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Parasocial Relationships with Social Media Influencers: A Bibliometric Review using R

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Abstract: This study aims to assess the scholarly development of parasocial relationships with social media influencers through a bibliometric citation and network analysis of literature published from 2018 to April 2024. The research data was extracted from the Web of Science (WoS) database following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines and was visualized using the bibliometrix package in R programming language. The analysis indicated a consistent growth in the number of publications on parasocial relationships with social media influencers, starting from the first paper in 2018, with the number increasing steadily to 35 by 2023. Additionally, the *Journal of Retailing and Consumer Services* emerged as the journal receiving the highest number of citations. Notably, Sophie C. Boerman and S. Venus Jin were identified as the most cited authors, with the University of Amsterdam being the most cited institution. Further analysis involving co-authorship and co-occurrence provided significant insights. This study offers detailed information on the most cited journals, influential papers, leading authors, prominent institutions, and the geographic distribution of research. It also serves as a practical guide for journal editorial boards to understand author growth and networking possibilities within the study of parasocial relationships with social media influencers.

Keywords: *bibliometric analysis, social media influencers, parasocial relationships, influencer marketing, systematic literature review*

Introduction

In recent years, the surge in social media usage has propelled social media influencers (SMIs) to the forefront of digital marketing strategies, leading to a meteoric rise in interest from both businesses and academic researchers. As these influencers have become important in shaping consumer preferences and purchasing decisions, the study of their impact has intensified. Statistics reveal that the influencer marketing industry is set to grow to approximately \$25 billion by the end of 2024 (“Global influencer market size 2024,” 2024), with over 67% of

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marketers planning to increase their influencer marketing budgets in the coming years (Geysler, 2022). This rapidly growing field has attracted the interest of researchers who are keen to explore how influencers effectively engage with and influence consumer behavior. They are investigating the specific ways through which influencers manage to attain significant influence over their followers.

Paralleling the concept of celebrity endorsements, the phenomenon of parasocial relationships (PSR) offers a compelling framework to understand the efficacy of SMIs in marketing. PSR describe the one-sided bonds that audiences develop with media personalities, a dynamic that is now extensively observed in the interactions between social media users and influencers (Breves et al., 2021). These relationships mimic real-life interactions and engender a sense of intimacy and trust, which marketers leverage to enhance brand loyalty and consumer engagement (Rubin and McHugh, 1987). Recent studies indicate that followers of SMIs often exhibit a higher degree of trust and a stronger emotional bond with these influencers compared to traditional celebrities, highlighting the unique influence SMIs hold (Bi and Zhang, 2022; Breves et al., 2021; Lacap et al., 2023). Given the expanding scope of research on PSR with SMIs, a systematic review of the literature is both timely and essential. Furthermore, the growing scholarly works on this subject make it increasingly difficult to comprehend the key areas of interest, top-ranked institutions and authors, and the potential links between the fields and the research gaps.

Several authors have conducted bibliometric studies in the field of influencer marketing. Boateng (2022) conducted a bibliometric analysis of 538 authors and 243 journal articles on influencer marketing. Khurana et al. (2024) also performed a similar bibliometric analysis on influencer marketing and called for more researchers to explore different related aspects to gain a better understanding of what makes SMIs so potent. Tanwar et al. (2022) looked into the research trends in the field of influencer marketing. Besides that, Ye et al. (2021) specifically focused on the value that influencer marketing offers to the businesses. Likewise, Abhishek & Srivastava (2021) conducted a bibliometric study focusing on mapping the influence of SMIs. Similarly, systematic literature reviews on PSR have been conducted in related areas. For instance, Liebers & Schramm (2019) carried out a comprehensive study on PSR with media characters, reviewing 60 years of research in the field. Tukachinsky et al. (2020) explored the antecedents of PSR through a meta-analysis. However, despite these efforts, there is a noticeable gap in the literature: no systematic literature reviews have specifically focused on PSR with SMIs. This gap highlights the pressing need for a bibliometric analysis in this area to better understand the unique dynamics of PSR in the context of social media, where influencers are increasingly influential in shaping public opinion and consumer behavior.

This paper seeks to carry out a bibliometric and co-citation study focused on several key aspects of PSR with SMIs. Specifically, it addresses the following research questions:

- Who are the leading authors contributing significantly to PSR with SMIs research?
- How has the volume of scientific publications on PSR with SMIs evolved annually?
- Which countries are actively conducting research on PSR with SMIs?
- In which journals are most studies related to PSR with SMIs published?
- Who are the top-cited researchers in the field?

Building on the goals outlined, the results of this bibliometric citation and network analysis are expected to stimulate more research publications in the area of PSR with SMIs. This study is crucial because it provides researchers, both established and new to the field, with important insights into citation trends for journals, papers, and authors. Additionally, our global network analysis of journals, papers, authors, institutions, and countries will help shape strategies for future research partnerships. This research also aims to inspire young scholars to explore new

research ideas within the topic of parasocial interactions and influencer marketing. Furthermore, this paper will be an invaluable resource not only for academic researchers but also for marketing firms interested in leveraging the power of influencers. Therefore, this study could help journal editorial boards track the growth and potential of authors who are contributing to this dynamic field.

Literature Review

Bibliometric Analysis

In recent years, bibliometric analysis has become increasingly popular across various research domains. This analytical approach is valued for its ability to reveal trends in topics, citations, authorship, geographic contributions, and collaborative efforts in the field (Donthu et al., 2021). By employing statistical methods, bibliometric analysis assesses both qualitative and quantitative shifts within a specific scientific area, offering insights into publication patterns and emerging trends. Such analysis provides crucial data for researchers and academics interested in understanding patterns of scientific activity across different study topics (Duque Oliva et al., 2006).

Bibliometric analysis is useful for thoroughly reviewing large amounts of unstructured data and for helping us understand the detailed scientific knowledge and growth of well-developed research topics. When done well, a bibliometric study can lay a strong foundation for further development in the field. It gives academics the tools to get a complete picture, spot areas that need more research, come up with new research ideas, and plan their contributions to the field. Nowadays, bibliometrics is a key method for analysing the work of researchers, finding collaboration between institutions and countries, measuring the impact of scientific work, and assessing the quality of academic research.

Bibliometric analysis can be conducted using various methods and tools, including specialized software like VOSviewer and CiteSpace, as well as more general programming languages like Python and R (Moral-Muñoz et al., 2020). Each method has its strengths, with software like VOSviewer offering user-friendly interfaces for network visualization (Kirby, 2023), and Python providing extensive libraries for data manipulation and machine learning (Zhang et al., 2021).

The use of R for bibliometric analysis, however, offers distinct advantages that make it a preferred choice for many researchers (Büyükkıdık, 2022; Ejaz et al., 2022; Guleria and Kaur, 2021). R is particularly valued for its comprehensive package ecosystem like bibliometrix, which is specifically designed for conducting bibliometric analysis. This package not only simplifies data collection and processing from databases like Scopus and Web of Science but also provides comprehensive tools for data visualization and statistical analysis. Furthermore, R's integration with tools for reproducible research, such as R Markdown, allows researchers to easily share their methodologies and results, enhancing transparency and collaboration in the field. This combination of specialized bibliometric capabilities, strong statistical foundations, and support for reproducible research makes R an excellent choice for conducting detailed and reliable bibliometric studies.

Social Media Influencers

The usage of social media has surged dramatically in recent years, increasing the impact of SMIs (Pagan et al., 2021). Many companies now collaborate with these influencers as a strategy to access new customer bases and advertise their products or services (Kim and Kim, 2021). SMIs are individuals who have amassed substantial followings on platforms like Facebook, Twitter, Instagram, YouTube, or Snapchat (Shan et al., 2020). They often post compelling content, including photos, videos, or blogs, that typically concentrates on specific niches or broader subjects like fashion, beauty, travel, or food (Belanche et al., 2021).

SIMs frequently collaborate with brands to endorse their products or services (Brooks et al., 2021). Sometimes, an influencer might simply share a photo or video showcasing the product in use; other times, they might be compensated to write a review or host a giveaway for their followers (Watkins, 2021). Brands are keen to partner with SIMs for several reasons. Firstly, influencers command large, active followings, enabling them to reach extensive audiences (Ki et al., 2020). Additionally, they are often regarded as credible sources by their followers (Alguacil et al., 2021), primarily because they tend to promote only products they genuinely like or believe in, thereby maintaining their authenticity and trustworthiness (Chekima et al., 2020). Moreover, collaborating with SIMs can be a cost-effective marketing strategy for brands (Britt et al., 2020). In many instances, payment to influencers is contingent on tangible results, such as boosts in sales or increased web traffic (Pei and Mayzlin, 2022).

The practice of leveraging influential figures for marketing and advertising is not a recent development. Traditional marketing strategies have long utilized celebrities to impact consumer behavior, well before the emergence of social media (Azhar et al., 2024; Erdogan, 1999). The logic behind using celebrities in advertising is their broad appeal and the significant influence they can exert through various marketing channels like television or billboards (Agrawal and Kamakura, 1995). Consumers generally perceive these celebrities as more trustworthy than typical salespeople, who are directly employed to sell products (Parsons, 1963). Moreover, the way the media portrays celebrities often elevates them to expert status (Kapitan and Silvera, 2016). This perceived trustworthiness and expertise lead audiences to develop what is known as PSR with them (Choi et al., 2023). These relationships, characterized by feelings of closeness, result from repeated exposure to these media personalities (Atad and Cohen, 2023), occurring without any actual social interaction. Despite the lack of real-time communication, consumers view these traditional celebrities as intimate conversational partners, thanks to these one-sided relationships (Derrick et al., 2008) (Derrick, Gabriel & Tippin 2008). This perception underpins the enduring influence of celebrities in the consumer market.

Comparing influencer marketing with traditional celebrity endorsements reveals several parallels, yet notable differences exist in interaction levels, message focus, engagement degree, and communication methods (Azhar et al., 2025b; Wang et al., 2025). While both approaches aim to influence consumer behavior, the interaction with SIMs is typically more content-rich, enabling consumers to engage more deeply with product or brand messages (Azhar et al., 2025a). Additionally, engagement with SIMs often surpasses that of celebrity endorsements, which historically relied on one-directional broadcasting channels like TV and radio, where neither followers nor celebrities could engage in real-time interactions (Akhtar et al., 2024). In contrast, SIMs facilitate a two-way communication dynamic, allowing them to build parasocial relationships by immediately responding to, commenting on, and recognizing follower interactions (Agnihotri et al., 2023). Thus, although there are similarities between influencer marketing and traditional celebrity endorsements, the distinctive characteristics of SIMs set them apart as a unique category (Belanche et al., 2021).

Conducting a bibliometric analysis of PSR with SIMs is essential due to the rapidly evolving nature of digital communication and the significant influence these relationships have on consumer behaviour. As social media platforms proliferate and the number of SIMs continues to grow, understanding the dynamics of PSR in this context becomes crucial. Bibliometric analysis can provide a systematic exploration of the existing literature, helping to map out the intellectual territory and gaps in the current research. By analysing citation patterns, collaboration networks, and geographical coverage, researchers can gain insights into the most impactful studies and emerging trends, facilitating a better understanding of how PSR influence consumer loyalty and purchasing decisions.

While the literature provides a robust background on both bibliometric analysis and the role of social media influencers, a significant gap remains in connecting these areas with the study of PSR. Existing research has predominantly focused on traditional celebrities, leaving the unique dynamics of PSR with social media influencers underexplored. This study seeks to address this gap by employing bibliometric analysis to investigate how these relationships are formed, sustained, and their impact on consumer behavior, particularly within the rapidly evolving digital landscape. By focusing on citation patterns, collaboration networks, and geographical contributions, this research aims to uncover under-researched aspects of PSR that have not been adequately explored, such as their long-term effects on brand loyalty and consumer decision-making.

Moreover, the integration of bibliometric analysis within the study of PSR with social media influencers is not merely a methodological choice but a necessary approach to understanding how research in this field has evolved. Although previous studies have touched on the influence of traditional celebrities, there is a lack of comprehensive bibliometric analysis that captures the distinct characteristics of PSR in the context of social media. This study aims to fill this gap by identifying emerging trends, key contributors, and geographical focuses in the existing literature.

Materials and Methods

The initial search was conducted exclusively using the Web of Science (WoS) database, which identified a total of 140 articles. Web of Science was chosen because it focuses on high-impact journals and provides detailed citation tracking, which is essential for this study. While other databases like Scopus and Google Scholar offer broader coverage, Web of Science's emphasis on high-quality publications made it the most suitable choice for analyzing the most influential research within the specific disciplines of business, communication, management, and psychology. Therefore, the exclusion of other databases was a deliberate decision to maintain the study's focus on highly cited and peer-reviewed research in these fields.

The exclusion criteria were systematically applied to ensure the relevance and quality of the included articles. The document type criteria led to the removal of 2 articles, as only peer-reviewed articles and review articles were deemed relevant. Articles from journals outside the study's focused disciplines were also excluded, reducing the pool to 118 articles. Further, one article was excluded due to language constraints, as it was written in Portuguese, leaving 117 articles. Of these, 90 were indexed in the SSCI, and these formed the basis for the bibliometric analysis.

Regarding the choice of bibliometric tools, R was selected for this study because of its specialized packages like bibliometrix, which offer comprehensive capabilities for conducting detailed bibliometric analysis. While software like VOSviewer and CiteSpace are widely used, R's bibliometrix package provides a unique combination of data collection, processing, and visualization tools tailored specifically for bibliometric analysis. Additionally, R's integration with tools for reproducible research, such as R Markdown, enhances the transparency and reliability of the study's methodology. This makes R a versatile choice that aligns with the study's emphasis on accuracy and reproducibility, further distinguishing the study from others that may rely on more generalized or less customizable software. Table 1 summarises the inclusion and exclusion criteria applied to the Web of Science search results, while Figure 1 illustrates the PRISMA-based screening process used to arrive at the final dataset of articles for analysis.

Table 1: Article Extraction from WOS with Inclusion and Exclusion Criteria

Criteria	Inclusion	Exclusion
Document Type	Articles, Review Articles	Books, Book Chapters, Conference Papers
Journal/Source Disciplines	Business, Communication, Management, Psychology	Environmental Studies, Hospitality, Leisure, Tourism, Library Science, Computer Science, and other unrelated fields
Language	English	Non-English
Indexing	SSCI Indexed	Indexed in ESCI and other indices

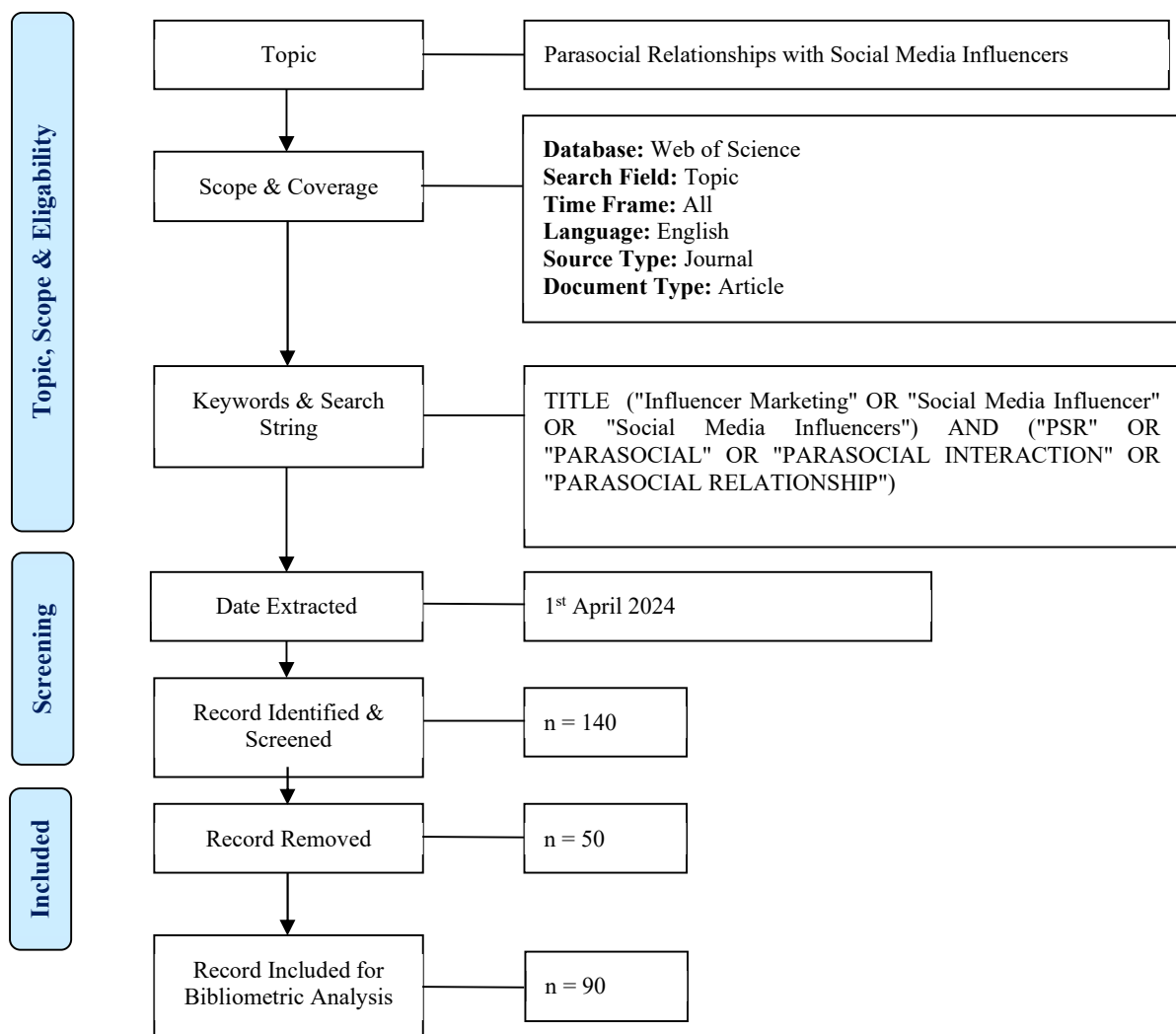


Figure 1: PRISMA Inclusion and Exclusion Process Flow

Analysis and Results

Main information

Table 2 illustrates that dataset spans from 2018 to 2024 and comprises 90 documents from 44 different sources. The dataset reflects a significant annual growth rate of 53.34% in document

production, indicating a rapidly expanding research interest in PSR with SMIs. This growth suggests that the field is gaining considerable traction within the broader domain of influencer marketing, driven by the increasing recognition of the impact of SMIs on consumer behavior. On average, each document in the dataset is relatively recent, with an age of around 1.72 years and an average citation count of 24.27, totaling 4539 references across all documents. This high citation count, particularly for a relatively new research area, demonstrating the relevance and influence of studies on PSR with SMIs. The active citation of these documents suggests that they are contributing valuable insights and are likely shaping ongoing discussions and research within the field.

The dataset also reveals a strong collaborative effort among researchers, with 234 authors contributing to the documents, and only 7 of them being single authors. The average of 2.99 co-authors per document and the 40% rate of international co-authorship highlight the global and interdisciplinary nature of research in this area. This international collaboration is particularly noteworthy as it suggests that the study of PSR with SMIs is not confined to one geographic or cultural context but is recognized as a significant area of inquiry worldwide.

Table 2: Main information regarding selected articles

Description	Results
<u>MAIN INFORMATION ABOUT DATA</u>	
Timespan	2018:2024
Sources	44
Documents	90
Annual Growth Rate %	53.34
Document Average Age	1.72
Average citations per doc	24.27
References	4539
<u>DOCUMENT CONTENTS</u>	
Keywords Plus (ID)	300
Author's Keywords (DE)	291
<u>AUTHORS</u>	
Authors	234
Authors of single-authored docs	7
<u>AUTHORS COLLABORATION</u>	
Single-authored docs	8
Co-Authors per Doc	2.99
International co-authorships %	40
<u>DOCUMENT TYPES</u>	
article	80
article; early access	8
review	2

Annual publication trends

The annual scientific production, as presented in Figure 2, shows a clear upward trend from 2018 to 2023, starting with a modest count of one article in 2018, which increased to three by 2019, and more than doubled to five in 2020. This growth continued sharply through to 2023, reaching a peak of 35 articles. The apparent decline to 13 articles in 2024 is attributed to the

dataset only covering the first three months of the year, suggesting an expected increase as the year progresses. This trajectory indicates a growing interest and active research within the field, potentially predicting sustained or even expanded publication rates by the end of 2024.

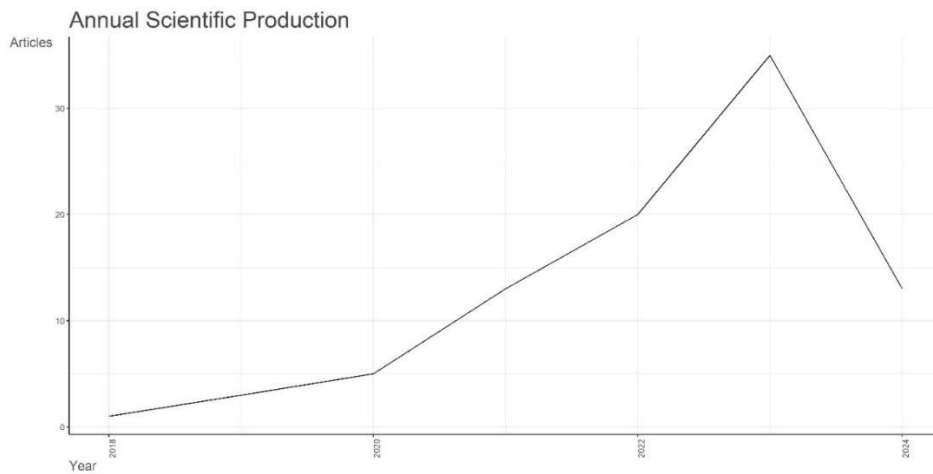


Figure 2: Annual publication trends

In analysing the citation impact in conjunction with publication trends, an interesting pattern emerges. The early years show a high citation impact per article, with the single 2018 article receiving 61 citations, suggesting its significant influence or that it addressed a crucial gap in the field. Despite an increase in publication volume, the peak citation impact per year was in 2020, with an average of 26.64 citations, indicating strong engagement with the research outputs from this period. However, the more recent years, particularly 2023 and 2024, show a notable decrease in citation impact per article, with averages of 2.85 and 0.92 citations respectively. This decline can be partly attributed to the recentness of the publications, which have not had sufficient time to accumulate citations. As these articles mature in the academic community, it is expected that their citation counts will increase, potentially aligning with earlier trends.

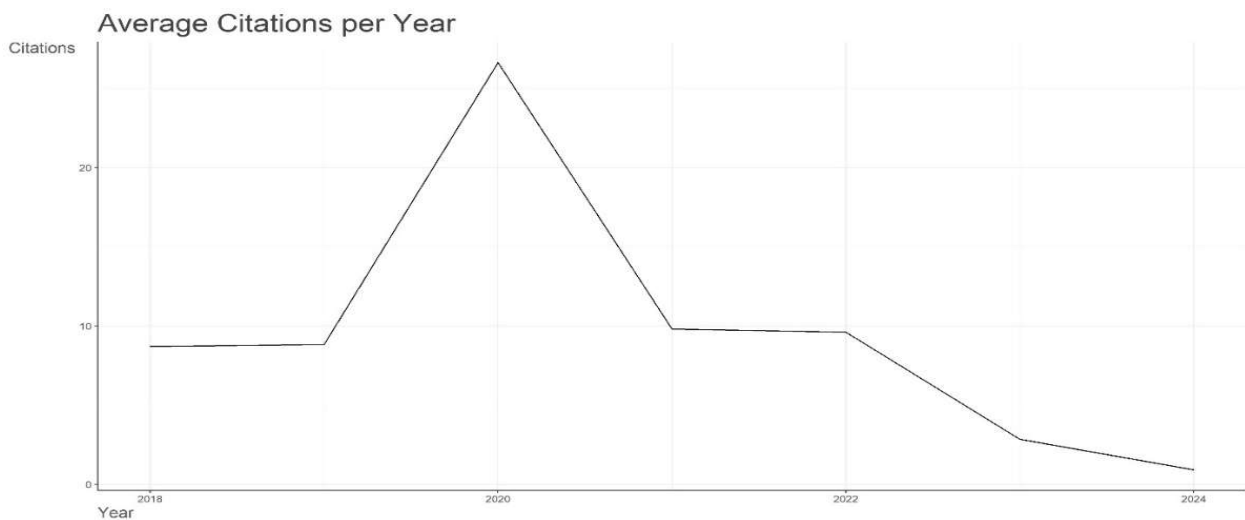


Figure 3: Annual citations per year

Most productive authors

Table 3 reveals significant contributions from various authors in the research community, marked by different levels of productivity and citation impact. Sophie C. Boerman leads with the highest number of citations, accumulating 229 across two documents, indicating her substantial influence in the field. Following closely are S. Venus Jin with 225 citations from three documents and Chen Lou with 200 citations from two documents, both demonstrating strong academic impact. Desirée Schmuck has authored the most documents, with a total of six, yet her citation count per document is among the lowest, with only 58 citations in total. This indicates a high output of work with a modest impact per document, which may suggest that her areas of research are either niche or still gaining traction within the scholarly community.

Table 3: Most Productive Authors

Authors	Document	Citation
Sophie C. Boerman	2	229
S. Venus Jin	3	225
Chen Lou	2	200
Vilma Luoma-aho	2	197
Hanna Reinikainen	2	197
Munnukka Juha	2	176
Devdeep Maity	1	170
Ehri Ryu	2	165
Kuan-Ju Chen	2	155
Jhieh-Syuan (Elaine)	2	155
Shan Yan	2	155
Eugene Cheng-Xi Aw	2	134
Samira Farivar	2	96
Wang Fang	2	96
Priska Breves	3	93
Nicole Liebers	3	93
Eva A van Reijmersdal	1	75
Stephanie Hui-Wen Chuah	1	72
Koay Kian Yeik	2	69
Desirée Schmuck	6	58

Most cited papers

The research on PSR with SMIs is represented in the top 20 most cited articles, revealing the critical themes and influential studies that have shaped the field. The article by Reinikainen et al. (2020), which investigates parasocial relationships and credibility in influencer marketing, leads with 170 citations. This paper highlights how audience comments can moderate these relationships, pointing to their significant role in digital marketing strategies. Boerman's (2020) study follows, examining the effects of standardized Instagram disclosures for micro- and meso-influencers, garnering 154 citations and reflecting a strong academic focus on transparency and ethical considerations in social media marketing.

Other significant contributions include Shan et al. (2020) and Jin & Ryu (2020), which analyze brand endorsements and consumer behavior, with 141 and 126 citations respectively. These

studies focus on the importance of self-influencer congruence and the psychological impacts, such as parasocial interaction and envy, on purchasing decisions. Further research by Masuda et al. (2022) and Lou (2022) explores the mediating roles of influencer attributes and theorizes about trans-parasocial relationships, enhancing our understanding of how influencers affect consumer behavior and the psychological mechanisms at play.

The dominance of Reinikainen et al. (2020) and Boerman (2020) in citation counts highlights a growing scholarly focus on the credibility and ethical considerations surrounding influencer marketing. Reinikainen et al.'s emphasis on the moderating role of audience comments points to the critical impact of interactive consumer engagement in shaping parasocial relationships, suggesting that successful influencer marketing strategies must account not just for the influencer's content but also for the kind of responses it elicits from audiences. Similarly, Boerman's exploration of standardized Instagram disclosures focuses on the increasing regulatory scrutiny and the need for transparency in influencer endorsements, which has direct implications for how brands structure their influencer collaborations. The high citation counts of these studies reflect their foundational role in establishing key themes and guiding future research in the field, particularly in understanding the fine balance between authenticity and marketing in the digital age.

Table 4: Most Cited Papers

Article Title	Author(s) and Year	Citations
'You really are a great big sister' – parasocial relationships, credibility, and the moderating role of audience comments in influencer marketing	(Reinikainen et al., 2020)	170
The effects of the standardized instagram disclosure for micro- and meso-influencers	(Boerman, 2020)	154
When social media influencers endorse brands: the effects of self-influencer congruence, parasocial identification, and perceived endorser motive	(Shan et al., 2020)	141
"I'll buy what she's #wearing": The roles of envy toward and parasocial interaction with influencers in Instagram celebrity-based brand endorsement and social commerce	(Jin and Ryu, 2020)	126
Impacts of influencer attributes on purchase intentions in social media influencer marketing: Mediating roles of characterizations	(Masuda et al., 2022)	104
Social Media Influencers and Followers: Theorization of a Trans-Parasocial Relation and Explication of Its Implications for Influencer Advertising	(Lou, 2022)	103
You follow fitness influencers on YouTube. But do you actually exercise? How parasocial relationships, and watching fitness influencers, relate to intentions to exercise	(Sokolova and Perez, 2021)	98
Fancying the New Rich and Famous? Explicating the Roles of Influencer Content, Credibility, and Parental Mediation in Adolescents' Parasocial Relationship, Materialism, and Purchase Intentions	(Lou and Kim, 2019)	97
Opinion leadership vs. para-social relationship: Key factors in influencer marketing	(Farivar et al., 2021)	77
Disclosing Influencer Marketing on YouTube to Children: The Moderating Role of Para-Social Relationship	(Boerman and van Reijmersdal, 2020)	75
"Stop the unattainable ideal for an ordinary me!" fostering parasocial relationships with social media influencers: The role of self-discrepancy	(Aw and Chuah, 2021)	72
Blind trust? The importance and interplay of parasocial relationships and advertising disclosures in explaining influencers' persuasive effects on their followers	(Breves et al., 2021)	66

“I follow what you post!”: The role of social media influencers’ content characteristics in consumers’ online brand-related activities (COBRAs)	(Cheung et al., 2022)	62
The Role of the Partner Brand’s Social Media Power in Brand Alliances	(Kupfer et al., 2018)	61
Perceived authenticity of social media influencers: scale development and validation	(Lee and Eastin, 2021)	60
Influencer marketing: Homophily, customer value co-creation behaviour and purchase intention	(Bu et al., 2022)	54
Gender effects in influencer marketing: an experimental study on the efficacy of endorsements by same- vs. other-gender social media influencers on Instagram	(Hudders and De Jans, 2022)	43
Are they being authentic? The effects of self-disclosure and message sidedness on sponsored post effectiveness	(Lee and Johnson, 2022)	28
“I will buy what my ‘friend’ recommends”: the effects of parasocial relationships, influencer credibility and self-esteem on purchase intentions	(Bi and Zhang, 2022)	24
Following Social Media Influencers in Early Adolescence: Fear of Missing Out, Social Well-Being and Supportive Communication with Parents	(Schmuck, 2021)	21

Most productive countries

The geographical distribution of research on PSR with SMIs reveals significant insights into the global landscape of influencer marketing. The USA leads with 16 documents and 751 citations, underscoring its central role in shaping the discourse around influencer marketing. This leadership is likely driven by the country’s expansive digital economy and early adoption of social media platforms, suggesting that U.S.-based research trends may heavily influence global marketing strategies, particularly in terms of regulatory practices and consumer behavior studies. South Korea, with 7 documents and 360 citations, also plays a pivotal role, reflecting its innovative approach to digital marketing and high social media usage, which likely contributes to its impactful research output.

European countries such as the Netherlands, Germany, and the UK, though contributing fewer documents, demonstrate substantial influence. The Netherlands, with 4 documents garnering 241 citations, and the UK, with 2 documents accumulating 231 citations, indicate that research in these regions is highly specialized and impactful, focusing on areas that resonate strongly within the academic community. Germany, with 8 documents and 186 citations, adds to the robust European contribution.

In Asia, China and Malaysia are noteworthy contributors. China’s 14 publications have attracted 192 citations, reflecting its increasing engagement in the field. Malaysia, with 6 documents and 184 citations, shows active research participation, indicative of the growing importance of PSR in these rapidly expanding digital markets. The contributions from these countries illustrate the diverse and widespread nature of global research efforts in influencer marketing, with regional strengths and socio-economic contexts shaping the focus and impact of studies on PSR with SMIs. This analysis highlights the potential for future research to benefit from greater cross-cultural collaboration, providing a more comprehensive understanding of these dynamics.

Table 5: Most Productive Countries

Country	Documents	Citations
USA	16	751
South Korea	7	360
Netherlands	4	241
United Kingdom	2	231

Finland	3	208
China	14	192
Germany	8	186
Malaysia	6	184
Australia	2	173
Belgium	7	106
India	3	51
Austria	2	39
Taiwan	2	14

Most Productive Affiliations

Table 6 reflects the academic output and citation impact of various universities on PSR with SMIs research. The University of Amsterdam leads with three documents, accumulating a total of 240 citations, reflecting a significant impact from a relatively small number of publications. Nanyang Technological University follows closely, with two documents achieving 200 citations, showcasing strong research quality and relevance.

Other notable institutions include the University of Jyväskylä and Sejong University, each contributing two documents but with substantial citation counts of 197 and 186, respectively. In North America, Boston College and Northwestern University each have two documents, both institutions gaining 165 citations, indicating impactful research contributions.

UCSI University in Malaysia stands out for its higher volume of publications, with six documents that have also accumulated 165 citations, suggesting active involvement in this research area. Similarly, KU Leuven in Belgium, with six documents resulting in 58 citations, indicates a strong focus on influencer marketing research, though the citation impact per document is lower. This data shows a broad and varied landscape of institutions contributing to the field, each adding unique value and perspective to the ongoing academic discussion on PSR with SMIs.

Table 6: *Most Productive Affiliations*

Affiliation	Documents	Citations
University of Amsterdam	3	240
Nanyang Technological University	2	200
University of Jyväskylä	2	197
Sejong University	2	186
Boston College	2	165
Northwestern University	2	165
UCSI University	6	165
California Polytechnic State University	2	155
National Chengchi University	2	155
Carleton University	2	96
Wilfrid Laurier University Waterloo	2	96
University of Würzburg	3	93
Sunway University	3	79
The Hong Kong Polytechnic University	2	68
The University of Texas	2	62
KU Leuven	6	58
Ghent University	5	48
Pontifical Catholic University of Paraná	2	35
Swinburne University of Technology	3	34

Most Productive Journals

Table 7, showing the top 20 journals, reflects their contributions to the field of PSR with SMIs, illustrating where significant research is published and how well it is received in terms of citations. The Journal of Retailing and Consumer Services leads with seven documents, accumulating a total of 423 citations, making it the most prolific in both volume and citation impact. Computers in Human Behavior follows closely with five documents that have attracted 375 citations, indicating strong interest and engagement with the research published in this journal.

The International Journal of Advertising is notable for having the highest number of published documents at thirteen, with a total of 321 citations, highlighting its critical role in publishing PSR with SMIs research. The Journal of Business Research also contributes with five documents and 311 citations, affirming its significance in the academic community. The Journal of Advertising, with only two documents, achieves a high citation count of 277, showing that the research it publishes can significantly influence the field.

Other journals such as Frontiers in Psychology and Psychology & Marketing also contribute significantly with multiple articles that are frequently cited, indicating their relevance across different psychological and marketing studies related to influencer marketing.

Table 7: Most Productive Journals

Journal	Documents	Citations
Journal of Retailing and Consumer Services	7	423
Computers in Human Behavior	5	375
International Journal of Advertising	13	321
Journal of Business Research	5	311
Journal of Advertising	2	277
Frontiers in Psychology	3	177
Journal of Marketing Management	2	173
Psychology & Marketing	4	163
Technological Forecasting and Social Change	3	141
Journal of Consumer Research	3	141
Journal of Research in Interactive Marketing	4	108
Journal of Interactive Advertising	2	96
Journal of Marketing	1	94
Human Communication Research	1	86
Journal of Brand Management	2	60
Media Psychology	1	56
Journal of Fashion Marketing and Management	1	52
Journal of Consumer Behaviour	3	47
International Journal of Consumer Studies	4	43
New Media & Society	2	41

Most Frequent Keywords

Figure 4 highlights the most common keywords in research on PSR with SMIs, revealing the key themes that are shaping the conversation. Terms like "influencer marketing," "social media influencers," and "parasocial relationships" stand out, showing where the main interest lies. The frequent use of "influencer marketing" shows just how important this strategy has become, with influencers playing a significant role in guiding consumer choices. The prominence of

"social media influencers" emphasizes the critical role these individuals play on platforms like Instagram and YouTube, where they actively engage and influence their audiences. The frequent mention of "parasocial relationships" indicates a strong focus on understanding how these one-sided relationships between influencers and their followers can drive purchasing decisions and build brand loyalty.

Other keywords, such as "credibility," "social interaction," and "persuasion knowledge," point to an ongoing interest in how trust, engagement, and awareness of marketing tactics affect the success of influencer marketing. These terms suggest that researchers are digging into what makes influencer marketing work—or not work—and how these relationships impact consumer behavior. The keywords in this figure not only reflect what's currently being studied but also hint at important questions for future research, such as the role of trust and the effects of these relationships on long-term consumer habits.



Figure 4 Most Frequent Keywords

Network analysis

The network visualizations employ colors and sizes of nodes to depict the significance and type of connections among entities within the research domain (Imam et al., 2023). Different colors in the diagrams represent distinct clusters or groups, indicating thematic or collaborative separations among the entities visualized. Larger nodes suggest entities with more connections or higher relevance within the network, highlighting their central role in collaborations or influence within the specified field. These visual elements help in quickly identifying key players and understanding the structural dynamics of the academic or professional communities represented.

In Figure 5, we see a variety of nodes clustered around central figures like "Schmuck D," who appears as a major hub, indicating extensive collaborations or a high number of citations. This visualization aids in identifying which authors are most central to the network, suggesting their work's pivotal role or their influence in driving the field's research agenda. The presence of different clusters can also suggest varying research focus areas or collaborative groups that share common interests and work closely together.



Figure 5 Network Analysis - Authors

Figure 6 focuses on affiliations, linking authors to universities and highlighting the institutions that are key centers of research and collaboration. Notably, UCSI University stands out as a central hub, closely connected with other institutions like Swinburne University and Sunway University. This positioning suggests that UCSI University plays a significant role in the field, frequently collaborating with other key universities. Similarly, Katholieke Universiteit Leuven is another prominent node in the network, indicating its strong presence and influence within the research community. The size and central position of its node suggest that it is involved in high-impact research or has extensive collaborations with other institutions. Other universities, such as Sejong University and California Polytechnic State University, form smaller clusters, indicating more localized or specialized collaborative efforts within specific research areas. The overall distribution of nodes and the formation of distinct clusters suggest that while there are key hubs of activity, like UCSI University and Katholieke Universiteit Leuven, research on PSR with SMIs is also widely distributed across various global institutions. This indicates a diverse and interconnected research landscape, with both prominent and emerging players contributing to the development of this field.

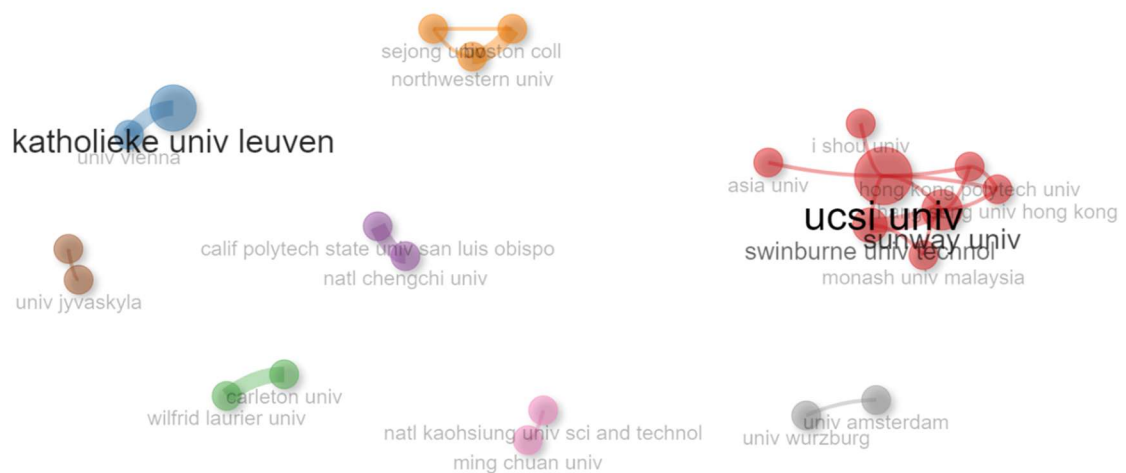


Figure 6 Network Analysis - Affiliations

Figure 7 maps the countries of these affiliations, offering a global view of where significant research is conducted. In the visualization, the USA stands out as the most prominent node, indicating that it plays a central role in the global research network. The USA's connections to multiple countries, including China, Malaysia, and Australia, suggest that it is a key player in fostering international collaborations. China and Malaysia also appear as significant nodes, closely connected to the USA and other countries, highlighting their active participation in global research efforts. The proximity and connections among these countries indicate a strong collaboration network in this region, likely contributing to the advancement of PSR with SMIs studies. On the other side of the map, European countries like France, Germany, Turkey, and the Netherlands form a distinct cluster. Although this cluster is somewhat separate from the USA-centric network, it shows strong internal collaboration, suggesting that these countries are working closely together within the European context.

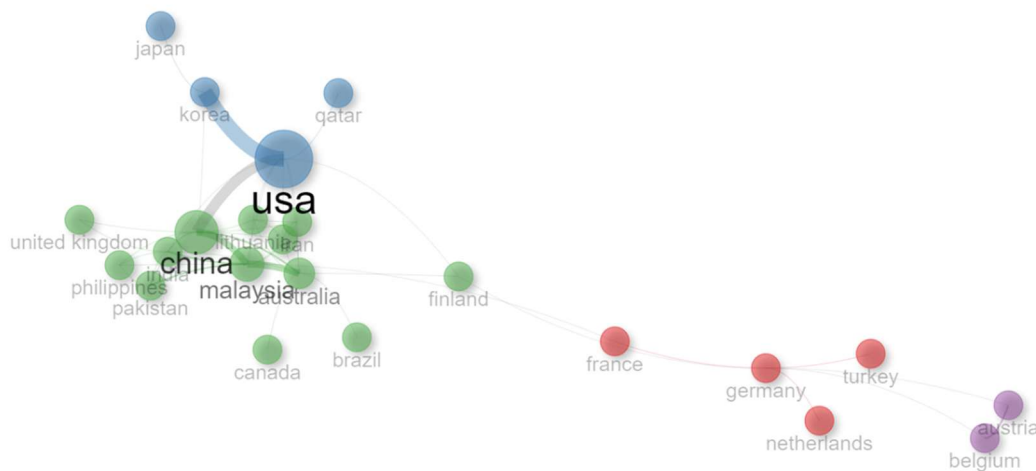


Figure 7 Network Analysis - Countries

Co-citation analysis

Co-citation analysis is a method used in bibliometric studies to evaluate how frequently two documents are cited together within other documents (Tomaszewski, 2023). In a co-citation network, nodes represent documents or authors, and the links between them indicate that they have been co-cited by other works. The strength of the connection is often proportional to the number of co-citations; a stronger link suggests a higher frequency of co-citation. Cluster 1, represented by Red, is characterized by moderately high betweenness centrality values, suggesting that nodes like De Veirman et al. (2017) and Horton & Richard Wohl (1956) are significant in connecting various research discussions within this cluster.

These are the key papers which reflects that their work is central to the discourse in their field, linking numerous studies and facilitating the flow of information across the network. This cluster appears to represent a foundational component of the research community, with a strong internal connection and influence over the development of the field. In contrast, Cluster 2, represented in blue, displays even higher betweenness centrality, particularly for nodes like Casaló et al. (2020) and Kim & Kim (2021). Cluster 3, represented in green, with nodes like Boerman & van Reijmersdal (2020) and De Veirman & Hudders (2020), also shows significant betweenness centrality.

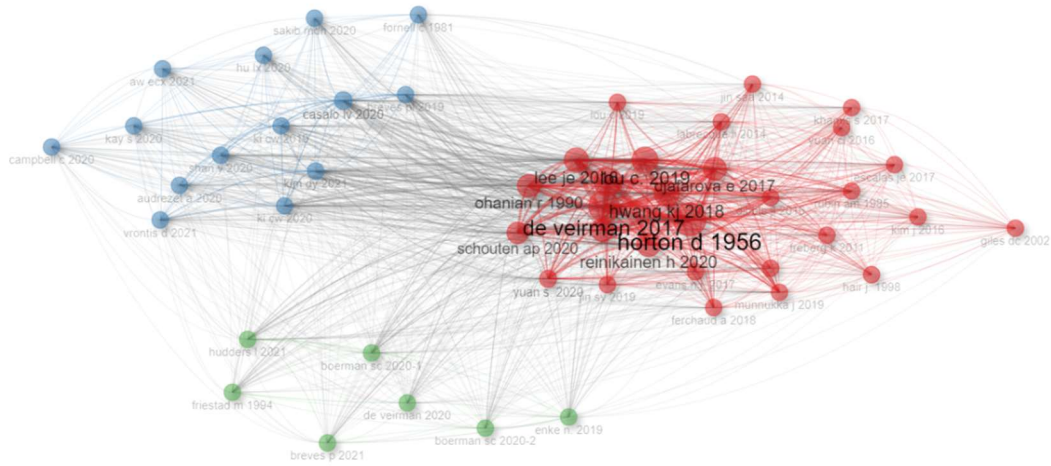


Figure 8 Co Citation Analysis

Three fields plot

The visualization presented is a Sankey diagram that illustrates the connections between specific keywords or topics (left column), authors (middle column), and the journals where their work is published (right column). This type of visualization is particularly useful in understanding how specific research topics are distributed across different authors and journals, highlighting the flow of research interests and collaborations within the field of influencer marketing (Farooq, 2021). For instance, terms like "parasocial interaction," "influencer marketing," and "source credibility" are linked to various researchers who have published on these topics, which are further traced to their respective journals. This diagram effectively maps out the intellectual landscape of influencer marketing research, showing which topics are most frequently explored and where this research is being disseminated. Analyzing the diagram reveals several key insights about the research related to PSR with SMIs. First, it shows a concentration of research activity around core topics, such as "parasocial relationships" and "social media influencers," by prominent researchers like Schmuck D and Jin SV, whose works are primarily published in journals like the Journal of Retailing and Consumer Services and Computers in Human Behavior. This indicates a strong, ongoing interest in the foundational and evolving aspects of influencer interactions with audiences. Additionally, the diagram highlights how different authors contribute to the discourse in various journals, suggesting a diverse yet interconnected research community.

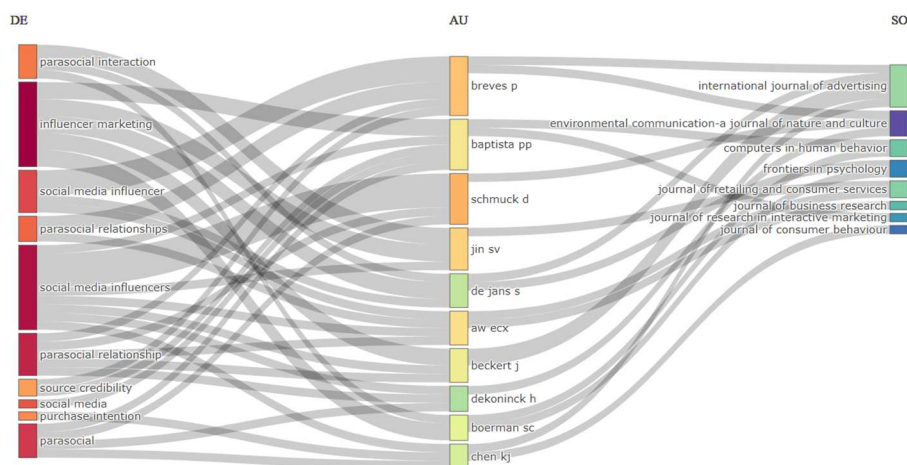


Figure 9 Three Fields Plot

DISCUSSION AND CONCLUSION

The data retrieved from the Web of Science (WOS) database for the years 2018 to 2024 (till April) included a total of 140 articles. Out of these, 90 articles were selected for detailed analysis. The dataset was sourced from 44 different journals, with a remarkable annual growth rate of 53.34%, indicating a rapidly expanding interest in this research area. These documents have an average citation rate of 24.27 per document, demonstrating significant academic impact. Additionally, the research community involved includes 234 authors, with a relatively small proportion contributing to single-authored documents, suggesting a strong trend towards collaborative research. The analysis revealed a clear positive trend in paper publication rates over the past 6 years, with the peak in publications occurring in 2023—35 documents were published while most number of citations came from the year 2020.

This trend highlights the importance of earlier works in setting the stage for ongoing inquiry and may indicate a maturing research field where foundational theories and methodologies are being built upon and refined. As this area of study continues to evolve, these patterns suggest a sustained and collaborative effort to deepen understanding and broaden the impact of PSRs with SMIs, potentially influencing both academic inquiry and practical applications in digital marketing.

The analysis highlighted that Sophie C. Boerman's was the most cited author in this field, with 229 citations across two documents. S. Venus Jin and Chen Lou also stand out, with Jin accumulating 225 citations from three documents and Lou gathering 200 citations from two documents, reflecting their critical contributions to PSR with SMIs research. In contrast, Desirée Schmuck, despite authoring the most documents at six, has a relatively lower citation impact, totaling only 58 citations, indicating her focus may be on niche or developing areas within the field. The most cited articles in the study of PSR with SMIs highlighted key research shaping this area. Reinikainen et al. (2020) lead with 170 citations, examining how audience interactions can impact influencer credibility. Boerman's study (2020) followed with 154 citations, focusing on transparency and ethical standards in influencer marketing. Additional notable works by Shan et al. (2020) and Jin & Ryu (2020) explored the psychological effects of influencer endorsements, discussed how emotional connections and congruence influence consumer behavior.

The distribution of documents and citations highlights significant global contributions to research on PSR with SMIs. The USA leads with 16 documents and 751 citations, while South Korea and European countries like the Netherlands and Germany also show high academic output. In Asia, China and Malaysia demonstrate strong involvement, with China's 14 publications attracting 192 citations and Malaysia's six documents attaining 184 citations. Additionally, the University of Amsterdam emerged as the most prolific institution with 240 citations (3 documents), followed by Nanyang Technological University with 200 citations (2 documents), and University of Jyväskylä with 197 citations (2 documents). The analysis included the top most cited journals in the field, highlighting the Journal of Retailing and Consumer Services as the leader with seven documents and 423 citations. Following closely were Computers in Human Behavior with five documents and 375 citations, and the International Journal of Advertising with the highest number of published documents at thirteen, totaling 321 citations.

The network analysis revealed significant insights into the structure of research on parasocial relationships with social media influencers. Notably, certain authors such as Desirée Schmuck and Priska Breves stand out as central figures within the network, highlighting their considerable influence and extensive collaborations. In terms of affiliations, institutions like Katholieke Universiteit Leuven and UCSI University are identified as key hubs for research and collaboration. At the country level, the USA, China, and Malaysia emerge as leading

contributors, demonstrating their significant role in producing influential research and promoting international cooperation.

Overall, these patterns imply that PSR research is becoming increasingly influential across multiple disciplines and regions, with certain institutions and journals emerging as key players. This widespread academic engagement suggests that the field is poised for continued growth, with potential implications for both theory development and practical applications in global marketing strategies. The diversity in geographic and institutional contributions also highlights the potential for cross-cultural research and collaboration, which could further enrich the understanding and application of PSRs with SMIs.

Directions for Future Research

In summary, the review of 90 articles from 2018- 2024 on PSR with SMIs, pulled from the Web of Science database, has proven both reliable and unique. This research spans a variety of journals, authors, institutions, and countries within the field. While the study only included articles listed in the Social Science Citation Index (SSCI), which is a limitation, it still provides a credible and thorough overview of the most influential works on PSR with SMIs. This overview is based on detailed analyses of citations, as well as networking through co-authorship and occurrences within the literature.

Future researchers can broaden this study by including additional indexes like the Emerging Sources Citation Index (ESCI), which will help in recognizing the contributions of new and less experienced authors in the field. Furthermore, the use of other databases such as Scopus, SCImago, Google Scholar, and journal rankings could enhance the document selection process. Overall, this study is valuable as it provides deep insights into the citation patterns across a vast number of articles and journals. The findings could pave the way for future researchers, especially those new to the field, by helping them establish connections among authors, institutions, and countries aligned with their research interests. Additionally, this study opens up avenues for new researchers to explore emerging topics within PSR with SMIs and related areas. Therefore, this research could serve as a valuable resource for journal editorial boards to monitor the progress and collaborative efforts within the field, particularly in enhancing the understanding of PSR with SMIs.

Given the insights from this analysis, several avenues for future research emerge. While current studies have laid a strong foundation, there are critical areas that warrant further exploration to deepen our understanding of PSRs with SMIs:

- **Cultural Differences:** As PSRs are influenced by cultural contexts, it is important to investigate how these relationships vary across different regions. Are there significant differences in how audiences from different cultures engage with influencers, and how do these differences affect the outcomes of influencer marketing campaigns?
- **Longitudinal Studies:** While much of the existing research focuses on short-term outcomes, there is a need for longitudinal studies that examine the long-term effects of PSRs on consumer loyalty and brand engagement. How do these relationships evolve over time, and what factors contribute to their durability or decline?
- **Ethical Considerations:** The ethical implications of influencer marketing, particularly regarding transparency and disclosure practices, are increasingly important. Future research should explore how these practices can be improved to ensure ethical standards without diminishing the effectiveness of marketing campaigns.
- **Impact of Emerging Technologies:** The rise of AI-driven influencer avatars and virtual influencers presents new challenges and opportunities for PSRs. Research should

investigate how these emerging technologies alter the dynamics of parasocial relationships and what implications they have for the future of influencer marketing.

Table 8 which presents a summary of key research questions that can emerge from this study.

Table 8: Future Research Question

Research Area	Future Research Questions
Cultural Differences	<ul style="list-style-type: none"> • How do PSRs vary across different cultural contexts? • Are there significant differences in how audiences from different cultures engage with influencers? • How do these cultural differences impact the effectiveness and outcomes of influencer marketing campaigns?
Longitudinal Studies	<ul style="list-style-type: none"> • What are the long-term effects of PSRs on consumer loyalty and brand engagement? • How do PSRs evolve over time, and what factors contribute to their durability or decline? • What role do changing consumer preferences and market trends play in the longevity of PSRs?
Ethical Considerations	<ul style="list-style-type: none"> • How can transparency and disclosure practices in influencer marketing be improved to ensure ethical standards? • What are the potential unintended consequences of stricter regulations on influencer marketing effectiveness? • How do ethical considerations around transparency impact consumer trust and engagement in PSRs?
Impact of Emerging Technologies	<ul style="list-style-type: none"> • How do AI-driven influencer avatars and virtual influencers alter the dynamics of PSRs? • What are the implications of these technologies for the future of influencer marketing? • How do consumers perceive AI-driven influencers compared to human influencers, and how does this affect the strength of PSRs?

These future research questions are designed to build on the foundational work presented in this study, addressing gaps in the current literature and providing a roadmap for advancing the field of PSRs with SMIs. By exploring these areas, future research can offer deeper insights into the complex dynamics at play and guide both academic inquiry and practical applications in influencer marketing. The conceptual model that can be derived from such a bibliometric analysis integrates key elements that influence the formation and impact of parasocial relationships (PSRs) with social media influencers (SMIs) on consumer behavior. The model revolves around three primary components:

Influencer Characteristics: This includes credibility factors such as expertise, trustworthiness, and attractiveness, which are crucial in establishing strong PSRs. Influencers who are perceived as credible are more likely to foster deeper connections with their audience. Additionally, the type and frequency of content play a significant role in maintaining and enhancing these relationships.

Parasocial Relationships (PSRs): The depth of PSRs is characterized by engagement level and emotional bonding. High engagement, such as frequent interactions through comments and likes, strengthens the PSR. Emotional bonding deepens this connection, making followers more receptive to the influencer's content and recommendations.

Consumer Behavior: Strong PSRs significantly influence consumer behavior, leading to increased purchase intentions, brand loyalty, and, in some cases, broader behavioral changes such as shifts in lifestyle or long-term brand preferences.

This model, informed by the bibliometric analysis, provides a framework for understanding how different elements interact to shape the effectiveness of influencer marketing strategies.

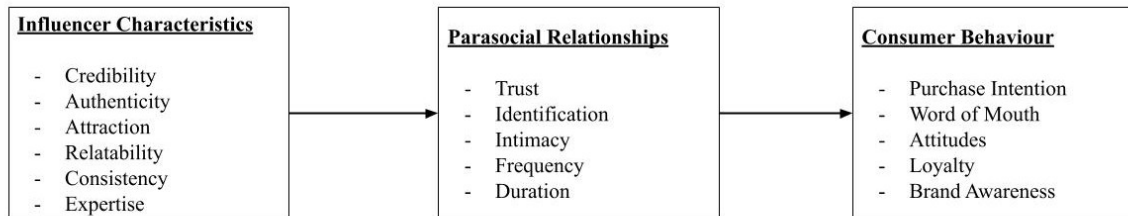


Figure 10 Proposed Model

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