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## Article

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## Virtual brand communities unveiled: A comprehensive bibliometric exploration

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### ABSTRACT

Virtual Brand Communities (VBCs) have evolved into essential platforms for consumer-brand interactions, fostering engagement, trust, and loyalty in digital spaces. Through a comprehensive bibliometric analysis of 424 Scopus-indexed articles dated from 2006 to 2024, this study maps the intellectual and thematic evolution of VBCs research using VOSviewer and SciMAT. The analysis reveals a notable shift from early research focused on technology and online community dynamics to more sophisticated research on digital marketing strategies, consumer behavior patterns, and brand management approaches. Consumer engagement, brand trust, and purchase intention emerge as central themes, with a growing emphasis on user-generated content, electronic word-of-mouth (eWOM), and social commerce developments. Findings demonstrate that VBCs not only influence consumer decision-making processes but also function as strategic assets for brands seeking to enhance customer relationships and cultivate long-term loyalty. VBCs increasingly serve as innovation hubs where brands can co-create value with consumers while building authentic connections. The research contributes significantly to understanding VBCs' evolving role in contemporary brand strategy, especially because VBCs represent a crucial frontier where brands can differentiate themselves through meaningful consumer interactions and relationship building beyond traditional marketing approaches. It is important to highlight that, by mapping both historical foundations and emerging trajectories in VBCs studies, this review establishes a baseline for future research directions while providing actionable insights for practitioners. Brands can leverage these findings to develop more effective community management strategies and capitalize on the competitive advantages offered by well-cultivated digital communities.

### 1. Introduction

The digital transformation has fundamentally altered the landscape of consumer-brand interactions, with Virtual Brand Communities (VBCs) emerging as pivotal platforms for engagement and relationship building in the online environment. These communities represent a significant shift in how consumers connect with brands and each other, creating dynamic ecosystems of interaction and co-creation (Ahmed, Zaidi, Alam, Streimikiene, & Parmar, 2023; Chen, 2023). The proliferation of social media and mobile technologies has accelerated this phenomenon, enabling individuals with shared brand affinities to form meaningful connections across geographical boundaries (Jiang, Mastromartino, Yang, Zhang, & Zhang, 2022; Wang, Chih, Honora, & Wu,

2024).

The theoretical underpinnings of brand-consumer relationships provide a framework for understanding these digital interactions. Morgan and Hunt's (1994) Commitment-Trust Theory establishes the foundational elements of trust and commitment in fostering enduring relationships. This perspective is enriched by Vivek, Beatty, and Morgan (2012) and Van Doorn et al. (2010), that extend the concept of commitment beyond mere transactions to encompass ongoing interactions and active participation. Consumer Culture Theory (Holt, 2002; McCracken, 1986) adds a critical cultural dimension, recognizing that consumers adopt brands as key elements in constructing their social and personal identities. Furthermore, Tajfel's (1978) Social Identity Theory illuminates how consumers identify with brands through the

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social groups they represent, reinforcing loyalty through a sense of collective identity. Complementing these perspectives, the Self-Determination Theory (Ryan & Deci, 2000) highlights the intrinsic motivation driving consumer engagement, emphasizing the fulfillment of autonomy, competence, and relatedness needs within a brand community. Additionally, the Psychological Ownership Theory (Pierce, Kostova, & Dirks, 2001) explains how users develop a sense of personal investment in brands, fostering stronger emotional connections and deepening their commitment through perceived control, intimate knowledge, and self-identification with the brand.

In contemporary digital ecosystems, VBCs have evolved from simple online platforms into powerful instruments for fostering brand loyalty, enhancing purchase intentions, and shaping brand image (Villegas & Marin, 2021; Nikhashemi, Kennedy, & Mavondo, 2025; Ali, Suveatwatanakul, Nanu, Ali, & Terrah, 2025). VBCs have become integral to modern brand management strategies, serving as hubs where consumers and brands co-create value in a dynamic, interactive environment (Li, Johnston, & Feng, 2024; Shah, Shoukat, Ahmad, & Khan, 2021; Wang, Chih, et al., 2024).

Despite the growing importance of VBCs, there remains a need for a comprehensive understanding of how research in this field has evolved. Bibliometric analysis emerges as a particularly valuable scientific method for mapping this intellectual landscape, especially given the increasing availability and utility of bibliometric software and databases (Passas, 2024). This approach enables researchers to visualize the structure and evolution of scientific activity surrounding VBCs, identifying main trends, collaboration networks, citation patterns, and opportunities for future research (Passas, 2024; Velástegui, Paredes, Zambrano, & Herrera, 2024).

This study conducts a thorough bibliometric analysis and literature review of research on VBCs, aiming to offer a cohesive understanding of the field's development within academic literature (Oliveira, Francisco da Silva, Juliani, César Ferreira Motta Barbosa, & Vieira Nunes, 2019; Donthu, Kumar, Mukherjee, Pandey, & Lim, 2021; Lim & Kumar, 2023). The value of this research lies in its ability to provide a more structured comprehension of the current state of knowledge, thereby informing strategic decision-making in brand management and contributing to the improvement and sustainability of VBCs.

The paper is structured as follows: begin with a literature review synthesizing theoretical perspectives and empirical findings on VBCs. Next, the methodological approach is outlined, employing rigorous bibliometric analysis techniques (Donthu et al., 2021). The results section presents co-occurrence analysis and thematic evolution maps, revealing key themes and trends in VBCs research (Veloutsou & Ruiz Mafe, 2020). Finally, a discussion interprets these findings, offering insights into implications for brand management and directions for future research (Elia, Messeni Petruzzelli, & Urbinati, 2020; Wang, Lv, Wang, Guo, & Ma, 2023).

### 1.1. Literature review

Virtual Brand Communities (VBCs) are non-geographically bound groups that exist primarily online, fostering relationships among individuals that share a passion for a brand (Marchowska-Raza & Rowley, 2024; Veloutsou & Ruiz Mafe, 2020; Wang, Chih, et al., 2024). Unlike traditional brand communities, VBCs rely on digital platforms to facilitate interactions and engagement among members (Jiang et al., 2022; Siuda, 2019; Zhang & Zhang, 2023). The emergence of internet-based VBCs has transformed consumer-brand interactions and peer-to-peer engagement in the digital marketplace, creating intricate ecosystems where psychological, social, and technological factors continuously interact and evolve (Kumar & Nayak, 2019; Shukla, Misra, & Gupta, 2023; Wang et al., 2023; Zhang & Zhang, 2023).

Social media platforms have played a crucial role in the formation and expansion of these communities, enabling brands to engage consumers, conduct market research, and enhance marketing initiatives

(Shihab, Ikhsan, & Fakhrorazi, 2025; Shukla et al., 2023; Wang, Chih, et al., 2024). This structure fosters a sense of belonging and collective identity, reinforcing the impact of social influence on consumer decision-making processes (Qiao, Song, & Wang, 2019; Wang, Chih, et al., 2024).

Moreover, a defining characteristic of virtual brand communities is their capacity to facilitate bidirectional communication, enabling the exchange of information and experiences between consumers and brands, as well as among the members of the community themselves (Rotchanakitumnuai & Speece, 2022; Zhang, Qi, & Lyu, 2021). These interactions enhance trust, strengthen brand loyalty and ultimately influence purchasing decisions (Nyrhinen, Uusitalo, Frank, & Wilska, 2022; Zhang & Zhang, 2023; Wang et al., 2024). Furthermore, VBCs often serve as platforms for value co-creation, where members actively contribute to shaping brand offerings (Marchowska-Raza & Rowley, 2024; Nibras et al., 2024; Wang, Chih, et al., 2024).

The value proposition of online shopping within VBCs encompasses both utilitarian and hedonic dimensions (Ahmed et al., 2023; Hsu, 2023). While utilitarian value reflects the practical benefits of a transaction, hedonic value emphasizes the enjoyment and emotional gratification derived from the experience (Ahmed et al., 2023; Hsu, 2023; Shukla et al., 2023). Both aspects contribute to user retention and engagement, reinforcing what is known as platform stickiness (Qu, Ciešlik, Fang, & Qing, 2023). Additionally, social norms play a crucial role in influencing user behavior, as individuals tend to conform to group preferences to facilitate social integration (Nyrhinen et al., 2022; Tran et al., 2022).

Expectation confirmation is another key factor in VBCs, as users' satisfaction and continued engagement depend on the alignment between their initial expectations and actual experiences (Li, Johnston, & Feng, 2024; Nikhashemi et al., 2025; Yuan, Lin, Filieri, Liu, & Zheng, 2020). Positive social media experiences strengthen engagement and ensure the longevity of virtual communities, making it essential for brands to continually adapt to evolving user needs (Le, Phan Tan, & Hoang, 2023). Moreover, as users accumulate experience, their beliefs and behaviors transform, affecting their interactions within the community (Hsu, 2023; Tran et al., 2022).

In essence, VBCs represent complex ecosystems where multiple factors converge to shape user behavior and brand relationships (Aoki, Tudor, Borders, & Lester, 2020; Jiang et al., 2022; Ryan, Deci, Vansteenkiste, & Soenens, 2021). By understanding online interaction dynamics, social influence mechanisms, shopping value dimensions, and expectation confirmation processes, organizations can strategically leverage VBCs to build trust, foster brand loyalty, and drive long-term business success in an increasingly digital marketplace (El Naggat & Hammad, 2023; Nyrhinen et al., 2022; Rotchanakitumnuai & Speece, 2022; Shukla et al., 2023).

## 2. Methodology

Scopus and Web of Science (WoS) are the most internationally recognized academic databases, and many authors have compared them, finding strengths and limitations in both (e.g. Mongeon & Paul-Hus, 2016). Despite the serious biases and limitations shared by WoS and Scopus, Prancutė (2021) found that Scopus is more suitable than WoS because: (i) Scopus covers more content; (ii) it makes author and institution profiles, as well as publication abstracts, available to its users, making its use more convenient and practical; (iii) its impact indicators and metrics perform better than those of WoS, because they are less susceptible to manipulation and are available for all publications and in all disciplines; and (iv) Scopus is a single database, while WoS has different databases that belong to its Core Collection (such as SCIE, SSCI, ESCI, among others), which may confuse those who are not used to its structure.

This study utilized a combination of quantitative bibliometric analysis and a comprehensive literature review, focusing on articles

published in journals indexed by Scopus, a widely recognized database known for its impact factors, which measure the influence and quality of published research (Baas, Schotten, Plume, Côté, & Karimi, 2020). The search strategy identified articles using the terms virtual brand community and online brand community, selected for their relevance and comprehensiveness after a preliminary screening. The following query was used: TITLE-ABS-KEY (((("VIRTUAL BRAND COMMUNI\*" OR "ONLINE BRAND COMMUNI\*")) AND (LIMIT-TO(DOCTYPE, "ar")))). No restrictions were placed on publication dates, as the earliest study on this topic dates to 2006. The search identified 601 documents, with 424 scientific articles selected for further analysis.

### 2.1. Bibliometric analysis

To fully leverage the strengths of both bibliometric analysis and literature review, this study combined these methods. One key technique used is co-occurrence analysis, which identifies when two or more terms appear together within a context, indicating a thematic or semantic relationship (Allahbakhshian Farsani, Riahinia, Danesh, & Azimi, 2024; Zhou, Zhou, Huang, & Cui, 2022). This reveals the intellectual structure of the research field, identifying core themes (Allahbakhshian Farsani et al., 2024; Donthu et al., 2021). In bibliometric studies, the frequency of citations indicates the prominence of an article and its contribution to advancing a particular research area (Allahbakhshian Farsani et al., 2024).

### 2.2. Data processing

This study used two specialized software tools for bibliometric analysis: VOSviewer and SciMAT (Moral-Muñoz, Herrera-Viedma, Santisteban-Espejo, & Cobo, 2020; Van Eck & Waltman, 2023). Both tools were chosen for their ability to visualize and map scientific networks and trends over time. VOSviewer was used to create co-occurrence networks, mapping the intellectual structure and development of the VBCs research field (Moral-Muñoz et al., 2020; Van Eck & Waltman, 2023). SciMAT, on the other hand, tracked the evolution of thematic networks, dividing the research timeline into distinct phases (Moral-Muñoz et al., 2020). This dual approach provided a dynamic and thorough analysis of the field's growth and emerging trends (Moral-Muñoz et al., 2020).

#### 2.2.1. VOSviewer

VOSviewer was used to generate bibliometric maps based on network data and visualizations (Emich, Kumar, Lu, Norder, & Pandey, 2020; Oliveira et al., 2019; Van Eck & Waltman, 2023). It was selected for its effectiveness in handling large datasets and its ability to visualize complex networks, helping to define scientific domains and track the evolution of research over time (Donthu et al., 2021; Van Eck & Waltman, 2023). The software facilitated the construction of bibliometric maps by collecting data, selecting units of analysis, calculating co-occurrence frequencies, and visualizing these relationships on two-dimensional maps (Emich et al., 2020; Oliveira et al., 2019). Data from Scopus was processed and exported to VOSviewer using CSV format.

The study categorized the database into distinct clusters based on co-occurrence, a widely used method in bibliometrics to identify patterns of association between frequently co-occurring terms (Donthu et al., 2021; Zhou et al., 2022). Co-occurrence analysis was conducted to examine the frequency of keywords or terms appeared together in the documents, indicating relationships between them; hence, helping to uncover connections between terms and providing insights into how closely related were within the VBCs research domain (Donthu et al., 2021; Emich et al., 2020). This method facilitated the visualization of relationships between articles, highlighting key insights into the structure and evolution of the research field (Moral-Munoz et al., 2019; Donthu et al., 2021). For the analysis, VOSviewer was configured with specific

parameter settings. A knowledge map was created from bibliographic data obtained from Scopus. The co-occurrence analysis method was applied, with a minimum keyword occurrence set to six. This resulted in 74 references being included in the final analysis.

#### 2.2.2. SCIMAT

The study employed a software tool that generates traditional science mapping techniques to produce thematic networks, represented as circular clusters whose sizes correspond to the number of associated documents. Connections between different time periods were indicated by lines, with the thickness of these lines reflecting the strength of topic connections (Moral-Muñoz et al., 2020). This approach offers valuable insights into the dynamic evolution of themes and keywords in the field under investigation.

To enhance the analysis of the scientific evolution of VBCs and facilitate comparisons across periods, the study period was divided into three distinct temporal divisions: 2006–2012, 2013–2019, and 2020–2024. The temporal division which segments the studied period into three stages, is primarily based on the amount of documentary production recorded over the years, this shows a clear upward trend in the number of documents published from 2006 to 2024, with variations that allow for the identification of inflection points or significant changes in productivity.

Between 2006 and 2012, document production was relatively low and exhibited gradual but modest growth. During this period, the number of documents remained below 10 per year until approximately 2010, when a slight increase began, reaching around 10–15 documents per year by 2012. This initial stage reflects a phase of lower activity in the analyzed literature, justifying its separation as an independent period.

From 2013 to 2019, a more pronounced and sustained growth in documentary production is observed. The number of documents per year has increased significantly, exceeding 20 documents in 2016 and reaching approximately 30–40 documents by 2019. This notable increase suggests a boom in research or publication in the area of study, motivating the delineation of this period as a stage of greater activity and literary expansion.

Finally, the period from 2020 to 2024 shows consolidation at high levels of production, with a peak exceeding 50 documents per year in 2022 and a slight decline toward 2024, though remaining above 40 documents. This behavior indicates maturity or stabilization in literary production, justifying its separation as a third stage. The temporal division, therefore, responds to the need to capture and analyze the dynamics of growth and fluctuation in documentary production, reflecting significant quantitative changes in the literature over time.

In conducting the analysis, SciMAT was configured with specific parameter settings to optimize results. Both author words and source words were selected as units of analysis, with data reduction thresholds set at 1, 3, and 3 for the respective periods. A co-occurrence matrix was employed to identify significant relationships between terms, and the network threshold reduction was consistently set to 1 across all phases. The Equivalence index was utilized for normalization, and clustering was performed using simple center algorithms. Network construction parameters were adjusted, with a maximum of 6 and a minimum of 3 terms per network. Core and Secondary were chosen as Document Mappers, while the Equivalence index was again employed to create both the evolution map and overlap diagram.

Additionally, it is worth noting that the researchers experimented with various parameter configurations during the "data reduction thresholds" stage. The final configuration was selected for producing the most relevant and meaningful results, offering a clear depiction of the thematic evolution compared to earlier outputs that appeared less aligned with the study's goals.



brand image, and consumer behavior within the context of online communities and virtual platforms, highlighting the deepening relationship between brands and consumers (Yuan et al., 2020; Zhang et al., 2021). As virtual platforms and online systems rise in prominence, offering increasingly immersive and interactive experiences, reshaping how consumers engage with brands (Zhang et al., 2021). These immersive experiences enable consumers to play a more active role in shaping brand identity and perception, making their participation crucial in defining the brand image (Ge et al., 2022; Jiang et al., 2021). The virtual environment provides brands with new avenues to create meaningful interactions that go beyond traditional consumer engagement, fostering stronger connections and deeper brand loyalty.

Cluster 4 (Yellow) focuses on the emotional and experiential dimensions of consumer relationships with brands, emphasizing the role of emotional engagement, brand love, loyalty, and trust in sustaining online brand community participation (Kaur et al., 2020). Emotional drivers like brand love and loyalty are essential in fostering long-term engagement and trust within these communities, strengthening brand equity and management efforts (Anaya-Sánchez et al., 2020; Nadeem et al., 2020). Building strong emotional connections with consumers leads to deeper loyalty and trust, which are crucial for sustaining brand relationships (Ahmed et al., 2023). The strategic use of social media platforms further highlights the importance of digital strategies in cultivating and maintaining these emotional bonds, reinforcing the role of social media in modern brand management (Shukla et al., 2023; Yuan et al., 2020).

In summary, these clusters reveal a multi-faceted perspective on the dynamics of VBCs, spanning emotional engagement, consumer behavior, and digital strategies. Show how online platforms have reshaped brand-consumer relationships and emphasize the importance of community engagement, trust, and loyalty in sustaining brand value in the digital age.

### 3.2. SciMAT results

For a more accurate SciMAT analysis, the database was divided into three time periods: 2006–2012; 2013–2019; and 2020–2024. This division allows for observation of how the research focus within the database changed over time. To examine the thematic evolution the Strategic Diagrams of each period were analyzed, providing insights into the continuity and development of key research topics.

A significant emphasis on the social aspects of technology emerges as a defining characteristic of the 2006–2012 period (see Fig. 2), particularly in relation to social networks and online communities (Ge et al., 2022; Wang, Shi, Ma, Shi, & Yan, 2012; Wu & Fang, 2010). This focus reflects a strong interest in examining the ways digital platforms reshape human interactions and social structures by transforming communication dynamics, redefining social norms, and influencing the way individuals connect, collaborate, and engage within VBCs (Nadeem et al., 2020; Wang et al., 2012).

Closely related to this social emphasis, human-computer interaction stands out as a central theme, encompassing various aspects of people's

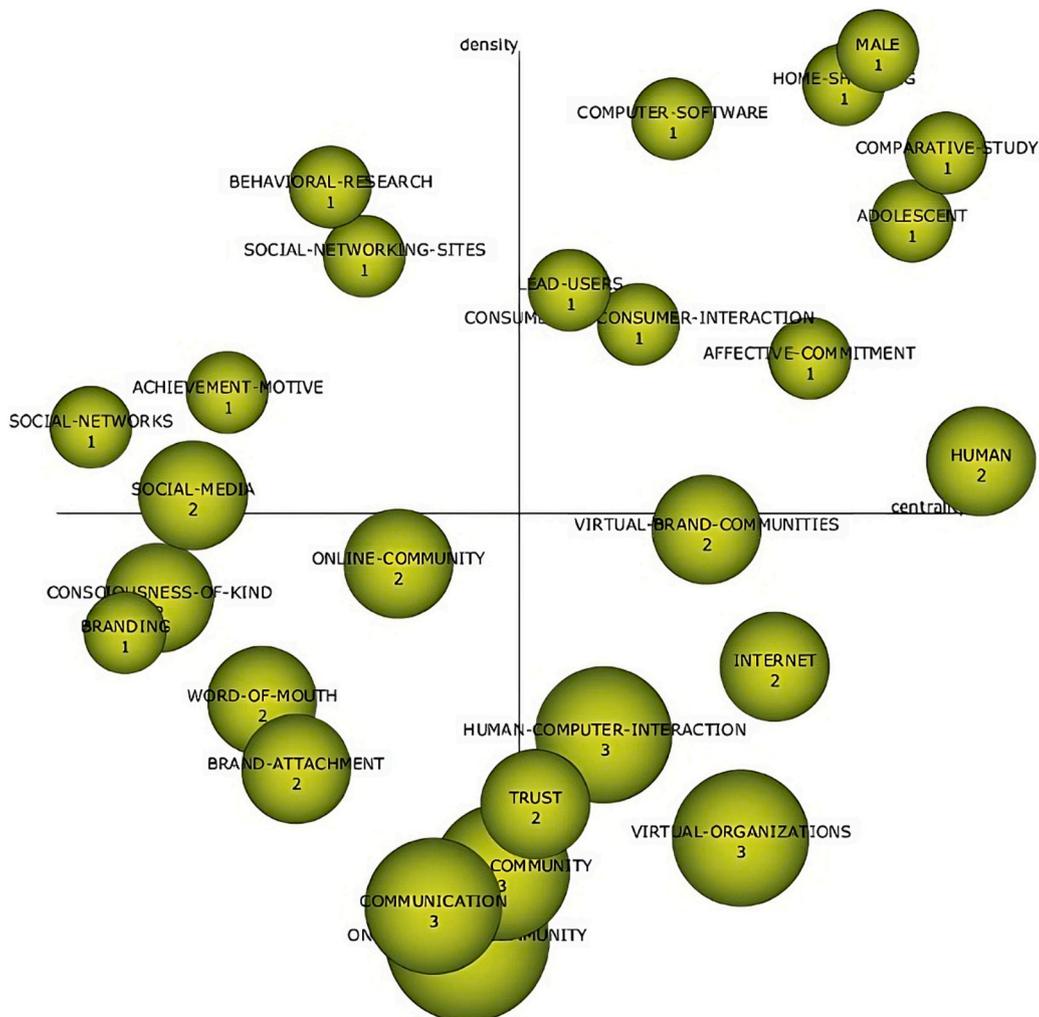


Fig. 2. SciMAT: Period 2006–2012.

engagement with and influence from digital technologies (Kaur et al., 2020; Laroche, Habibi, Richard, & Sankaranarayanan, 2012). Within this context, marketing-related concepts such as branding and word-of-mouth begin to surface, playing a crucial role in shaping consumer perceptions, influencing purchasing decisions, and fostering customer engagement (Scarpi, 2010; Wang, Butt, & Wei, 2011; Zhou, Zhang, Su, & Zhou, 2012).

This emergence indicates a growing interest in exploring how traditional marketing principles apply to or are transformed by digital environments. The intersection of these marketing concepts with social technology themes reflects the complex interplay between human behavior, technology, and commercial interests in the digital age.

Overall, this period represents a formative stage in the study of VBCs, marked by a broad exploration of diverse topics that would later converge into more defined research streams. Studies on consumer-to-consumer interaction and affective commitment dominate the research landscape, while social networks emerge as an increasingly prominent area of interest. This evolution highlights the growing significance of VBCs in digital consumer behavior.

The period from 2013 to 2019 (see Fig. 3) shows a clear concentration on sales and customer engagement topics. This suggests a significant shift toward understanding ways businesses can effectively interact with and sell to consumers in digital environments (Li, Modi, Wu, Chen, & Nguyen, 2019; Zhou et al., 2012). This focus reflects the growing recognition of digital platforms as crucial channels for commercial activities and customer relationships (Arya, Verma, Sethi, & Agarwal, 2019; Chen, Tsai, & Ke, 2019; Zhao, Chen, Zhou, & Ci, 2019).

Concurrently, the concept of brand community gains prominence, likely reflecting a growing awareness of the ways in which customers form cohesive groups around brands in online spaces (de Almeida, Scaraboto, dos Santos Fleck, & Dalmoro, 2018; Sanz-Blas, Bigné, & Buzova, 2019). This trend aligns closely with the emphasis on customer engagement, as brand communities often serve as powerful engines for sustained customer loyalty and advocacy (Chan, Zheng, Cheung, Lee, & Lee, 2014; Matute, Palau-Saumell, & Occhiocupo, 2019; Ul Islam & Rahman, 2017). New themes emerge in the field, notably information management and purchase intention, as researchers delve deeper into the interconnected dynamics of data strategy and consumer behavior (Kuo & Feng, 2013; Xi & Hamari, 2020; Arya et al., 2019).

The emergence of these concepts indicates a growing focus on how businesses handle data and how consumer decision-making processes operate in digital contexts. This development suggests a more nuanced understanding of the customer journey, from initial interest to final purchase, within the digital ecosystem.

Although social aspects of technology continue to be evident, these aspects appear to be less prominent than in the preceding period. This shift could indicate a transition from broad social implications of technology to more specific, business-oriented applications. However, the continued presence of social themes underscores the enduring importance of understanding social dynamics in digital business contexts.

Overall, these points indicate an evolution in the field toward more business-centric and consumer-focused topics, while still maintaining some interest in the social dimensions of technology. This trend reflects a maturing understanding of digital brand communities, with research

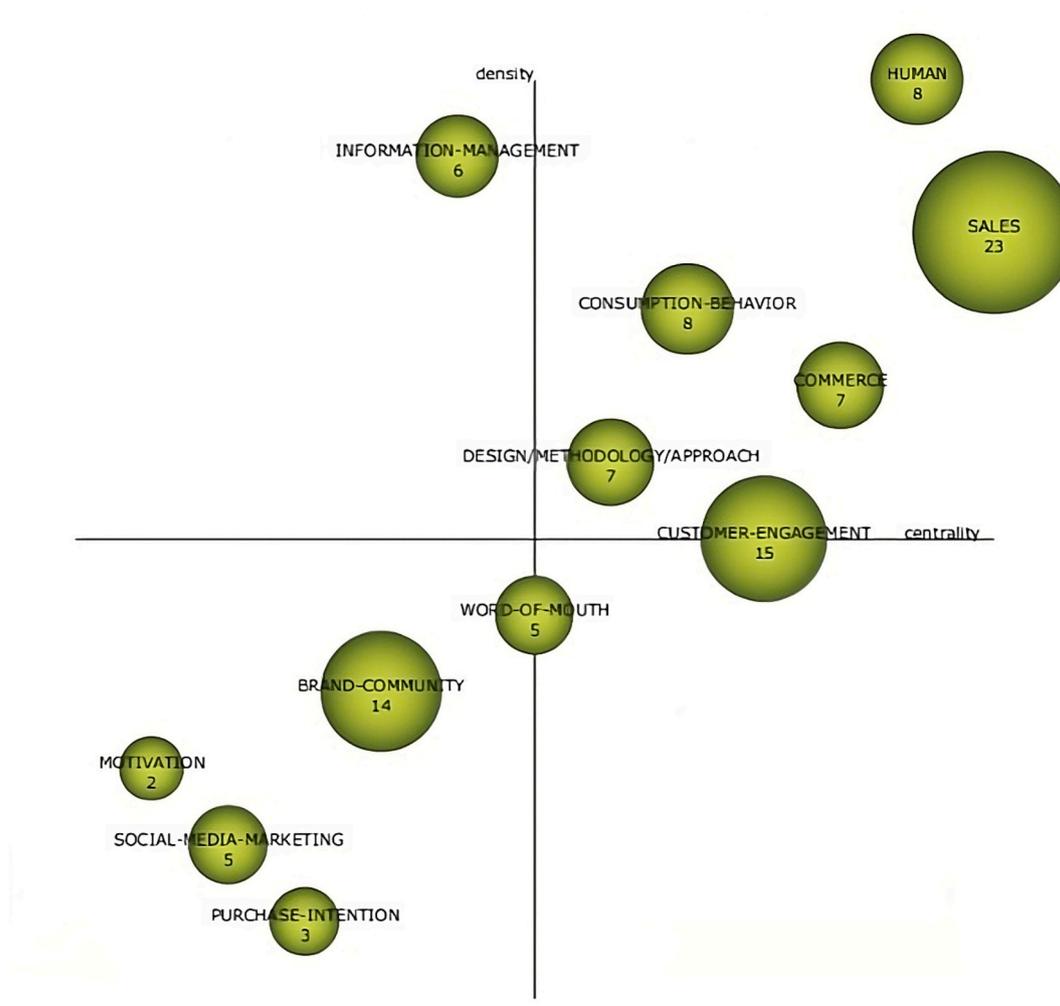


Fig. 3. SciMAT: Period 2013–2019.

now delving into more practical aspects of how businesses can leverage these communities for tangible outcomes, such as increased sales and customer loyalty.

In the last thematic evolution map (see Fig. 4), which encompasses data from 2020 to 2024, a significant shift in focus toward VBCs. This indicates a growing interest in how consumers interact with and around brands in digital spaces (Jiang et al., 2022; Sun, 2020). This trend suggests an increased emphasis on understanding the formation and dynamics of loyal customer groups within these virtual environments (Nadeem et al., 2020; Ali et al., 2025).

Analyzing the results in quadrant 1 (top right) reveals a strong representation between consumption behavior and community identification. Consumption behavior acts as a central axis, interweaving consumers into intricate networks of shared experiences and brand interactions. Consumers rely on peer recommendations and digital platforms to make more informed and ethical purchasing decisions (Shihab et al., 2025). This shift highlights that modern consumption behavior is no longer solely individualistic but deeply embedded in social interactions and collective norms (Nadeem et al., 2020; Shihab et al., 2025). Additionally, consumers can develop an emotional connection through shared content, which strengthens their trust in recommendations and motivates them to purchase promoted products (Sokolova & Kefi, 2020). Community identification fosters deep emotional connections, transforming traditional consumer relationships beyond mere transactions. Consumers actively engage in brand narratives, co-creating meaning and value through digital interactions. This identification reflects a sense of belonging in which individuals favor their group, share

common interests, and develop positive feelings toward the community (Liao, Dong, & Guo, 2020; Lin et al., 2024).

Quadrant 2 (top left) shows that consumer behavior has gained prominence, this shift reflects a deepening interest in comprehending how individuals make decisions, engage with brands, and influence others in online settings (Qu, Liu, & Yin, 2023; Siuda, 2019). Also, user-generated content was prominent shedding light on its direct influence on consumer behavior, revealing that the authenticity of the content, the emotions conveyed, and its alignment with consumer expectations are determinants in how it impacts purchasing decisions and attitudes toward brands (Liu, Gong, Zhang, & Ma, 2022; Soylemez, 2021).

The findings in quadrant 3 (bottom left) indicate that electronic word-of-mouth (EWOM) plays a pivotal role in shaping purchase intention and consumer loyalty. The data show that opinions shared on digital platforms increase trust in products or services, while positive feedback strengthens the predisposition to purchase (Bilal, Akram, Zhang, Cai, & Wang, 2022; Dinsmore, Swani, Troise, Wamwara, & Li, 2022; Pavlović-Höck, 2022). Furthermore, this process is linked to greater loyalty, as shared and validated experiences from other users generate a sense of security and commitment to brands, reinforcing their relevance in decision-making (Dinsmore et al., 2022; Pavlović-Höck, 2022).

The results in quadrant 4 (bottom right) emphasize that online brand communities have a significant impact on brand loyalty, functioning as spaces for interaction and emotional reinforcement (Ali et al., 2025). Active participation in these communities fosters a sense of belonging and trust among consumers, translating into greater long-term loyalty

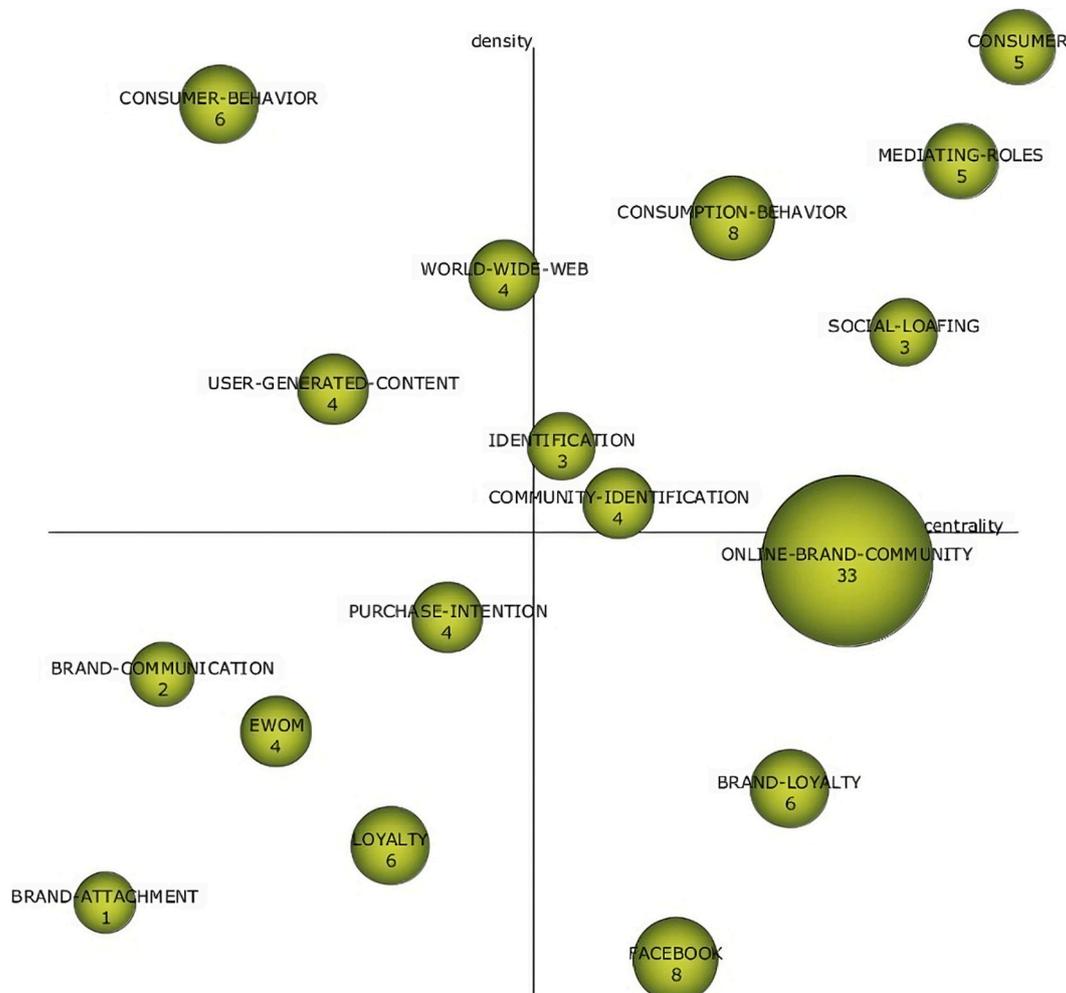


Fig. 4. SciMAT: Period 2020–2024.

(Nyrhinen et al., 2022; Shukla et al., 2023). This quadrant demonstrates that strengthening relationships within digital communities not only enhances the emotional connection with the brand but also positions it as a central element in the consumer experience.

### 3.3. Co-occurrence and thematic evolution map

The decision to use only the latest period from the thematic evolution map alongside the co-occurrence analysis is based on its relevance and up-to-date perspective on the research landscape. This latest period highlights current trends, emerging themes and cutting-edge developments within the field. It aligns well with the co-occurrence analysis, which reveals recent patterns in keyword usage and research collaboration. By focusing on this period, the analysis reflects the most contemporary insights, providing a clear understanding of the present state of the research domain (See Table 1).

The connection between the latest thematic evolution map (see

**Table 1**  
Summary quadrants and co-occurrence analysis.

Quadrant	Keywords (cluster)	Description
Quadrant 1 (Motor and central themes)	Brand identification (Cluster 1)	The extent to which consumers perceive a brand as part of their personal identity (Kaur et al., 2020; Nikhashemi et al., 2025).
	Consumption behavior (Cluster 2)	The patterns and habits of consumers when using and purchasing products or services (Shihab et al., 2025).
	Consumer (Cluster 3)	An individual or group that purchases and uses goods or services (Cui & Li, 2024; Jiang et al., 2022).
Quadrant 2 (Highly developed yet isolated themes)	Web 2.0 (Cluster 1)	The evolution of the internet into interactive platforms that enable user collaboration and content creation (Chen et al., 2021; Ge et al., 2022; Song, Duan, Huang, & Zhan, 2020).
	Consumer behavior (Cluster 3)	The study of motivations and processes influencing the decision to purchase and use products or services (Jiang et al., 2021; Siuda, 2019)
Quadrant 3 (Emerging or declining themes)	Loyalty (Cluster 1)	A consumer's commitment to a brand or product, reflected in repeat purchases (El Naggar & Hammad, 2023; Nadeem et al., 2020).
	Electronic word of mouth (Cluster 1)	The spread of opinions and information about products or services in online spaces (Qiao et al., 2019; You & He, 2023).
	Brand attachment (Cluster 2)	The emotional and lasting bond that a consumer develops with a brand (Hongsuchon et al., 2023).
	Purchase intention (Cluster 2)	The likelihood that a consumer will buy a product or service in the future (Wang, Chee, et al., 2024; Zhang & Zhang, 2023).
Quadrant 4 (Basic and transversal themes)	Facebook (Cluster 1)	A social network that facilitates interaction and communication between users is also used as a marketing and brand community platform (Chen, 2021; Rotchanakitumnuai & Speece, 2022).
	Online brand communities (Cluster 2)	Groups of consumers interact on digital platforms, sharing interests and experiences related to a brand (van Heerden & Wiese, 2021; Wang et al., 2023; Xi & Hamari, 2020).
	Brand loyalty (Cluster 4)	A consumer's continued preference for a specific brand over competitors, is often influenced by positive past experiences (El Naggar & Hammad, 2023; Kaur et al., 2020).

Fig. 4) and the clusters from the co-occurrence analysis (see Fig. 1) reveals a cohesive structure in the study of VBCs and related keywords.

For instance, Quadrant 1, which hosts motor and central themes in the thematic evolution map, highlights the strong connection between identification processes and both brands and virtual communities. Keywords such as brand identification and community identification from cluster 1 emphasize that the identification processes are pivotal for driving consumption behavior and shaping how consumers engage with and participate in VBCs (Kaur et al., 2020; Nikhashemi et al., 2025; Qiao et al., 2019). The central role of identification processes within this quadrant underscores their influence not only on consumption behavior but also on consumers' active contributions to these communities (Kaur et al., 2020).

In contrast, Quadrant 2, representing highly developed yet isolated themes, introduces terms like web 2.0, highlighting the technological infrastructure that supports the growth of VBCs (Chen et al., 2021; Ge et al., 2022). Here, consumer behavior illustrates how interactive platforms shape consumer engagement and actions (Siuda, 2019; Tran et al., 2022). Although well-developed, these themes remain a bit disconnected from broader research trends, indicating a gap that could be bridged by integrating technological and behavioral insights into mainstream discussions of digital consumer behavior (Akdevelioglu, Hansen, & Venkatesh, 2021; Chen, 2021). This underscores the importance of connecting technological advancements with consumer actions to enhance the holistic understanding of VBCs dynamics.

Shifting to Quadrant 3, which represents emerging or declining themes, it is observed that loyalty and word-of-mouth (WOM) are closely interconnected, highlighting the significant influence that loyalty exerts on advocacy behaviors within VBCs (El Naggar & Hammad, 2023; Nadeem et al., 2020; Qiao et al., 2019; You & He, 2023). Additionally, brand attachment and purchase intention highlight potential areas for future growth by linking emotional connections to actual purchase behaviors (Ahmed et al., 2023; Hongsuchon et al., 2023; Wang, Chee, et al., 2024; Zhang & Zhang, 2023). While these themes explore deeper psychological aspects of consumer behavior, their emergence suggests that emotional engagement and loyalty will become increasingly central to understanding consumer participation in VBCs (Chen et al., 2021; Ge et al., 2022; Kumar, 2019; Li, Lu, Akram, & Cheng, 2024).

Lastly, Quadrant 4 features basic and transversal themes that form the foundational aspects of VBCs. Social media platforms, particularly Facebook, and online brand communities provide a foundation for understanding consumer interactions with brands in digital environments (Chavadi et al., 2023; Lin et al., 2024; Ali et al., 2025). The inclusion of brand loyalty in this quadrant reinforces the idea that sustained engagement in these communities is a critical factor in fostering long-term consumer loyalty (Kaur et al., 2020; El Naggar & Hammad, 2023; Ali et al., 2025). This quadrant emphasizes that online interactions, facilitated by social media, continue to play a central role in shaping brand-consumer relationships, highlighting the ongoing significance of digital spaces in driving consumer engagement and loyalty (Chavadi et al., 2023; Lin et al., 2024).

Overall, the thematic evolution map quadrants and the co-occurrence analysis clusters share a strong thematic connection. The concepts of loyalty, engagement, and the role of online communities highlight the central importance of VBCs in shaping modern consumer behavior and brand strategies.

## 4. Discussion

This analysis reveals a strong alignment between the micro-level dynamics within VBCs and the macro-level trends shaping their evolution, highlighting a clear shift toward consumer-centric approaches. This interconnectedness goes beyond mere thematic overlap, reflecting a deeper alignment between activities within VBCs and the broader trends shaping the field's development (Terán-Yépez, Marín-Carrillo,

del P Casado-Belmonte, & de las Capobianco-Uriarte, 2020). For instance, the prominence of consumer behavior and online brand communities in the latest thematic evolution map (2020–2024) and Cluster 1 underscores this pivotal shift (Jiang et al., 2022; Nadeem et al., 2020; Paruthi, Kaur, Islam, Rasool, & Thomas, 2022). This movement reflects a departure from a brand-centric view of VBCs toward a more nuanced understanding of consumer agency and interaction within these digital spaces (Bilro & Loureiro, 2023; Kaur et al., 2020).

An example of this transition can be observed in brands that have shifted their digital strategies from traditional advertising campaigns toward interactive community-based platforms, where consumers not only consume content but actively engage by sharing personal experiences and co-creating customized challenges (Hsu, 2023). This strategy illustrates how brands can transition from one-way communication to two-way collaboration, with significant implications for brand strategy, prioritizing engagement and co-creation over top-down approaches (Le et al., 2023; Marchowska-Raza & Rowley, 2024). Therefore, an interactive platform that enables consumers to customize products and participate in community challenges, such as designing limited-edition items that are voted on by the community, will foster a sense of belonging.

This emphasis on consumer engagement also carries significant implications for social commerce (Hsu, 2023; Yuan et al., 2020). Brands must cultivate environments that encourage participation, incorporating elements like gamification in online communities to boost engagement and loyalty (Li, Lu, et al., 2024; Xi & Hamari, 2020). For example, brands that successfully implemented its gamified rewards programs, where users earn points, stars, etc. for purchases and challenges, incentivize ongoing interaction within a VBC (Baranidharan, Sharon Sophia, & Mohan, 2023; Oliveira, Abelha, Sousa, & Peixoto, 2024). Well-designed co-creation events, such as virtual workshops where consumers design new flavors or packaging, can enhance participants skills and build trust, driving intrinsic motivation and sustained brand engagement (Baranidharan et al., 2023; Sarkar & Banerjee, 2020). Implement gamified reward systems that offer points not just for purchases but also for actions like posting reviews or participating in community forums, linking these to tangible benefits like discounts or exclusive event access (Xi & Hamari, 2020).

Moreover, brands must leverage social-hedonic values and position themselves as entities consumers are proud to associate with (Ahmed et al., 2023; Nibras et al., 2024). This requires proactively initiating conversations on social platforms, upholding high ethical standards, and strategically balancing co-creation with brand-led initiatives (He & Zhang, 2022; Marchowska-Raza & Rowley, 2024). Brands can launch social media campaigns inviting consumers to share their experiences with the brand's products or values and the effect it have on their lives, amplifying these stories to strengthen emotional connections (He & Zhang, 2022).

The convergence of themes like brand loyalty, trust, and engagement across multiple clusters and quadrants highlights their enduring importance. This suggests that despite technological advancements and evolving consumer behaviors, these fundamental pillars of brand-consumer relationships remain critical for thriving VBCs (Nadeem et al., 2020; Nyrhinen et al., 2022). It reinforces the notion of trust and engagement through meaningful interactions (Jiang et al., 2021; Shukla et al., 2023). For example, establishing community ambassador programs in which the most active members are recognized and rewarded for guiding others, thereby strengthening trust and loyalty within VBCs (Aoki et al., 2020).

Similarly, the emergence of concepts like user-generated content (UGC) and electronic word of mouth (eWOM) reflects the democratization of brand narratives (Bilal et al., 2022; Dinsmore et al., 2022; Song, Duan, et al., 2020). This challenges traditional marketing paradigms, emphasizing the need for brands to actively listen and respond (Jiang et al., 2022; Nikhashemi et al., 2025). UGC contests invite consumers to submit campaign ideas, with the brand implementing the best

submissions and publicly acknowledging contributors, which encourages ongoing participation (Chen, 2023; Soylemez, 2021; Thaib, Ghozi, Sanjaya Kusno, Kusumawati, & Yulianto, 2023).

To understand consumer motivation within VBCs, Self-Determination Theory (SDT) provides a valuable framework, it proposes that autonomy, competence, and relatedness drive intrinsic motivation (Hagger, Hankonen, Chatzisarantis, & Ryan, 2020; Ryan et al., 2021; Ryan & Deci, 2019). By fostering these needs within VBCs, for example, by providing opportunities for members to contribute, learn, and connect, brands can enhance participation and co-creation (Jiang et al., 2021; Zhang, 2019). For example, platforms like Duolingo integrate these needs by allowing users to set personal learning goals (autonomy), master language skills (competence), and compete on leaderboards with friends (relatedness), boosting engagement (Zhou, 2024).

Likewise, psychological ownership, the feeling of possession without legal ownership, enhances engagement and loyalty (Kumar & Nayak, 2019). Some VBCs exemplify this by enabling members to design and propose products or services that, once approved by the community, become official offerings (Ardley, McIntosh, & McManus, 2020). Such opportunities foster a sense of control, recognition, and belonging among creators, who can further personalize their digital spaces, such as profiles or community forums, and actively engage in collective decision-making processes like voting on new product launches, thereby deepening their emotional investment in the community (Ardley et al., 2020).

These frameworks offer valuable insights for researchers and practitioners alike, emphasizing a consumer-centric approach that prioritizes engagement, co-creation, and emotional connection in VBCs strategies (Ahmed et al., 2023; Anaya-Sánchez et al., 2020; El Naggat & Hammad, 2023; Xi & Hamari, 2020). Additionally, the authors emphasize the importance of monitoring and responding to user-generated content, as well as adapting to evolving technological developments and changing consumer preferences (Chen, 2023).

The alignment between VOSviewer clusters and SciMAT quadrants provides a cohesive narrative of VBCs evolution, serving as a guide for brands to navigate the digital ecosystem. By leveraging key insights into the themes and trends driving VBCs, companies can achieve far-reaching strategic goals (Thaib et al., 2023; Villegas & Marin, 2021). Through understanding and harnessing these trends, brands can construct and sustain vibrant online communities that nurture trust, brand loyalty, and active consumer participation (Chavadi et al., 2023; Kaur et al., 2020; Zhang, 2019). This, in turn, empowers brands to cultivate deep-rooted relationships that translate into lasting customer commitment and advocacy (Shukla et al., 2023; Tseng, Huang, & Setiawan, 2017).

In today's fast-paced digital environment, VBCs are hubs of interaction in which consumers co-create brand narratives (Nikhashemi et al., 2025; Yuan et al., 2020). Brands that align their strategies with these dynamics, facilitate authentic dialogues, and respond to evolving expectations can strengthen their market position (Wang, Chih, et al., 2024). This involves encouraging user-generated content, fostering authentic dialogues, and responding to the evolving needs and expectations of community members (Liu et al., 2022).

## 5. Conclusion

This research highlights that VBCs have evolved into dynamic and influential entities in the digital age, with a clear shift toward consumer-centric approaches. The thematic evolution maps illustrate this journey, starting from explorations of social technology and progressing toward a focus on online brand communities and digital consumer behavior in recent years (Ahmed et al., 2023; Shukla et al., 2023; Veloutsou & Ruiz Mafe, 2020; Wang, Chee, et al., 2024). This highlights the increasing importance of understanding and leveraging these communities for brand success.

The co-occurrence clusters further emphasize this multifaceted

nature. Cluster 1 underscores consumer engagement and participation, facilitated by social media and Web 2.0 technologies (Chen et al., 2021; Ge et al., 2022; Song, Duan, et al., 2020). Cluster 2 delves into the emotional and psychological underpinnings of VBCs, emphasizing the sense of ownership and deep connection individuals develop (Bilro & Loureiro, 2023; Hongsuchon et al., 2023; Jami et al., 2020; Jiang et al., 2021; Shukla et al., 2023). Cluster 3 expands the scope to the broader digital landscape, where online communities and virtual platforms are reshaping consumer behavior and brand perception (Chen et al., 2021; Jiang et al., 2021; Lin et al., 2024; Paruthi et al., 2022; Siuda, 2019). Cluster 4 highlights the critical role of brand loyalty and trust in fostering strong consumer-brand relationships (Anaya-Sánchez et al., 2020; El Nagggar & Hammad, 2023; Nadeem et al., 2020).

From a practical standpoint, this requires a shift in the way brands approach their online presence. Brands must actively cultivate engaging online spaces by creating interactive content calendars, hosting online events, and implementing social listening tools to understand consumer needs and preferences (Baranidharan et al., 2023; Cui & Li, 2024; El Nagggar & Hammad, 2023). Furthermore, building emotional connections within VBCs is crucial. This can be achieved by sharing user-generated content, creating personalized experiences, and supporting social causes that resonate with the community (Shukla et al., 2023; Ali et al., 2025). By embracing consumer empowerment and involving communities in shaping brand experiences, brands can unlock the full potential of VBCs (Le et al., 2023; Marchowska-Raza & Rowley, 2024).

This research provides a comprehensive overview of the VBCs landscape, tracing its evolution and highlighting key themes. While the analysis focused on academic literature, further research could explore industry perspectives and best practices. As technology continues to advance, VBCs will undoubtedly play an increasingly vital role in shaping brand-consumer relationships in the digital age.

## 6. Future research

While this study provides a comprehensive bibliometric exploration of VBCs, several areas remain valuable for future research. First, further empirical studies are needed to examine the evolving role of artificial intelligence and machine learning in shaping consumer engagement and brand interactions within VBCs. AI-driven personalization, automated community management, and chatbot-mediated relationships present new dynamics that require deeper exploration.

Second, future research should investigate the impact of emerging technologies, such as virtual reality (VR) and augmented reality (AR), on consumer participation and psychological ownership within VBCs. These technologies have the potential to redefine how users experience brand communities by enhancing immersion and interactivity.

Additionally, cross-cultural studies should be prioritized to assess how cultural differences influence engagement, trust, and commitment in VBCs. Given the global nature of digital communities, examining variations across different regions and consumer segments can help brands tailor their strategies more effectively.

Finally, methodological advancements in network analysis, sentiment analysis, and big data analytics can further enrich the study of VBCs. Leveraging these tools to analyze large-scale interactions and behavioral patterns will enable a more nuanced understanding of how virtual communities evolve over time.

By addressing these research directions, scholars can contribute to a more holistic and forward-looking understanding of VBCs, ensuring their relevance in an increasingly digital and interconnected marketplace.

## 7. Limitations

Some limitations must be acknowledged that could affect the interpretation and generalizability of the findings. First, the reliance on the Scopus database, though comprehensive, may overlook relevant

publications from other sources such as Web of Science or Emerald. This could result in an over-representation of certain perspectives or research areas while underrepresenting others, particularly those focused on specific industries or regions. For instance, our findings related to the impact of VBCs on consumer behavior might be biased toward certain demographics or cultural contexts that are prevalent in the Scopus database.

Furthermore, the results primarily focus on well-established VBCs platforms, especially those hosted on social media networks. However, newer platforms and decentralized community models may exhibit different behaviors. Their exclusion may limit the applicability of our findings to niche or emerging VBCs formats, potentially overlooking innovative approaches to community building and engagement.

Finally, the division of research into specific periods, 2006–2012, 2013–2019, and 2020–2024, might oversimplify the evolution of VBCs. Some emerging trends could have developed across these periods but were segmented due to the methodological approach, potentially leading to an incomplete understanding of how certain concepts evolved and integrated with broader trends over time.

## CRedit authorship contribution statement

**Christiam Méndez-Lazarte:** Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Alfredo Galdo-Jiménez:** Writing – original draft, Methodology, Data curation, Conceptualization. **Ammer Ghoulah-Grundl:** Writing – review & editing, Writing – original draft, Visualization, Validation, Resources, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Ximena Yance-Morales:** Writing – original draft, Resources, Investigation, Data curation. **Victor Bohorquez-Lopez:** Writing – review & editing, Writing – original draft, Validation, Supervision, Conceptualization.

## Declaration of competing interest

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## Data availability

Data will be made available on request.

## References

- Ahmed, R. R., Zaidi, E. Z., Alam, S. H., Streimikiene, D., & Parmar, V. (2023). Effect of social media marketing of luxury brands on brand equity, customer equity and customer purchase intention. *Amfiteatru Economic*, 25(62), 265. <https://doi.org/10.24818/ea/2023/62/265>
- Akdevelioglu, D., Hansen, S., & Venkatesh, A. (2021). Wearable technologies, brand community and the growth of a transhumanist vision. *Journal of Marketing Management*, 38(5–6), 569–604. <https://doi.org/10.1080/0267257x.2021.2001559>
- Ali, F., Suveatwatanakul, C., Nanu, L., Ali, M., & Terrah, A. (2025). Social media marketing and brand loyalty: Exploring interrelationships through symmetrical and asymmetrical modeling. *Spanish Journal of Marketing - ESIC*. <https://doi.org/10.1108/sjme-08-2023-0219>
- Allahbakhshian Farsani, L., Riahinia, N., Danesh, F., & Azimi, A. (2024). Co-occurrence analysis of COVID-19 publications with an emphasis on the global health governance (GHG). *Advanced Biomedical Research*, 13. <https://doi.org/10.4103/abr.344.23>
- de Almeida, S. O., Scaraboto, D., dos Santos Fleck, J. P., & Dalmoro, M. (2018). Seriously engaged consumers: Navigating between work and play in online brand communities. *Journal of Interactive Marketing*, 44(1), 29–42. <https://doi.org/10.1016/j.intmar.2018.05.006>

- Anaya-Sánchez, R., Aguilar-Illescas, R., Molinillo, S., & Martínez-López, F. J. (2020). Trust and loyalty in online brand communities. *Spanish Journal of Marketing - ESIC*, 24(2), 177–191. <https://doi.org/10.1108/SJME-01-2020-0004>
- Aoki, K., Tudor, R. K., Borders, A. L., & Lester, D. H. (2020). Why build sustainable relationships with customers? - the effects of “ambassador program.”. *Journal of Global Scholars of Marketing Science*, 30(3), 291–303. <https://doi.org/10.1080/21639159.2020.1766368>
- Ardley, B., McIntosh, E., & McManus, J. (2020). From transactions to interactions: The value of co-creation processes within online brand consumer communities. *Business Process Management Journal*, 26(4), 825–838. <https://doi.org/10.1108/bpmj-10-2019-0444>
- Arya, V., Verma, H., Sethi, D., & Agarwal, R. (2019). Brand authenticity and brand attachment: How online communities built on social networking vehicles moderate the consumers’ brand attachment. *IIM Kozhikode Society & Management Review*, 8(2), 87–103. <https://doi.org/10.1177/2277975219825508>
- Baas, J., Schotten, M., Plume, A., Côté, G., & Karimi, R. (2020). Scopus as a curated, high-quality bibliometric data source for academic research in quantitative science studies. *Quantitative Science Studies*, 1(1), 377–386. [https://doi.org/10.1162/qss\\_a.00019](https://doi.org/10.1162/qss_a.00019)
- Baranidharan, S., Sharon Sophia, J., & Mohan, C. (2023). Does gamification affect customer brand engagement and brand value co-creation?. In *Advances in marketing, customer relationship management, and E-services* (pp. 258–276). IGI Global. <https://doi.org/10.4018/979-8-3693-0019-0.ch013>
- Bilal, M., Akram, U., Zhang, Y., Cai, S., & Wang, Z. (2022). Love is blind! Exploring the impact of brand love on eWOM in Chinese hospitality industry. *Frontiers in Psychology*, 13. <https://doi.org/10.3389/fpsyg.2022.916206>
- Bilro, R. G., & Loureiro, S. M. C. (2023). I am feeling so good! Motivations for interacting in online brand communities. *Journal of Research in Interactive Marketing*, 17(1), 61–77. <https://doi.org/10.1108/JRIM-07-2021-0182>
- Chan, T. K. H., Zheng, X., Cheung, C. M., Lee, M. K. O., & Lee, Z. W. Y. (2014). Antecedents and consequences of customer engagement in online brand communities. *Journal of Marketing Analytics*, 2(2), 81–97. <https://doi.org/10.1057/jma.2014.9>
- Chavadi, C. A., Sirothiya, M., Menon, S. R., & M R, V.. (2023). Modelling the effects of social media-based brand communities on brand trust, brand equity and consumer response. *Vikalpa*, 48(2), 114–141. <https://doi.org/10.1177/02560909231172010>
- Chen, L., Yuan, L., & Zhu, Z. (2021). Empirical study of consumer participation motivation in value cocreation within cultural and creative virtual brand communities. *Asia Pacific Journal of Marketing and Logistics*, 33(7), 1630–1647. <https://doi.org/10.1108/APJML-05-2020-0363>
- Chen, M., Tsai, K., & Ke, Y.-A. (2019). Enhancing consumers’ stickiness to online brand communities as an innovative relationship marketing strategy. *International Journal on Semantic Web and Information Systems*, 15(3), 16–34. <https://doi.org/10.4018/ijswis.2019070102>
- Chen, Y. (2021). Using machine learning to compare the information needs and interactions of Facebook: Taking six retail brands as an example. *Information*, 12(12), 526. <https://doi.org/10.3390/info12120526>
- Chen, Y. (2023). Comparing content marketing strategies of digital brands using machine learning. *Humanities and social sciences. Communications*, 10(1). <https://doi.org/10.1057/s41599-023-01544-x>
- Cui, Z., & Li, G. (2024). Consumer literacy in virtual brand communities: Dimension exploration and scale development. *Sustainability*, 16(4), 1395. <https://doi.org/10.3390/su16041395>
- Dinsmore, J. B., Swani, K., Troise, C., Wamwara, W., & Li, B. (2022). Antecedents and consequences of sending and receiving information in mobile gaming apps. *Digital Business*, 2(2), Article 100031. <https://doi.org/10.1016/j.digbus.2022.100031>
- Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W. M. (2021). How to conduct a bibliometric analysis: An overview and guidelines. *Journal of Business Research*, 133, 285–296. <https://doi.org/10.1016/j.jbusres.2021.04.070>
- El Naggar, R. A. A., & Hammad, R. (2023). Determinants of online social entrepreneurs brand loyalty: A value creation model. *International Review on Public and Nonprofit Marketing*, 21(1), 155–176. <https://doi.org/10.1007/s12208-023-00365-7>
- Elia, G., Messeni Petruzzelli, A., & Urbinati, A. (2020). Implementing open innovation through virtual brand communities: A case study analysis in the semiconductor industry. *Technological Forecasting and Social Change*, 155, 119994. <https://doi.org/10.1016/j.techfore.2020.119994>
- Emich, K. J., Kumar, S., Lu, L., Norder, K., & Pandey, N. (2020). Mapping 50 years of small group research through small group research. *Small Group Research*, 51(6), 659–699. <https://doi.org/10.1177/1046496420934541>
- Ge, M., Khan, J., & Li, Y. (2022). Understanding the effect of organizational innovation environment and customer participation in virtual communities on customer creativity: A study of mediating and moderating influences. *Frontiers in Psychology*, 13. <https://doi.org/10.3389/fpsyg.2022.913525>
- Hagger, M. S., Hankonen, N., Chatzisarantis, N. L. D., & Ryan, R. M. (2020). Changing behavior using self-determination theory. In *The handbook of behavior change* (pp. 104–119). Cambridge University Press. <https://doi.org/10.1017/9781108677318.008>
- He, J., & Zhang, F. (2022). Dynamic brand positioning: A firm-customer synergistic strategy of brand meaning cocreation in a hyperconnected world. *European Journal of Marketing*, 56(10), 2774–2803. <https://doi.org/10.1108/ejm-10-2021-0813>
- van Heerden, D., & Wiese, M. (2021). Why do consumers engage in online brand communities – And why should brands care? *Journal of Consumer Marketing*, 38(4), 353–363. <https://doi.org/10.1108/jcm-04-2020-3739>
- Holt, D. B. (2002). Why do brands cause trouble? A dialectical theory of consumer culture and branding. *Journal of Consumer Research*, 29(1), 70–90. <https://doi.org/10.1086/339922>
- Hongsuchon, T., Rahardja, U., Khan, A., Wu, T.-H., Hung, C.-W., Chang, R.-H., ... Chen, S.-C. (2023). Brand experience on brand attachment: The role of interpersonal interaction, feedback, and advocacy. *Emerging Science Journal*, 7(4), 1232–1246. <https://doi.org/10.28991/esj-2023-07-04-014>
- Hsu, C.-L. (2023). Enhancing brand love, customer engagement, brand experience, and repurchase intention: Focusing on the role of gamification in mobile apps. *Decision Support Systems*, 174. <https://doi.org/10.1016/j.dss.2023.114020>, 114020.
- Jami, A., Kouchaki, M., & Gino, F. (2020). I own, so I help out: How psychological ownership increases prosocial behavior. *Journal of Consumer Research*, 47(5), 698–715. <https://doi.org/10.1093/jcr/ucaa040>
- Jiang, X., Mastromartino, B., Yang, Q., Zhang, J., & Zhang, J. J. (2022). Influence of consumer interaction and community relationships on value co-creation willingness: A mediation model of Chinese sports brands. *Sustainability*, 15(1), 115. <https://doi.org/10.3390/su15010115>
- Jiang, Y., Liao, J., Chen, J., Hu, Y., & Du, P. (2021). Motivation for users’ knowledge-sharing behavior in virtual brand communities: A psychological ownership perspective. *Asia Pacific Journal of Marketing and Logistics*, 34(10), 2165–2183. <https://doi.org/10.1108/apjml-06-2021-0436>
- Kanimozhi, G., & Sengottuvel, C. (2024). Customer value and sustainable choice behaviour in social commerce. *Economics*. <https://doi.org/10.2478/eoik-2024-0021>
- Kaur, H., Paruthi, M., Islam, J., & Hollebeek, L. D. (2020). The role of brand community identification and reward on consumer brand engagement and brand loyalty in virtual brand communities. *Telematics and Informatics*, 46. <https://doi.org/10.1016/j.tele.2019.101321>, 101321.
- Kumar, J. (2019). How psychological ownership stimulates participation in online brand communities? The moderating role of member type. *Journal of Business Research*, 105, 243–257. <https://doi.org/10.1016/j.jbusres.2019.08.019>
- Kumar, J., & Nayak, J. K. (2019). Understanding the participation of passive members in online brand communities through the lens of psychological ownership theory. *Electronic Commerce Research and Applications*, 36. <https://doi.org/10.1016/j.elerap.2019.100859>, 100859.
- Kuo, Y.-F., & Feng, L.-H. (2013). Relationships among community interaction characteristics, perceived benefits, community commitment, and oppositional brand loyalty in online brand communities. *International Journal of Information Management*, 33(6), 948–962. Elsevier BV <https://doi.org/10.1016/j.ijinfomgt.2013.08.005>.
- Laroche, M., Habibi, M. R., Richard, M.-O., & Sankaranarayanan, R. (2012). The effects of social media-based brand communities on brand community markers, value creation practices, brand trust, and brand loyalty. *Computers in Human Behavior*, 28(5), 1755–1767. <https://doi.org/10.1016/j.chb.2012.04.016>
- Le, Q. H., Phan Tan, L., & Hoang, T. H. (2023). Brand posts and brand co-creation in higher education communities: A social communication process theory. *Journal of Marketing for Higher Education*. <https://doi.org/10.1080/08841241.2023.2239756>. Advance online publication.
- Li, M., Lu, M., Akram, U., & Cheng, S. (2024). Understanding how customer social capital accumulation in brand communities: A gamification affordance perspective. *Journal of Retailing and Consumer Services*, 78. <https://doi.org/10.1016/j.jretconser.2024.103761>, 103761.
- Li, S., Modi, P., Wu, M.-S., Chen, C.-H., & Nguyen, B. (2019). Conceptualising and validating the social capital construct in consumer-initiated online brand communities (COBCs). *Technological Forecasting and Social Change*, 139, 303–310. <https://doi.org/10.1016/j.techfore.2018.11.018>
- Li, X., Johnston, K. A., & Feng, J. (2024). Virtual community engagement: Engaging virtual communities for nation branding through sports. *Public Relations Review*, 50(3). <https://doi.org/10.1016/j.pubrev.2024.102440>, 102440.
- Liao, J., Dong, X., & Guo, Y. (2020). Examining knowledge contribution in firm-versus consumer-hosted virtual brand community. *Electronic Commerce Research and Applications*, 41, Article 100963.
- Lim, W. M., & Kumar, S. (2023). Guidelines for interpreting the results of bibliometric analysis: A sensemaking approach. *Global Business and Organizational Excellence*, 43(2), 17–26. <https://doi.org/10.1002/joe.22229>
- Lin, H. F., Lin, P. C., & Yeo, B. (2024). Consumer-generated visual advertisements in social media brand communities. *International Journal of Communication*, 18, 982–1005.
- Liu, D., Gong, C., Zhang, S., & Ma, Y. (2022). The influence of firm’s feedbacks on user-generated content’s linguistic style matching-an explanation based on communication accommodation theory. *Frontiers in Psychology*, 13. <https://doi.org/10.3389/fpsyg.2022.949968>, 949968.
- Marchowska-Raza, M., & Rowley, J. (2024). Consumer and brand value formation, value creation and co-creation in social media brand communities. *The Journal of Product and Brand Management*, 33(4), 477–492. <https://doi.org/10.1108/JPBM-01-2023-4299>
- Matute, J., Palau-Saumell, R., & Occhiocupo, N. (2019). Understanding customer brand engagement in user-initiated online brand communities: Antecedents and consequences. *The Journal of Product and Brand Management*, 30(3), 360–376. <https://doi.org/10.1108/jpbm-04-2019-2329>
- McCracken, G. (1986). Culture and consumption: A theoretical account of the structure and movement of the cultural meaning of consumer goods. *Journal of Consumer Research*, 13(1), 71–84. <https://doi.org/10.1086/209048>
- Mongeon, P., & Paul-Hus, A. (2016). The journal coverage of web of science and Scopus: A comparative analysis. *Scientometrics*, 106(1), 213–228. <https://doi.org/10.1007/s11192-015-1765-5>
- Moral-Muñoz, J. A., Herrera-Viedma, E., Santisteban-Espejo, A., & Cobo, M. J. (2020). Software tools for conducting bibliometric analysis in science: An up-to-date review. *El Profesional de la Información*, 29(1). <https://doi.org/10.3145/epi.2020.ene.03.e290103>.

- Morgan, R. M., & Hunt, S. D. (1994). The commitment-trust theory of relationship marketing. *Journal of Marketing*, 58(7), 20–38. <https://doi.org/10.2307/1252308>
- Nadeem, W., Khani, A. H., Schultz, C. D., Adam, N. A., Attar, R. W., & Hajli, N. (2020). How social presence drives commitment and loyalty with online brand communities? The role of social commerce trust. *Journal of Retailing and Consumer Services*, 55. <https://doi.org/10.1016/j.jretconser.2020.102136>, 102136.
- Nibras, S., Gunawan, T. A., Tan, G. W.-H., Lo, P.-S., Aw, E. C.-X., & Ooi, K.-B. (2024). Engage to co-create! The drivers of brand co-creation on social commerce. *Marketing Intelligence & Planning*. <https://doi.org/10.1108/mip-05-2023-0204>. Advance online publication.
- Nikhashemi, S. R., Kennedy, R., & Mavondo, F. (2025). Leveraging virtual brand community engagement and consumer brand identification as a bounce-back brand recovery strategy: Role of brand endorsers. *Journal of Marketing Communications*. <https://doi.org/10.1080/13527266.2023.2191630>. Advance online publication.
- Nyrhinen, J., Uusitalo, O., Frank, L., & Wilska, T.-A. (2022). How is social capital formed across the digital-physical servicescape. *Digital Business*, 2(2). <https://doi.org/10.1016/j.digbus.2022.100047>, 100047, Elsevier BV.
- Oliveira, M., Abelha, A., Sousa, R., & Peixoto, H. (2024). Gamification in mobile applications: Techniques, benefits and challenges. *Procedia Computer Science*, 251, 678–683. <https://doi.org/10.1016/j.procs.2024.11.168>
- Oliveira, O., Francisco da Silva, F., Juliani, F., César Ferreira Motta Barbosa, L., & Vieira Nunes, T. (2019). Bibliometric method for mapping the state-of-the-art and identifying research gaps and trends in literature: An essential instrument to support the development of scientific projects. *Scientometrics Recent Advances*. <https://doi.org/10.5772/intechopen.85856>
- Paruthi, M., Kaur, H., Islam, J. U., Rasool, A., & Thomas, G. (2022). Engaging consumers via online brand communities to achieve brand love and positive recommendations. *Spanish Journal of Marketing - ESIC*, 27(2), 138–157. <https://doi.org/10.1108/sjme-07-2022-0160>
- Passas, I. (2024). Bibliometric analysis: The main steps. *Encyclopedia*, 4(2), 65. <https://doi.org/10.3390/encyclopedia4020065>
- Pavlovic-Höck, N. D. (2022). Herd behaviour along the consumer buying decision process - experimental study in the mobile communications industry. *Digital Business*, 2(1). <https://doi.org/10.1016/j.digbus.2021.100018>, 100018, Elsevier BV.
- Pierce, J. L., Kostova, T., & Dirks, K. T. (2001). Toward a theory of psychological ownership in organizations. *Academy of Management Review*, 26(2), 298–310.
- Pranckuté, R. (2021). Web of science (WoS) and Scopus: The titans of bibliographic information in today's academic world. *Publications*, 9(1), 12. <https://doi.org/10.3390/publications9010012>
- Qiao, L., Song, M., & Wang, N. (2019). Virtual brand community experience, identification, and electronic word-of-mouth. *Journal of Computer Information Systems*, 61(4), 357–370. <https://doi.org/10.1080/08874417.2019.1661805>
- Qu, L., Liu, C., & Yin, J. (2023). Effects of person-environment fit on users' willingness to contribute knowledge in virtual brand communities. *Sustainability*, 15(18). <https://doi.org/10.3390/su151813476>, 13476.
- Qu, Y., Cieslik, A., Fang, S., & Qing, Y. (2023). The role of online interaction in user stickiness of social commerce: The shopping value perspective. *Digital Business*, 2(2). <https://doi.org/10.1016/j.digbus.2023.100061>, 100061, Elsevier BV.
- Rotchanakitumnuai, S., & Speece, M. (2022). How relationship quality drives knowledge sharing on Facebook brand pages. *Journal of International Consumer Marketing*, 35(3), 276–295. <https://doi.org/10.1080/08961530.2022.2092925>
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55, 68–78.
- Ryan, R. M., & Deci, E. L. (2019). Brick by brick: The origins, development, and future of self-determination theory. *Advances in Motivation Science*, 6, 111–156. <https://doi.org/10.1016/bs.adms.2019.01.001>
- Ryan, R. M., Deci, E. L., Vansteenkiste, M., & Soenens, B. (2021). Building a science of motivated persons: Self-determination theory's empirical approach to human experience and the regulation of behavior. *Motivation Science*, 7(2), 97–110. <https://doi.org/10.1037/mot0000194>
- Sanz-Blas, S., Bigné, E., & Buzova, D. (2019). Facebook brand community bonding: The direct and moderating effect of value creation behaviour. *Electronic Commerce Research and Applications*, 35, Article 100850. <https://doi.org/10.1016/j.elerap.2019.100850>
- Sarkar, S., & Banerjee, S. (2020). Brand co-creation through participation of organization, consumers, and suppliers: An empirical validation. *The Journal of Product and Brand Management*, 30(8), 1094–1114. <https://doi.org/10.1108/jpbm-01-2020-2732>
- Scarpi, D. (2010). Does size matter? An examination of small and large web-based brand communities. *Journal of Interactive Marketing*, 24(1), 14–21. <https://doi.org/10.1016/j.intmar.2009.10.002>
- Shah, S. A., Shoukat, M. H., Ahmad, M. S., & Khan, B. (2021). Role of social media technologies and customer relationship management capabilities 2.0 in creating customer loyalty and university reputation. *Journal of Marketing for Higher Education*, 34(1), 344–367. <https://doi.org/10.1080/08841241.2021.1991072>
- Shihab, M. S., Ikhsan, R. B., & Fakhrorazi, A. (2025). The power of social media: Exploring online member groups and psychological factors to support responsible consumption. *Digital Business*, 5(1). <https://doi.org/10.1016/j.digbus.2024.100101>, 100101, Elsevier BV.
- Shukla, M., Misra, R., & Gupta, R. (2023). Why do consumers engage in a social media brand community: Investigating the effect of psychological empowerment on commitment and loyalty. *Journal of Consumer Marketing*, 40(6), 734–747. <https://doi.org/10.1108/JCM-05-2022-5370>
- Siuda, D. (2019). Participation in virtual brand communities as an element of online consumer behaviour. In , 22. *Proceedings of the 9th international conference on information communication and management* (pp. 186–189). <https://doi.org/10.1145/3357419.3357454>
- Sokolova, K., & Kefi, H. (2020). Instagram and YouTube bloggers promote it, why should I buy? How credibility and parasocial interaction influence purchase intentions. *Journal of Retailing and Consumer Services*, 53, Article 101742. <https://doi.org/10.1016/j.jretconser.2019.01.011>
- Song, M., Duan, Y., Huang, T., & Zhan, L. (2020). Inter-edge and cloud conversion accelerated user-generated content for virtual brand community. *EURASIP Journal on Wireless Communications and Networking*, 2020, 14. <https://doi.org/10.1186/s13638-019-1635-6>
- Soylemez, K. C. (2021). Impact of individual and brand level factors in generation of different user-generated content. *Journal of Consumer Marketing*, 38(4), 457–466. <https://doi.org/10.1108/jcm-12-2019-3521>
- Sun, C. (2020). Evaluation of the consumer interaction capability of the virtual brand community of Chinese mobile internet enterprises based on the hybrid MCDM method. *Journal of Information & Knowledge Management*, 19(4). <https://doi.org/10.1142/s0219649220500343>, 2050034.
- Tajfel, H. (1978). Interindividual behavior and intergroup behavior. In H. Tajfel (Ed.), *Differentiation between groups: Studies in the social psychology of intergroup relations* (pp. 27–60). London: Academic Press.
- Terán-Yépez, E., Marín-Carrillo, G. M., del P Casado-Belmonte, M., & de las Capobianco-Uriarte, M. (2020). Sustainable entrepreneurship: Review of its evolution and new trends. *Journal of Cleaner Production*, 252, Article 119742. <https://doi.org/10.1016/j.jclepro.2019.119742>
- Thaib, D., Ghoozi, S., Sanjaya Kusno, H., Kusumawati, A., & Yulianto, E. (2023). Distribution of brand community in university: A systematic review of literature on higher education market-oriented strategy. *Journal of Distribution Science*, 21(3), 25–36. <https://doi.org/10.15722/JDS.21.03.202303.25>
- Tran, T. B. H., Nguyen, Q. A., Le, T. T., Nguyen, Q. H., Nguyen, K. S., & Dinh, H. H. (2022). Towards an insight into customer behavior in virtual brand communities. *International Journal of E-Business Research*, 18(1), 1–26. <https://doi.org/10.4018/ijebr.293296>
- Tseng, T., Huang, H. H., & Setiawan, A. (2017). How do motivations for commitment in online brand communities evolve? The distinction between knowledge- and entertainment-seeking motivations. *Computers in Human Behavior*, 77, 326–335. <https://doi.org/10.1016/j.chb.2017.09.016>
- Ul Islam, J., & Rahman, Z. (2017). The impact of online brand community characteristics on customer engagement: An application of stimulus-organism-response paradigm. *Telematics and Informatics*, 34(4), 96–109. <https://doi.org/10.1016/j.tele.2017.01.004>
- Van Doorn, J., Lemon, K. N., Mittal, V., Naß, S., Pick, D., Pirner, P., & Verhoef, P. (2010). Customer engagement behavior: Theoretical foundations and research directions. *Journal of Service Research*, 13(3), 253–266. <https://doi.org/10.1177/1094670510375599>
- Van Eck, N. J., & Waltman, L. (2023). *VOSviewer (Version 1.6.18)*. Centre for Science and Technology Studies, Leiden University. <https://www.vosviewer.com>.
- Velástegui, C. A. G., Paredes, R. E. I., Zambrano, S. X. P., & Herrera, J. B. H. (2024). A bibliometric analysis of literature trends in content marketing and content managers. *Sapienza: International Journal of Interdisciplinary Studies*, 5(2). <https://doi.org/10.51798/sijis.v5i2.734>
- Veloutsou, C., & Ruiz Mafe, C. (2020). Brands as relationship builders in the virtual world: A bibliometric analysis. *Electronic Commerce Research and Applications*, 39. <https://doi.org/10.1016/j.elerap.2019.100901>, 100901.
- Villegas, D. A., & Marin, A. M. (2021). Bilingual brand communities? Strategies for targeting Hispanics on social media. *The Journal of Product and Brand Management*, 31(4), 586–605. <https://doi.org/10.1108/jpbm-10-2019-2625>
- Vivek, S. D., Beatty, S. E., & Morgan, R. M. (2012). Consumer engagement: Exploring customer relationships beyond purchase. *Marketing Theory and Practice*, 20(2), 122–146. <https://doi.org/10.2307/23243811>
- Wang, K.-Y., Chih, W.-H., Honora, A., & Wu, Y.-P. (2024). Investigating antecedents of brand value co-creation behaviors in social media based brand communities. *Electronic Commerce Research and Applications*, 64, Article 101359. <https://doi.org/10.1016/j.elerap.2024.101359>
- Wang, N., Lv, T., Wang, L., Guo, A., & Ma, Z. (2023). The social side of innovation: Peer influence in online brand communities. *Management Decision*, 61(10), 2994–3016. <https://doi.org/10.1108/MD-09-2022-1185>
- Wang, Y., Shi, J., Ma, S., Shi, G., & Yan, L. (2012). Customer interactions in virtual brand communities: Evidence from China. *Journal of Global Information Technology Management*, 15(2), 46–69. <https://doi.org/10.1080/1097198x.2012.11082755>
- Wang, Y. J., Butt, O. J., & Wei, J. (2011). My identity is my membership: A longitudinal explanation of online brand community members' behavioral characteristics. *Journal of Brand Management*, 19(1), 45–56. <https://doi.org/10.1057/bm.2011.28>
- Wang, Z.-X., Chee, W. M., Jantan, A. H. B., Xia, Y.-H., Xue, H., Ye, M.-J., ... Wang, L. (2024). Impact of perceived value in virtual brand communities on purchase intention of domestic electric vehicles. *Acta Psychologica*, 248. <https://doi.org/10.1016/j.actpsy.2024.104371>, 104371.
- Wu, S.-C., & Fang, W. (2010). The effect of consumer-to-consumer interactions on idea generation in virtual brand community relationships. *Technovation*, 30(11–12), 570–581. <https://doi.org/10.1016/j.technovation.2010.07.005>
- Xu, N., & Hamari, J. (2020). Does gamification affect brand engagement and equity? A study in online brand communities. *Journal of Business Research*, 109, 449–460. <https://doi.org/10.1016/j.jbusres.2019.11.058>
- You, Y., & He, Y. (2023). How brands drive electronic word-of-mouth in an interactive marketing environment: An overview and future research directions. In *The Palgrave handbook of interactive marketing* (pp. 149–179). Palgrave Macmillan. <https://doi.org/10.1007/978-3-031-14961-0-7>.

- Yuan, D., Lin, Z., Filieri, R., Liu, R., & Zheng, M. (2020). Managing the product-harm crisis in the digital era: The role of consumer online brand community engagement. *Journal of Business Research*, 115, 38–47. <https://doi.org/10.1016/j.jbusres.2020.04.044>
- Zhang, J., Qi, S., & Lyu, B. (2021). A receiver perspective on knowledge sharing impact on consumer–brand relationship in virtual communities. *Frontiers in Psychology*, 12. <https://doi.org/10.3389/fpsyg.2021.685959>, 685959.
- Zhang, S., & Zhang, L. (2023). The influence of brand social interaction on purchase intention: A perspective of social capital. *SAGE Open*, 13(2). <https://doi.org/10.1177/21582440231169933>
- Zhang, Z. (2019). Sustained participation in virtual communities from a self-determination perspective. *Sustainability*, 11(23), 6547. <https://doi.org/10.3390/su11236547>
- Zhao, Y., Chen, Y., Zhou, R., & Ci, Y. (2019). Factors influencing customers' willingness to participate in virtual brand community's value co-creation. *Online Information Review*, 43(3), 440–461. <https://doi.org/10.1108/oir-08-2017-0232>
- Zhou, S. (2024). Gamifying language education: The impact of digital game-based learning on Chinese EFL learners. *Humanities and Social Sciences Communications*, 11(1). <https://doi.org/10.1057/s41599-024-04073-3>
- Zhou, X., Zhou, M., Huang, D., & Cui, L. (2022). A probabilistic model for co-occurrence analysis in bibliometrics. *Journal of Biomedical Informatics*, 128. <https://doi.org/10.1016/j.jbi.2022.104047>, 104047.
- Zhou, Z., Zhang, Q., Su, C., & Zhou, N. (2012). How do brand communities generate brand relationships? Intermediate mechanisms. *Journal of Business Research*, 65(7), 890–895. <https://doi.org/10.1016/j.jbusres.2011.06.034>