the UK with 1128 total citations and 62.7 average citations. Table 2 highlights the diverse and cooperative nature of research endeavours worldwide.

Table 2

Most Cited Countries

Country	Total Citations	Average Article Citations
USA	4597	139.3
CHINA	2501	32.5
UNITED KINGDOM	1128	62.7
KOREA	712	39.6
MEXICO	645	645
INDIA	515	13.9
NORWAY	459	153
MALAYSIA	376	15
CANADA	347	115.7
AUSTRALIA	255	36.4

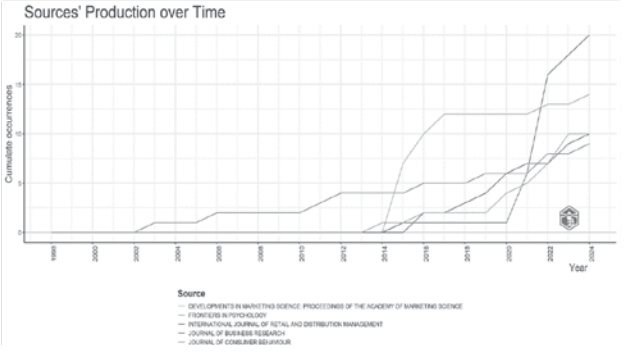
Source: Author's calculation using the software

4.2 Pertinent Sources, Documents and Authors

To achieve the second objective of the study, Biblioshiny in R was used to identify the top sources of documents over time, both globally and locally, as well as the most cited documents and relevant authors. Citation analysis attempts to answer research questions such as which author is the most influential in the field, which journal has the highest impact, and who are the field experts, etc. (Zupic & Cater, 2015). Figure 5 depicts the list of top sources of documents over time. Frontiers in Psychology, with 20 articles, is the most relevant source on the topic of research, followed by Developments in Marketing Science: Proceedings of the Academy of Marketing Science.

Figure 5

Top Sources of Documents over Time

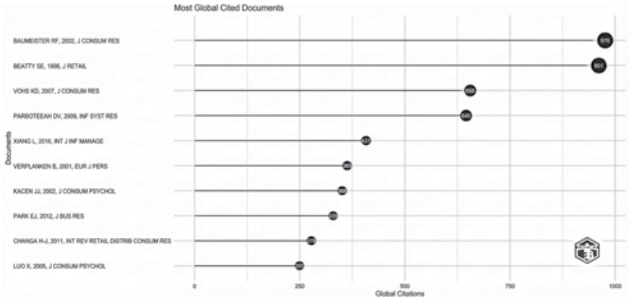


Source: Author's calculation using the software

In Figure 6, BAUMEISTER RF, 2002, (Journal of Consumer Research) is the most globally cited document, with 976 citations in total and 40.67 total citations per year, closely followed by BEATTY SE, 1998 (Journal of Retailing), with 961 total global citations and 34.32 total citations per year. BEATTY SE, 1998 (Journal of Retailing) was also found to be the most locally cited document with 186 local citations and an LC/GC ratio of 19.35 percent (Figure 7). It was followed by KACEN JJ, 2002 (Journal Consumer Psychology) with 87 local citations, 350 global citations, and a 24.86% LC/GC ratio.

Figure 6

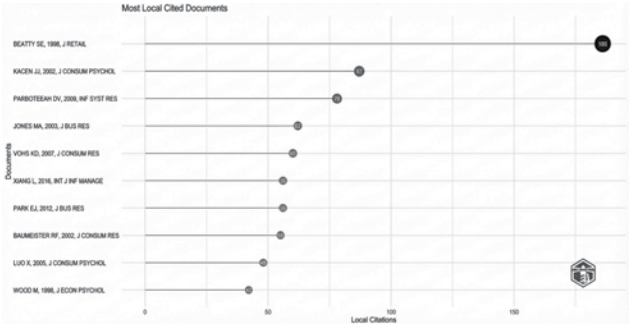
Most Global Cited Documents



Source: Author's calculation using the software

Figure 7

Most Local Cited Documents

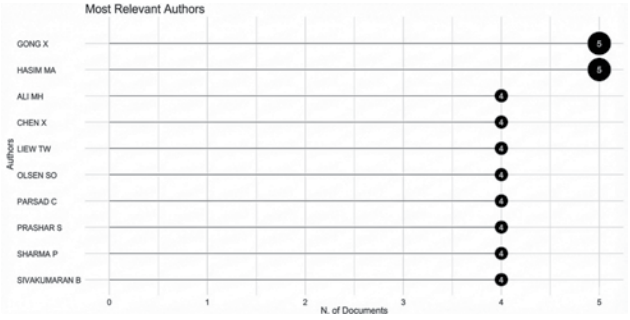


Source: Author's calculation using the software

It can be seen from Figure 8 that Gong X and Hasim Ma are the most relevant authors in the field. As an author-level metric, the h-index attempts to indicate a scientist's or scholar's productivity and the citation impact of the publications. Authors Liew TW, Olsen SO, and Verplanken B, each with an h-index of 4, had the greatest local impact. Table 3 provides details of the local impact of the top 10 authors.

Figure 8

Most Relevant Authors



Source: Author's calculation using the software

Table 3

Authors' Local Impact

Author	h_index	g_index	m_index	TC	NP	PY_start
LIEW TW	4	4	1	63	4	2022
OLSEN SO	4	4	0.4	122	4	2016
VERPLANKEN	4	4	0.16	665	4	2001
AHN J	3	3	0.5	101	3	2020
CHEN C-D	3	3	0.42857143	95	3	2019
CHEN X	3	4	0.42857143	246	4	2019
GAN CL	3	3	0.75	58	3	2022
GONG X	3	5	0.5	70	5	2020
HASIM MA	3	4	0.375	22	5	2018
KU ECS	3	3	0.42857143	95	3	2019

Figure: Authors' Local Impact

Source: Author's calculation using the software

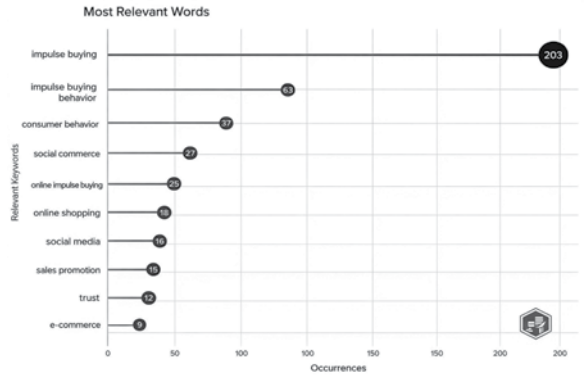
4.3 Frequently Used Words

To fulfil objective 3 of the study, the most relevant words and word frequencies over time were examined using Biblioshiny.

Figure 9 highlights that the top 6 most frequently used words are 'impulse buying', 'consumer behaviour', 'social commerce', 'impulse buying behaviour', 'online shopping' and 'online impulse buying.' The word "impulse buying" was used 203 times across 458 documents.

Figure 9

Most Relevant Words

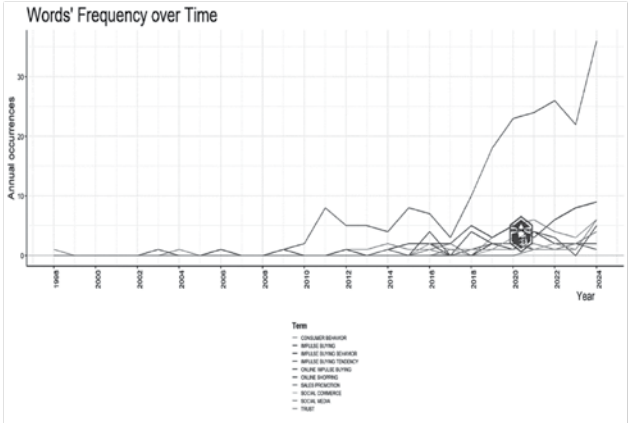


Source: Author's calculation using the software

Figure 10 gives an account of the words' frequency over time. The detailed chart of word frequency over time highlights that the term 'consumer behavior' was used from the year 1998. However, 'impulse buying', the most frequently used keyword by the authors, emerged in 2003 with minimal frequency, increasing significantly after 2010. The use of the term online impulse buying began much later, in 2014, and picked up in 2020, whereas the use of social commerce began in 2016. Phrases like 'social media' and 'social commerce' indicate growing interest and increasing concentration in the social aspect/character around impulse buying. Furthermore, the terms used, such as 'sales promotion', 'self-control' and 'trust', which allude to studies on the antecedents of impulsive buying, are noteworthy.

Figure 10

Words' Annual Frequency over Time

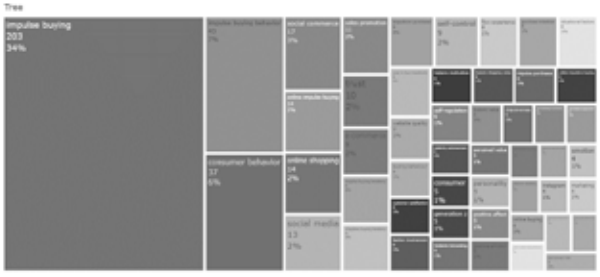


Source: Author's calculation using the software

A tree map visually represents text data in the form of nested rectangles, giving a representation of hierarchical data, with each rectangle's area corresponding to its relative frequency. A treemap composed of different rectangles represents keywords, their occurrences, and their percentages. The treemap in Figure 11 depicts the dominance of the keywords 'impulse buying', 'impulse buying behaviour', and 'consumer behaviour'. The words that occurred less frequently, such as emotion, hedonic motivation, Generation Z, positive affect, and self-regulation, can indicate research areas that need attention in the future.

Figure 11

Tree Map



Source: Author's calculation using the software

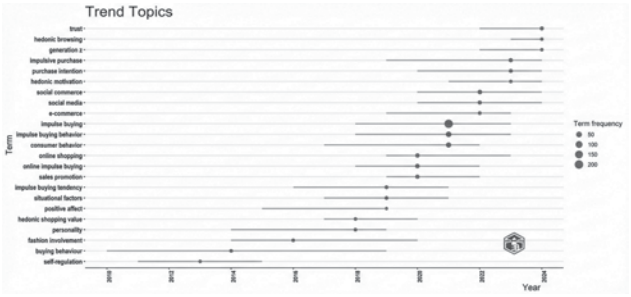
4.4 Trending Topics and Thematic Evolution

To fulfil objective 4, trending topics, thematic map and thematic evolution were conducted using Biblioshiny.

Figure 12 displays the trending topics from 2010 to 2024. It can be clearly observed from the figure above that impulse buying, online impulse buying, consumer behavior, e-commerce, social commerce, social media, hedonic browsing, trust, and Generation Z have been trending in the past 5 years. This highlights the ideas related to impulse buying that are relevant today.

Figure 12

Trending Topics

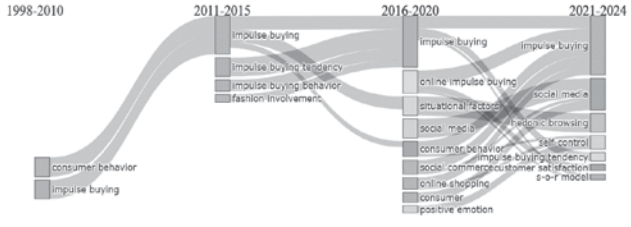


Source: Author's calculation using the software

With the e-commerce term being prevalent for a few years, the term social commerce can also be seen to be more trending. Usage of the terms social media and social commerce brings to attention the reliance of consumers on social media platforms and their connections while making purchases. The terms 'trust' and 'generation z' have also been used frequently from 2022 to 2024. Trust, as one of the trending topics in this area suggests, highlights the importance of trustworthiness in the context of impulse purchases. Kimaigari and Malafe (2021) noted that trust propensity, a customer characteristic, has a direct impact on online impulse buying behavior, and it also moderates the relationship between utilitarian browsing and online impulsive buying. Recently, studies centred around exploring the impulse buying behavior of Generation Z have been conducted.

Figure 13

Thematic Evolution

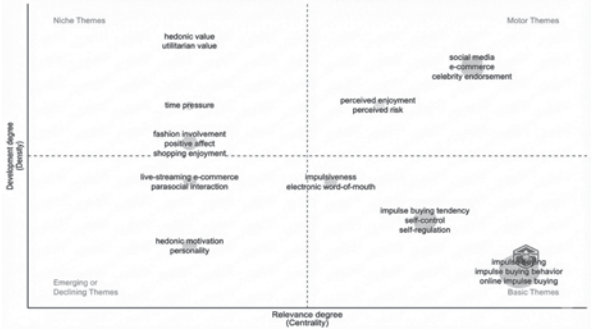


Source: Author's calculation using the software

Thematic evolution depicts the evolution of themes in the field over time, whereby bar thickness reflects the significance of keywords during that time slice. Figure 13 shows the thematic evolution of the field from 1998 to 2024. For the time slices, three cutting points (years 2010, 2015, and 2020) were put. It can be observed that from the year 1998 to 2010, consumer behavior and impulse buying were the two important themes, which merged into impulse buying during 2011-2015. In the same period, studies started to focus on the impulse buying tendency and impulse buying behavior of consumers. From 2016 to 2020, online impulse buying was also an important theme. Other themes such as situational factors, social media, and social commerce were also studied. From 2021 to 2024, other than impulse buying, social media can also be noted to be an important theme. Thus, the shifting focus of impulse buying research to online impulse buying across different platforms can be noticed. Other themes like hedonic browsing, self-control, the SOR model, and satisfaction can also be observed.

Figure 14

Thematic Map



Source: Author's calculation using the software

Thematic map, a visualisation tool in Biblioshiny, is used in Bibliometric analysis is used to classify research themes based on two key metrics, centrality and density. Centrality (X-axis) measures the importance of a theme within a research field, and density (Y-axis) measures the development of a theme, indicating its internal strength. Centrality indicates a theme's connections to other themes, and density indicates how well-developed and cohesive the theme is. Thematic map is divided into four quadrants. Figure 14 displays a thematic map categorising research areas related to impulse buying by development density and relevance.

Lower-left quadrant (low density, low centrality), signifying "emerging or declining themes"

characterises the themes that are weekly developed or not very well connected with the main theme. These could highlight emerging or outdated themes. Such themes might require further investigation to determine if they will grow further or fade away. Placement of 'hedonic motivation' and 'personality' in this quadrant might represent a relatively mature theme and point towards a shift in the focus of the field. Cluster comprising "live-streaming e-commerce" and "parasocial interaction" appeared in the 'emerging or declining themes' quadrant, suggesting that these themes are presently peripheral and relatively less developed in this field, and more work can be done in these areas. In the light of an interactive shopping environment, influencer-led commerce, 'live-streaming e-commerce' and 'parasocial interaction' appear to represent an emerging thematic direction, capable of explaining affective consumer responses and social presence in digital buying contexts, especially impulse-driven behaviours. Interest in 'parasocial interaction is being renewed owing to influencer culture, virtual influencers, and livestream shopping hosts. These two themes, tied to new technological phenomena, are novel, still developing and have not been fully integrated into the thematic field structure, but are on an upward trend and gaining relevance.

In the light of an interactive shopping environment, influencer-led commerce, 'live-streaming e-commerce' and 'parasocial interaction' appear to represent an emerging thematic direction, capable of explaining affective consumer responses and social presence in digital buying contexts, especially impulse-driven behaviours.

Upper-left quadrant (low centrality, high density) signifying "niche themes" characterises a well-developed but isolated theme from the main research field. These can be specialised or interdisciplinary topics with limited influence. Such themes could refer to self-contained research areas that might not influence mainstream studies but are valuable for specific fields. The first cluster in Niche themes included the terms 'hedonic value' and 'utilitarian value', indicating dual motivational aspects underlying consumer impulse buying behaviour. The cluster centred on 'time pressure', a situational factor associated with urgency and time scarcity, suggests the focused but less integrated area, reflecting limited cross-thematic application. The third cluster included 'fashion involvement', 'positive affect', and 'shopping enjoyment', which suggests an affect-laden, domain-specific subfield. All these themes can be related to other areas, such as social influence and cross-platform frameworks, so that they do not remain context-bound constructs.

Upper-right quadrant (high centrality, high density) representing "motor themes" illustrates the themes that are important, well-developed and strongly connected to other themes in the literature. Motor themes in this research comprised "perceived enjoyment", "perceived risk", "social media," "e-commerce," and "celebrity endorsement, " signifying the driving forces or core areas of research. These are mature and influential themes that play a critical role in defining the field, connecting different sub-themes.

The lower-right quadrant (high centrality, low density), representing "basic themes", illustrates themes that are highly relevant to the field but not well developed. Basic themes serve as foundational topics that connect diverse research spheres and require further refinement and deeper investigation. The three clusters found in basic themes include: 1) impulse buying tendency, self-control and self-regulation; 2) impulsiveness and eWOM; and 3) impulse buying, impulse buying behaviour, and online impulse buying. All of these form the foundational structure, are well-connected to the other themes, and serve as conceptual anchors in the impulse buying behaviour literature.

4.5 Keyword Co-Occurrence Analysis

To accomplish objective 5, keyword co-occurrence analysis was conducted. The keyword co-occurrence analysis in VOS viewer identified distinct research themes. A threshold of 4 occurrences of a keyword was selected, meaning that each keyword in the co-word analysis would have appeared in at least 4 documents. No standard threshold is available for use in co-word analysis (Van Eck & Waltman, 2014). A lower threshold of 4 was selected to yield more information.

The keyword co-occurrence map in Figure 15 reveals the patterns of frequency and relationships among the keywords. Here, the size of keyword nodes indicates their relative frequency. Links between nodes signify that the two keywords co-occurred, with link density indicating the frequency of co-occurrence. The proximity of nodes implies the extent to which keywords were associated in the literature. The organisation of keywords into clusters signified conceptual similarity among the keywords.

Figure 15

Keyword Co-occurrence Network Visualisation

Source: Author's calculation using the software

Conducting keyword co-occurrence analysis in VOS viewer resulted in the identification of distinct research themes. The first cluster (green) highlights the evolving nature of online shopping scenarios and the factors associated with recent social media trends. The second cluster (cyan) focuses on important aspects of consumers' experience in online settings and the factors that can influence their impulse buying behaviour. The third cluster (red) centres on the cognitive and emotional influences that shape consumption behaviour, particularly impulse buying. The fourth cluster (blue) relates to psychological mechanisms underlying impulse buying. Cluster five (yellow) reflects both hedonic and utilitarian values associated with impulse buying behaviour. The sixth cluster (purple) underscores the dynamic interplay between social media dynamics, consumer perceptions, and impulsive buying behaviour. The co-occurrence of keywords in cluster seven (orange) illustrates a behavioural mechanism wherein flow experience (psychological engagement), live-streaming and e-commerce (platforms), and trust (consumer perception) jointly shape impulse buying in online shopping contexts.

Figure 16

Keyword Co-occurrence Overlay Visualisation

Source: Author's calculation using the software

To understand the change in keyword usage over time, an overlay visualisation of keyword co-occurrence was obtained. The focus can be seen shifting from impulse buying to online impulse buying, and within the online domain, from e-commerce to social commerce and then influencer marketing, with the recent spotlight on trust, hedonic browsing, parasocial relationships, Generation Z, perceived value, live-streaming e-commerce, electronic word-of-mouth, TikTok, and perceived risk.

Currently, an increasing share of the literature in this field addresses the online context. It is worth highlighting that the major emerging sub-themes identified by keyword occurrence analysis and thematic analysis relate to the digital aspect of impulse buying behaviour, including live-streaming e-commerce, electronic word-of-mouth, and influencer marketing.

5. Discussion

This study provides a bird's-eye view of the existing literature on IBB. Bibliometric analysis was performed to ascertain the publication and citation trends, prominent countries, prominent documents and authors, central themes, research trends, and thematic evolution in the IBB literature. Data from 458 publications, published from 1998 to 2024, retrieved from Scopus, were evaluated using VOS viewer

and Biblioshiny. Techniques such as trend topics, thematic evolution, and keyword co-occurrence network analysis were used. A 13.88% yearly growth rate was seen in the publications. A pattern of growth in the number of articles produced annually can be observed in previous years. This information demonstrates a dynamic research setting, which reaffirms the perseverance to scholarly output and information exchange.

'Frontiers in Psychology' was found to be the most relevant source on the topic of research. As per the results, China had the highest number of scientific publications. BAUMEISTER RF, 2002, (Journal of Consumer Research) was observed to be the most globally cited, with 976 citations in total and 40.67 total citations per year, closely followed by the second most globally cited document, BEATTY SE, 1998 (Journal of Retailing), with 961 total global citations and 34.32 total citations per year.

In recent years, the terms 'online impulse buying', 'e-commerce', 'social media', and 'Generation Z' have gained popularity. Use of the terms 'social media' and 'social commerce' highlights the reliance of consumers on social media platforms and their connections while making purchase decisions.

The literature review and bibliometric analysis reveal that impulse buying is a broad field, and that various dimensions of the concept have been examined by previous research. The focus shifted to online impulse buying after the proliferation of the internet, and in recent years, the social dimension has been emphasised more in the literature. Thus, greater focus and more extensive research on the social aspects of buying must be undertaken.

Trending topics determined using Biblioshiny highlighted that impulse buying, online impulse buying, consumer behaviour, e-commerce, social commerce, social media, hedonic browsing, trust, and Generation Z have been trending as keywords in the past 5 years. This brings to attention the ideas related to impulse buying that are currently relevant.

Several clusters were found in the four quadrants of the thematic map. Inclusion of 'live-streaming e-commerce' and 'parasocial interaction' in the 'Emerging or Declining' theme quadrant indicates the swiftly advancing research frontier. As ripe areas for future development, these themes hold significant future relevance as consumers engage with influencers and marketers in para-social relationships. The recent surge in promotions led by influencers and live-streaming events brings parasocial dynamics to the forefront of consumer psychology and online marketing. In the context of live streaming, Fu and Hsu (2023) noted that parasocial interaction with co-viewers exerts a greater influence on utilitarian and hedonic values than on parasocial interaction with the streamer. Hedonic motivation and personality formed a cluster in 'emerging or declining' quadrant. Hedonic motivation has a considerable impact on online impulse buying (Akram et al., 2017). People who often make impulsive purchases frequently have similar personality traits and features (Youn & Faber, 2000). These two constructs have previously helped in understanding consumers' impulse buying behaviour, but newer lenses, such as personalisation, social influence, and technological factors, are currently emphasised over personal traits.

In the thematic mapping, identification of 'social media', "e-commerce', and 'celebrity endorsement' as motor themes highlights that these have become powerful tools that can influence perceptions of consumers and drive online impulse purchases in different contexts. Shamim et al. (2024) conducted a study on social commerce and utilised signalling theory to examine the effect of fashion influencers on consumers' impulsive buying. 'Perceived risk' and 'perceived enjoyment' as 'motor themes' highlight the hedonic dimension of impulse buying behaviour. 'Perceived risk' highlights the psychological hurdles faced by users in the online shopping environment, and "perceived enjoyment" represents the hedonic dimension of online impulse buying. Xiang et al. (2016) noted that parasocial interaction significantly affects perceived enjoyment on social media platforms.

The basic theme quadrant included three clusters. The cluster with terms 'impulse buying', 'impulse buying behaviour' and 'online impulse buying' encompasses the core construct of the research field. The cluster of terms 'impulse buying tendency', 'self-control' and 'self-regulation' reflects the psychological framework of impulse buying, with a focus on individual

differences. Nyrhinen et al. (2024) also found that consumers with low self-control are more receptive to targeted advertisements and to the impulsiveness of social networks (namely, product displays and social media reviews), which further results in a higher inclination to make impulse purchases. Impulsiveness has long been recognised as a personality trait and an antecedent of consumers' impulsive buying behaviour. The integration of electronic word-of-mouth (eWOM) adds a social and informative layer that can impact online impulse buying behaviour.

Positioning social media, e-commerce, and celebrity endorsements as themes in the motor quadrant underscores the central role of social influence and digital marketing strategies in driving impulsive purchases. Similarly, perceived enjoyment and perceived risk reflect the core psychological mechanisms that mediate consumer responses in online settings, with perceived enjoyment being an affective state and perceived risk serving as a cognitive evaluation that influences behavioural outcomes (Eroglu et al., 2001).

The keywords in the first cluster of the keyword co-occurrence analysis are related to current trends in digital marketing and social media, with a particular focus on influencer-driven interactions and the shift towards social commerce, and are more relevant to Generation Z, who actively use social media. The second cluster of keyword co-occurrence analysis centres on the dynamics and vital aspects of consumers' online buying experience. Live-streaming e-commerce depicts the evolving nature of online shopping. The co-occurrence of the terms 'impulse buying' and 'compulsive buying' within a thematic cluster suggests a connection between them. Impulse purchases can lead to an emotional lack of control and induce compulsive behaviours (Pandya & Pandya, 2020).

Besides 'TikTok', 'SOR' can also be found to relate to live streaming and social commerce, suggesting the use of this framework in varied online platforms. The terms 'electronic word-of-mouth', 'live-streaming e-commerce', and 'positive emotion' have the smallest node sizes in the second cluster, indicating that more studies can be conducted on these topics in future research. 'Scarcity' of the fourth cluster can be noted to have links with 'social media' and 'social commerce'. Scarcity can, through tactics such as limited-time deals, flash sales, and low-stock notifications, create a sense of urgency, increase perceived product value, and drive impulse purchases. Wu et al. (2020) found that both limited-quantity scarcity and limited-time scarcity elevated consumers' perceived arousal, which then led them to make impulse purchases.

'Trust' of the seventh cluster is linked to other clusters' items such as 'influencer marketing', 'Generation Z', 'social media', ''perceived usefulness, and the 'urge to buy impulsively'. Koay et al. (2021) found that the attractiveness and trustworthiness of Instagram influencers significantly and positively influenced impulsive online purchases. The term 'e-commerce' is linked to several keywords in other clusters, such as 'hedonic value', 'utilitarian value', and 'website quality', and is particularly closely linked to the core theme keyword, 'impulse buying'.

This bibliometric analysis highlights the multifaceted nature of impulse purchase research, reflecting different dimensions, offline and online environments, e-commerce and s-commerce platforms, as well as business, social, and psychological perspectives. The SOR model developed by Mehrabian and Russell (1974) is considered groundbreaking, as it brought psychology into consumer research and environmental design. The original SOR model was introduced in the physical setting. To date, the SOR model has been widely used to understand consumers' impulse buying behaviour in both offline and online contexts (Hashmi et al., 2020; Ampadu et al., 2022; Li et al., 2022).

Keywords identified in the co-occurrence analysis can be placed within the SOR framework as stimulus, organism, and response variables. Factors such as website quality, scarcity, eWOM, and influencer marketing can be traced to Stimulus, cognition and emotion, to Organism, and to impulse buying, to Response. Where antecedent variables of impulse buying behaviour could be found in the network visualisation, the consequences of impulse buying could not. The prominence of factors such as perceived usefulness, perceived risk, and perceived enjoyment aligns with the Technology Acceptance

Model (TAM), which suggests that technological affordances contribute towards online impulse buying. Keywords such as impulsiveness, self-control and self-regulation reflect the impact of dual-process theory. Taken together, these patterns suggest that impulse buying research is grounded in multiple theories, which can be integrated into a comprehensive framework, and that technological and psychological perspectives can be synthesised in the future.

6. Future Research Directions

This study focused on understanding trends in impulse-buying research. We have identified some key streams that need further exploration to analyse the topic in greater detail. The study will be helpful to researchers in understanding recent trends and issues in impulse-buying behaviour studies. Marketers and retailers can also gain useful insights from recent research trends and formulate strategies to increase customer engagement and generate greater revenue from consumers' impulsive buying, while also considering the consequences of such impulse buying. Findings from the present study can be used by researchers to address the research gap in impulse buying behaviour, particularly in the online context.

In line with the trend of social commerce, studies can examine the role of social media visual trust cues on impulse buying. Also, as Generation Z has been a trending topic and a focus of thematic maps in recent years, highlighting the focus on studying impulse-buying patterns of Gen Z, studies can also be conducted to compare the antecedents of impulse buying across generational cohorts, as these may be significantly different. This can be beneficial for marketers, who can then customise the environmental stimuli for people from different generational cohorts.

Clustering of keywords such as 'social commerce', 'social media', and 'influencer marketing' reflects the growing shift from transactional e-commerce to entertainment-centric platforms. Future research can explore additional variables to establish the connection between social factors and online impulse buying.

Future studies can deepen the understanding of platform-specific impulse buying behaviour of consumers. Interplay between perceived risk and perceived enjoyment (which together formed a 'motor theme' cluster) can be examined. Also, the influence of algorithmic factors like personalisation and recommendation can be evaluated in the context of trust and perceived enjoyment on e-commerce and s-commerce platforms. As hedonic value and utilitarian value formed a part of the 'niche theme' quadrant, future research can integrate these value frameworks into models like the SOR framework to better comprehend impulse buying behaviour of consumers. It can be studied how shopping enjoyment and positive affect (niche theme quadrant terms) vary across cultures and age-groups in the context of impulse buying. Also, fashion involvement and shopping enjoyment can be assessed in the context of augmented reality (AR) and virtual try-on features that are re-shaping the online fashion environment. The evolving nature of eWOM (such as live-stream real-time feedback and unboxing videos) can be investigated. Further studies can examine the interplay of social media strategies, and endorsements from different types of influencers like nano, micro and macro influencers and compare with the impact of celebrity endorsements on impulse buying behaviour of consumers.

As the antecedents of impulse buying behaviour could be found in the keyword co-occurrence analysis, but not the variables related to consequences, this suggests that more studies in the future can study the consequences of impulse buying behaviour, both long-term and short-term, which has been overlooked until now. As only SOR could be found in the keyword co-occurrence analysis and literature review also suggests that studies have been conducted taking SOR as the theory base, studies in the future can utilise SOR in conjunction with other suitable theories such as Technology Acceptance Model (TAM) (Davis, 1989) and Dual Process Model (Strack & Deutsch, 2004) to have a comprehensive understanding of impulse buying behaviour of consumers. Also, as different platforms could be noted in the thematic analysis and trending topics over years, future studies can compare the aspects of impulse buying behaviour of consumers across different platforms.

7. Contribution to Literature and Industry

This study adds significantly to the body of knowledge on impulse purchases in several ways. It provides a systematic bibliometric overview of the field, integrating performance analysis and thematic mapping to offer a clearer understanding of the research area's intellectual, conceptual, and thematic development. The study ascertains publication and citation trends, influential authors, documents, and sources. It also identifies frequently used, trending, and trending words, and the thematic evolution in the research area. The use of keyword co-occurrence analysis and thematic mapping offers nuanced insights into the research domain. This study contributes to theory-building by clarifying the conceptual boundaries and suggesting underexplored areas for further empirical investigation.

The study's findings carry several practical implications for marketers, e-commerce platforms, retail strategists, and business owners. Identification of themes in the field offers insights into the psychological, behavioural and contextual drivers of impulse buying behaviour, particularly in the digital environment. Understanding these themes can enable practitioners to design more responsive and personalised shopping experiences for consumers that align with their emotional triggers and cognitive processes.

The thematic classification of research trends can help industry players anticipate shifts in consumers' expectations, particularly with the growing popularity of various social media, live-streaming e-commerce, short-form video platforms, and influencers. Aligning with academic insights, businesses can adopt such data-driven approaches, which can help innovate marketing models, improve customer engagement, and enhance conversion rates in the highly competitive digital marketplace.

8. Limitations of the Study

Like any other study, this one also has certain limitations. For the study, data were retrieved only from Scopus. Other databases can be included in future studies to provide a more comprehensive analysis of the topic. Biblioshiny and VOS viewer were used as software tools for conducting science mapping & performance analysis of IBB literature. However, other software may offer enhanced data visualisations that can be used in forthcoming studies. The bibliometric analysis covered the period from 1998 to 2024. Future studies can evaluate bibliometric data separately for specific time intervals.

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